HOW DOES THE LIFE INSURANCE BUSINESS PERFORM AND BEHAVE: THE CASE OF THE UK INDUSTRY

A thesis submitted for the degree of Doctor of Philosophy

By

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Abstract

This thesis reviews the UK life insurance industry comprehensively in terms of performance and business behaviour. One major contribution of the thesis is to challenge the conventional view on evaluation of investment funds from a shareholders' perspective. The accounting valuation techniques to evaluate investment from the policyholder's perspective have not been advanced to the same extent as methods designed to evaluate investment from the shareholder's perspective, due partly to the accounting complexity of the investment management. Against this context, the thesis develops a valuation method on the basis that policyholders' basic expectation that their saved funds shall be invested with value growth higher than inflation in the real goods market, and the thesis takes this as the benchmark to assess the reported value of policyholders' assets. The thesis employs this valuation to assess the performance of different life assurance products (conventional vs. modern) and examine whether the transformation (from conventional to modern) has any impact on insurer performance and behaviour. The thesis also examines whether product diversification impacts realised and unrealised investment income homogenously; the result suggests that the effect of product diversification on performance varies across different measurements of realised and unrealised gain. The second major contribution of the thesis is to test the validity of different output proxies and compare efficiency scores based ranking for competitive firms to the value creation based ranking. Overall, the thesis suggests that different output proxies give consistently similar ranking for competitive firms, and cost efficiency based on different proxies are closely related to conventional measurers of firm performance and value creation in terms of value and ranking.

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List of Abbreviations

A

ABI: The Association of British Insurers.
AFBD: The Association of Futures, Brokers and Dealers.
APE: The Annual Premiums Equivalent.
AR/CR: The Appointed and/or Company Representatives.
ASB: The Accounting Standards Board.

C

CEV: The Current Exit Value.
CFO: The Chief Financial Officers.
CPI: The Consumer Price Index.
CPIH: The Consumer Price Index Including Housing Costs.

D

DEA: The Data Envelopment Analysis.
DFA: The Distribution Free Approach.
DTI: The Department of Trade and Industry.
DWH: The Durbin-Wu-Hausman Test.

E

EC: The European Commission.
EEA: The European Economic Area.
EEV: The European Embedded Value.
EEVP: The European Embedded Value Principles.
EU: The European Union.
EVA: The Economic Value Added.
EV: The Embedded Value.

F

FEVD: The Fixed Effects Vector Decomposition.
FIMBRA: The Financial Intermediaries, Managers and Brokers Regulatory Association.
FCA: The Financial Conduct Authority.
FDH: The Free Disposal Hull.
FSA: The Financial Services Authority.

G

GDP: The Gross Domestic Product.
GDPD: The Gross Domestic Product Deflator.
GVA: The Gross Value Added.
GMM: The Generalized Method of Moments.

H

HHI: The Herfindahl-Hirschman Index.
HICP: The Harmonised Index of Consumer Prices.

I

IAD: The Insurance Accounts Directive.
IASB: The International Accounting Standards Board.
IASC: The International Accounting Standards Committee.
IFA: The Independent Financial Advisers.
IFRSs: The International Financial Reporting Standards.
IMRO: The Investment Regulatory Organisation.
IV: The Instrumental Variable.
ISA: The International Accounting Standards.

L

LAUTRO: The Life Assurance and Unit Trust Regulatory Organisation.
LTIB: The Long-Term Insurance Business.

M

M&A: The Mergers and Acquisitions.
MCEV: The Market Consistent Embedded Value.
MCEVP: The Market Consistent European Embedded Value Principles.
MSSB: The Modified Statutory Solvency Basis.
MVR: The Market Value Reduction.

O

OECD: The Organisation for Economic Cooperation and Development.
ONS: The Office for National Statistics.
OLTIB: The Other Long-Term Insurance Business.
OOH: The Owner Occupiers' Housing Costs.
OLS: The Ordinary Least Squares.

P

PRA: The Prudential Regulation Authority.
PEV: The Profit reported under the Embedded Value.
PIA: The Personal Investment Authority.
PPI: The Producer Price Index.
PVIF: The Present Value of In-force Business.

R

RBC: The Risk-Based Capital.
RPI: The Retail Price Index.

S

SFA: The Stochastic Frontier Approach.
SFA: The Securities and Futures Association.
SORP: The Statement of Recommended Practice.
SSB: The Statutory Solvency Basis.
S&P: The Standard and Poor's.
SPPI: The Producer Price Index.
SIB: The Securities and Investments Board.
2SLS: The Two-Stage Least-Squares.
SROs: The Self-Regulatory Organisations.

T

TFA: The Thick Frontier Approach.
TSA: The Securities Association.

V

VAT: The Value Added Tax.
VNB: The Value of New Business.

1. Chapter 1: Introduction

1.1. The Role of the UK Life Insurance Industry in the UK Economy

It is assumed that the Lombards from northern Italy introduced the first insurance policy written in the UK in the 14th or the 15th centuries. This earliest insurance policy was a marine insurance policy and from which came the earliest life assurance policy written in the late 16th century on the life of a merchant sailing with his goods (Hardwick and Guirguis, 2007). From this early beginning, the UK life assurance industry has developed to become the third largest (after the US and Japan) in the world, accounting for 9.4%[1] of the total premium income of the Organisation for Economic Cooperation and Development (OECD) (OECD, 2012). Compared to the European counterparts, the UK life assurance industry is the largest in Europe; its share in the European market was 25.5% of the EU member premium incomes in 2010 (Datamonitor, 2011). Domestically, the share of the life assurance industry in the UK insurance market exceeded 70% in 2010 (ABI, 2011). In addition, the UK life assurance premium incomes as a percentage of the Gross Domestic Product (GDP) was about 9.5% in 2010, which is the third highest worldwide (after Luxembourg and Ireland) (OECD, 2012). Furthermore, it is anticipated that the UK life industry will have a compound annual growth rate of 6% over the period 2010-2015 (Datamonitor, 2011).

The life assurance industry is a vital contributor to the UK economy; it is a prime investor, a major employer and a significant source of overseas earnings. The UK life insurance industry is considered to be an investment and saving vehicle for the UK economy. The proportion of the pension segment exceeded 73% of total gross premium income of the UK life industry in

[1] The author calculates this information using data published by the OECD concerning life gross premiums on its members in 2010 (OECD, 2012).

2010 (Datamonitor, 2011). Indeed, the UK had the fourth highest per capita life insurance expenditure in the world in 2010 (falling behind Luxembourg, Ireland and Switzerland) (OECD, 2012). The UK life assurance industry had £1,597 billion invested in shares and other assets in 2010; amounting to about 24% of the UK total net worth (ABI, 2011). Moreover, it paid out around £53.6 billion (an average of £147 million per day) in benefits to pensioners and long-term policyholders and around £6.2 billion (an average of £17 million per day) in death and disability benefits in 2010 (ABI, 2011). As further indicators of its importance to the economy, the total number of employees in the UK insurance industry (life and non-life) was 290,000 in 2010, accounting for more than a quarter of all financial service jobs (ABI, 2011). With regard to overseas earnings, the proportion of premium incomes from overseas was £42 billion accounting for 38% of total life premium incomes (ABI, 2011). Therefore, it is meaningful and important to understand how the UK life insurers behave and perform in creating wealth for policyholders and shareholders to assess the performance of the UK life insurance industry from shareholders and policyholders perspectives.

To address these challenging issues concerning assessing life insurer performance, the thesis employs regulatory data at the legal entity level over the period 1985-2010. The data is derived from the SynThesys life database (version 10.1, 15-August 2011 released) provided by the Standard and Poor's (S&P); this data summarises the annual returns filed to the regulatory authority in the UK over the period 1985-2010. The sample consists of three hundred and sixty nine companies (see Table 31 in Appendix). The annual returns are required to be submitted in specific forms covering revenues, expenses, assets, liabilities and solvency (see Table 1). Using this data set, the thesis reviews the developments in the UK life insurance market over the period 1985-2010 concerning product and ownership structures as well as assets, liabilities, revenues and expenses, and then goes further to develop a valuation, value creation, for life

assurance funds based on policyholders' basic expectations. The thesis also examines how life assurance product diversification impacts on investment performance concerning realised and unrealised gains; employing value creation as performance benchmark compared to conventional measure such as investment yield. Finally, thesis compares the value creation based ranking of competitive firms to efficiency frontier ranking based on different output proxies.

1.2. Value Creation as an Approach to Measure Life Insurer Performance

Examining performance in the life insurance business is considered to be fraught with problems[2] because of the unsatisfactory nature of life insurance company accounts[3] (O'Brien, 2009b). Indeed, existing solvency[4] based valuation information is considered to be unable to reflect the underlying economies of life insurers due to difficulties arising from the valuation of insurer contractual liabilities, and, hence, recognising the associate surplus (Swiss Re,

[2] An explanation for the difficulty in using performance measures in the life insurance industry was offered by one interviewee in the survey conducted by Diacon et. al. (2005); the interviewee commented that: '*We still look a lot at APE (annual premium equivalent) so volume and share are very important…It's very difficult to compare your performance against competitors… Again it goes back to how transparent an industry we are: it's very difficult to actually get beneath the surface. In terms of APE, you can get the figures from the ABI (Association of British Insurers) and you can see where everyone's going; the proportion of the whole market, that's very easy to do. Profitability is very difficult to monitor (senior development and planning manager, bancassurer)*' (Diacon et. al., 2005, p.7).

[3] It is assumed that the current project of the International Accounting Standards Board (IASB) will be able to address this issue; however, the project is still in the development phase. In the UK, the Accounting Standards Board (ASB) introduced a new standard for medium-sized and large with-profits life insurers in 2004 (ASB, 2004a,b; 2005), but this does not identify fully the interest of the shareholders in the assets shown on the balance sheet (O'Brien, 2009b).

[4] Proprietary life insurers and some mutual life insurers have employed the Embedded Value (EV) to deal with these issues and report their performance since the 1990s (Almezweq and Liu, 2012; 2013). The empirical analysis on the value relevance of the EV accounting information provides evidence that accounting information reported under the EV is relevant to the market value of life insurance firms (Horton, 2007; Préfontaine, Desrochers and Godbout, 2009; 2011; Almezweq and Liu, 2012; 2013). Despite the adoption of the International Financial Reporting Standards (IFRSs) in 2005 by the UK listed life insurers, they continue to disclose the EV supplementary accounts within their annual reports (Almezweq and Liu, 2012; 2013). However, recent empirical evidence by Almezweq and Liu (2013) shows that profits reported under the EV are not value relevant to the market value of life insurance firms. Furthermore, the data on the EV is only available at the holding company level and the accounting numbers of the EV have to be extracted directly from the firm annual reports because these values are not separately reported in any available database to the best of the author's knowledge. These difficulties make an analysis of performance based on the EV accounting information invisible at the level of an individual legal entity.

2012a). In 2008, the market value of policyholders' assets was £1,243 billion, £250 billion lower than its value in 2007 (£1,493 billion). Similarly, the value of policyholders' benefits (net mathematical reserves) fell by £209 billion in 2008 when compared to their value in 2007. This statutory valuation of assets and liabilities is considered to be informative regarding the solvency position of life insurers; however, the extent to which these statutory values of assets and liabilities are informative regarding answering critical question from policyholders' perspective such as how does the UK life insurance industry perform? Does its saving products or investments create value for the policyholders? is questionable.

Insurance based literature, with respect to policyholders, focuses on the calculation of the value of the asset share of with-profits policies (see Ranson and Headdon, 1989; Needleman and Westall, 1991; Paul et. al., 1991; Mehta, 1992; Roff, 1992; Eastwood et. al., 1994; Needleman and Roff, 1995; Clay et. al., 2001; Hairs et. al., 2002 and O'Brien, 2009a, c; 2012). Asset share measures the share of a single policy in with-profits life insurance funds as these funds are not unitised. This value of unit (the market value) or the asset share value; gives policyholders information regarding the changes in the value of units but it is not clear how this value is attributed to premiums paid by policyholders and investment income generated from reinvesting these premiums. Furthermore, it does not show how much wealth has been created from original investment relative to changes in the purchase power of the monetary unit.

The basic idea is how much real wealth has been created for policyholders from a single life assurance policy over the duration of the contract? This requires accumulation of the investment based contributions (realised and unrealised gains) to the value of the unit / asset share in real terms, this would help measuring the changes in real wealth created for policyholders over the duration of the policy; with the assumption there are no guarantees. This measure also enables the policyholders to assess whether life insurers would be able to keep

the value of invested assets in line with changes in the purchasing power of monitory unit. The excess in real wealth over original investments (paid premiums) can be decomposed into realised and unrealised gains. Furthermore, this valuation provides information to classify life insurers into: (1) Life insurers that can keep the value of policyholders' contributions and realised gain from investing these contributions in line with the changes in the purchase power of the monetary unit, and, hence, achieve positive real capital gain (unrealised gain); all value are in accumulative terms. (2) Life insurers that can keep the value of policyholders' contributions but only part realised gain from investing these contributions in line with the changes in the purchase power of the monetary unit, and, hence, achieve negative real capital gain (unrealised gain) that destroys part of realised gain generated from investing policyholders' contributions; all value are in accumulative terms. (3) Life insurers that cannot keep the value of policyholders' contributions and realised gain from investing these contributions in line with the changes in the purchase power of the monetary unit, and, hence, achieve negative real capital gain (unrealised gain) that destroys all realised gain generated from investing policyholders' contributions and part of their contributions; all value are in accumulative terms.

By applying this valuation, it is identified that, overall, the UK life insurance firms have created value in total[5] of £11 billion per annum on average over the period 2001-2010, when compared with the average value of £50 billion[6] created each year over the 1990s. Apparently, value creation relative to the basic expectation of the policyholders has dropped significantly over the last decade. This is due to the recent financial turmoil that has lowered the market value of policyholders' assets. For instance, the whole UK life industry lost £209 billion[7] of value

[5] It is based on value creation in flow terms.
[6] It is based on value creation in flow terms.
[7] It is value creation in flow terms in 2008.

relative to the policyholders' expectations in 2008. Such scale of value losses in a single year has never been seen in the history of the industry since 1985. This raises concern regarding the future of the industry for its capability in creating real value for the policyholders. Furthermore, it is found that a firm with high value creation is likely to perform better in business growth compared to a firm that has low value creation. The latter has a precautionary behaviour concerning demanding for more liquid assets and the reinsurance purchase. The finding of this chapter is interesting for managers of life insurance companies, reinsurance companies, policyholders and their agents and regulators.

1.3. Product Diversification and Performance of the UK Life Insurers

The amount of loss on revaluation of policyholders' assets (unrealised gain) was £-18 billion (-4% of total assets) in 1990 compared to £-104 billion (-10% of total assets) in 2002 and £-171 billion (-14% of total assets) in 2008. Most of valuation losses (unrealised gain) are related to linked assets, for instance, in 2008, the valuation loss in the value of linked assets was £-160 billion (23% of the value of linked assets) compared to only £-11 billion (-2% of the value of non-linked assets). This raises an interesting and challenging question for research on whether the net effect of product diversification on the performance of the UK life insurers is homogenous across conventional ratio such as investment income (realised gain) and two value creation based measures, namely, capital gain (unrealised gain) and value creation (realised and unrealised gains).

The debate in literature concerning product diversification and firm performance interrelationship suggests inconclusive relationship concerning the net effect of product diversification on firm performance (see Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996; Desai and Jain, 1999; Campa and Kedia, 2002; Villalonga, 2004a,b; Laeven

and Levine, 2007; Santalo and Becerra, 2008). Similarity, existing insurance based studies tend to report inconclusive diversification-performance-relationship regarding various performance benchmarks such as efficiency score (see Berger et. al., 2000; Meador, Ryan and Schellhorn, 2000; Fuentes, Grifell-Tatje and Perelman, 2005; Cummins et. al., 2010 and Chen, Lai and Wang, 2012) and investment yield ratio (see Boose, 1993; Adams, 1996b; Browne, Carson and Hoyt, 2001; Adams and Buckle, 2003; Shiu, 2004; Elango, Ma and Pope, 2008; Liebenberg and Sommer, 2008; Shiu, 2009 and Berry-Stölzle, Hoyt and Wende, 2013).

This chapter examines investment performance and product diversification interrelationships using conventional measure of firm performance such as investment income (realised gain) and two new measures based on Chapter 3, namely, value creation (realised and unrealised gains) and capital gain (unrealised gain). The basic idea is to test whether product diversification impacts unrealised gain, realised gain and combined measure (realised and unrealised gain) homogenously. This chapter first examines the implications of concentration on a certain product, namely, linked or non-linked on business performance of the UK life insurers to establish the potential implications of the concentration on a certain product on life insurer performance. This chapter goes further to examine the effect of the product diversification on the performance of a firm and whether this performance is endogenously linked to product diversification, or whether the type of products decides a type of performance.

It is found that there are significant differences between linked and non-linked products; linked products can lead life insurers to be more cost efficient, less capital intensive, purchase less reinsurance and to deliver, on average, higher value for policyholders than non-linked products. Regarding diversification, the finding of the chapter shows that the effect of product diversification on performance varies across three different types of measurements: realised gain, unrealised gain and combined measure, namely, value creation (realised and unrealised

gains). This evidence supports the endogeneity argument; suggesting that researchers need to be careful in interpreting the performance results for different products and product diversification. It also shows the result is sensitive to theoretical measure of diversifications: dummies, percentages and Herfindahl–Hirschman Index (HHI). Furthermore, evidence from this chapter shows that some products (the value of their backed assets) are very sensitive and vulnerable to market shocks, and therefore, it is not recommended for the firm to concentrate its entire investment in these products notwithstanding that it has empirically shown its success in creating returns. The finding of this chapter is interesting for manager of life insurance companies, reinsurance companies, policyholders and their agents and regulators.

1.4. Defining Output Proxy to Estimate Life Insurer Efficiency

The main issue regarding using efficiency frontier as a measure of life insurer performance is that the result varies according to the output proxy applied by the researchers (see Jeng and Lai, 2005; Leverty and Grace, 2010 and Vencappa, Fenn and Diacon, 2013). Despite the popularity of efficiency frontier measures in insurance based literature, defining the intangible output proxy is still considered to be the main issue. It is argued that an output proxy must meet all economic properties of output and the production function, and it must be related to conventional measure of firm performance such as financial ratios. However, a substantial body of insurer-based literature employs output proxies that have not been verified empirically. Indeed, the two main theoretical approaches to measure insurer's output in literature, namely, the value-added approach and the intermediation approach, define only insurer objectives and leave the output proxy choice for researchers. Surprisingly, this does not promote innovation and many researchers tend to use claims, premiums or some ratios such as return on assets and solvency to proxy output.

However, existing output proxies, such as premiums, claims and financial ratios, are all based on different theoretical foundations that are not mutually consist. Furthermore, many of these proxies have many theoretical and measurement limitations, such as non-negativity, quantifiability and maximizability. For instance, premiums are considered to be price times quantity rather than a count of output units (Yuengert, 1993), and price difference between small and large insurers may lead to misleading inferences regarding average costs (Yuengert, 1993, p. 489), whereas high claims imply a firm is efficient rather than inefficient (Diacon, Starkey and O'Brien, 2002; Brockett et. al., 2004a, 2005; Leverty and Grace, 2010). However, accumulative funds have not been utilised as an output proxy by existing studies to the best of the author's knowledge, despite the fact that many life assurance products involve accumulation of funds over a relatively long period of time. Indeed, Cummins and Weiss (2013) argued that '*to capture this element of intermediation, average invested assets for life insurers is usually included as an output variable. An approach that has not been utilized in the existing literature would be to separate incurred benefits from additions to reserves, giving rise to a total of ten insurance outputs if by line disaggregation is used. It would be interesting to test whether this might raise the average estimated efficiency scores'* (Cummins and Weiss, 2013; p.820).

The basic idea is that the output proxy must meet the production function properties, namely, maximisation and non-negativity, and incorporate insurer objectives, namely, maximising or satisficing. With respect to the production function properties, it is clear that insurers may not be willing to maximise their claims, and additions to reserves could violate the non-negativity (see Chapter 5), whereas premiums plus investment income (including unrealised gain) may violate the non-negativity constraint (see Chapter 5); however, excluding unrealised gain creates a bias since policyholders' payouts and shareholders' revenues are linked to the market

value of assets (see Chapter 5). In contrast, the net value of policyholders' assets (policyholders' funds), which is equivalent to the present value of future policyholders' payouts plus the solvency margin, meets all the production function properties. Similarly to insurers' objectives or / and shareholders' and policyholders' interests, it is clear that insurers, and, hence, shareholders may not be willing to maximise claims. As for policyholders, it is argued that they are interested in maximising their returns on investments (premiums or price of the policy) rather than actual amount paid as this amount more likely to be guaranteed contractually or legally. Therefore, policyholders are interested in the growth in the value of their assets in terms of realised and unrealised gains, which will increase the value of their payouts. As for shareholders, they are also interested in maximising the value of backing assets, as it will maximise their revenues (management fees). With respect to insurers, maximising claims will not increase their abilities to meet future claims, whereas maximising the value of backing assets may help the insurer to meet future claims, suggesting that maximising the value of backing assets meets the objective of both proprietary insurers (maximising) and mutual insurers (satisficing).

The fundamental objective of the chapter is to test the validity of three different proxies of output, namely, revenue, claims and funds to identify what is an appropriate proxy of the life insurer output. To address this, the chapter highlights the theoretical advantages and limitations for each of these proxies. The chapter goes further to exam analytically whether each proxy can be derived using actual available data on the UK life insurers. The stochastic frontier approach is utilised to estimate cost efficiency based on each output proxy. Finally, the validity of different proxies is verified using 'consistency conditions' regarding efficiency score proposed by Bauer et. al. (1998). Furthermore, the chapter tests whether ranking of best practice firms based on value creation is consistent with efficiency score based ranking. The

result shows that using premiums plus investment income (realised gain) plus valuation gain and loss (unrealised gain), change in policyholders' funds and claims plus addition to reserves are not possible practically as these proxies violate non-negativity constraint of outputs, including over 50% of sample firms have negative values for some of these variables during the period of financial turmoil. As for cost efficiency, it is found that average cost efficiency based on revenue is higher and less volatile compared to average cost efficiency based on funds or claims. However, three output proxies give consistently similar ranking for competitive firms, and cost efficiency based on different proxies are closely related to conventional measurers of firm performance and value creation. Indeed, the ranking of best practice firms is correlated with the value creation based ranking, indicating more efficient firms also deliver higher value to policyholders compared with their basic expectations. The finding of this chapter is interesting for manager of life insurance companies, reinsurance companies and regulators.

1.5. The Outlines of the Thesis

This thesis is organised into six chapters as follows:

Chapter 1 — this chapter serves as an introduction to the thesis.

Chapter 2 — this chapter reviews the developments in the regulatory and macroeconomic environments of the UK life insurers since 1980s, and it also provides detailed explanations concerning data, sample and regulatory returns of the Financial Services Authority[8] (FSA). The chapter also highlights the developments in the UK life assurance market in terms of products, segments, legal forms and ownership structures over the period 1985-2010. It also analytically

[8] On the 1st of April 2013, the FSA has been replaced by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA) due to the prudential regulation reform in the UK (FSA, 2013).

illustrates the flow of funds in the life assurance business including detailed analysis of revenues, expenses, assets and liabilities using trend and ratio analyses.

Chapter 3 — this chapter develops a valuation methodology to value funds provided by policyholders with the expectation that the value of the funds shall grow above or at least at the same rate of inflation in the real goods market. This expected value (by policyholders) is regarded as the basic economic value of funds since it retains constant purchasing power of money over time. The value perceived by the market in excess of the basic economic value is defined as value creation that consists of two basic elements: investment returns (realised gain) and capital gains (unrealised gain). With this valuation methodology, it is found that the UK life insurance industry lost £209 billion[9]of value relative to the basic economic value in 2008. It is evident that the identified value creation is related to the business performance and strategies of life insurers, in particular, their risk-taking attitudes in setting their investment portfolio.

Chapter 4 — this chapter examines the effect of product diversification on the performance of the UK life insurers over the period 1985-2010. The chapter first examines the differences between linked focused life insurers and non-linked focused life insurers in terms of risk-taking attitudes and hedging strategy and business and financial performance. The chapter goes further to examine whether the effect of product diversification on the performance of the UK life insurers is homogenous across conventional ratio such as investment yield (realised gain) and newly proposed measures in Chapter 3, namely, capital gain (unrealised gain) and value creation (realised and unrealised gains). The result shows that there is a significant difference between the linked and non-linked investment with respect to the firm business behaviour and

[9] It is value creation in flow terms in 2008.

financial performance, hedging strategies and risk-taking attitude. More investment in the linked products leads the firm to improve performance for value creation and be more aggressive in asset portfolio setting, but be more fragile against more volatile financial markets for its performance. Furthermore, this chapter shows evidence in support of the argument that a product decides performance endogenously.

Chapter 5 — this chapter looks at how value creation is related to efficiency scores based on different output proxies. The chapter highlights the theoretical foundation for each existing output proxy, and then analytically shows that some of these existing proxies violate the principle output characteristic, namely, non-negativity; using data on 369 firms over the period 1985-2010.This chapter also tests the validity of three proxies to measure life insurer output, namely, revenue, claims and accumulative funds. It is found that the average cost efficiency based on revenue is higher and less volatile compared to average cost efficiency based on funds or claims. However, three output proxies give consistently similar ranking for competitive firms, and cost efficiency based on different proxies are closely related to conventional measurers of firm performance. It is also found that efficiency score is closely related to value creation and ranking of the best practice firms.

Chapter 6 — this chapter summarises the main contributions of the chapters to the existing literature, and highlights key findings. The chapter presents the author's view on how the research findings can be implemented and future research and limitations.

2. Chapter 2: Data, Sample and Review of Latest Developments of the UK Life Insurance Industry over the Period 1985-2010

2.1. Introduction

Over the period 1985-2010, the UK life insurance industry has experienced significant changes in regulatory and macroeconomic environments. The most noticeable changes are: (1) The external and internal shocks which generated deep recessions[10]. (2) The liberalisation of the European insurance market. (3) The deregulation in the UK financial service industry. (4) The noticeable decline in interest rates to its lowest level. (5) The harmonisation in the accounting standards and solvency requirements. These developments in the external and internal environments of the UK British life insurance industry have some key implications reflected in the structure of British life insurance providers and their products.

It is argued that the liberalization of the European insurance market increases competiveness pressure leading to cost cutting, and, hence, enhance the overall efficiency and productivity of the European insurers (Swiss Re, 1996; Fenn et. al., 2008; Vencappa, Fenn and Diacon, 2013). Furthermore, the liberalization of the European insurance market and deregulations in the UK financial service market led to waves of demutualisation[11] and mergers and acquisitions, making the whole industry dominated by smaller number of groups (see Armitage and Kirk,

[10] The insurance industry has suffered from a severe drop in equity markets, and it is going through a prolonged period of historically low interest rates (Van Rossum, 2005). The most noticeable drops in equity markets are 1989, 2001, 2002 and 2008.

[11] It is argued demutualisation is motived by mutual life insurer capital disadvantages. Indeed, it is well documented in the insurance based literature that mutual life insurers have higher costs for raising new capital than proprietary counterparts (see Harrington and Niehaus, 2002).

1994; Swiss Re, 1999; Diacon, Starkey and O'Brien, 2002; Davutyan and Klumpes, 2008 Carter and Falush, 2009 and Schertzinger, 2009). It is also argued that these deregulations diminished boundaries between individual financial institutions; promoting banks, other financial institutions as well as non-financial institution to enter the life UK insurance market (Watson, 2004). It is also noted that low interest rates is clearly a significant issue for life insurers (see Swiss Re, 2012b and Basse et.al., 2013); interest based income is the major source of their earnings (Swiss Re, 2012b). Furthermore, low interest rates may lead to decrease in the economic value of insurance companies; Swiss Re (2012b) showed that the market value of insurers fell faster than the book value as the interest rates declined over the over the period 2000-2011; using a sample of global insurers. Furthermore, low interest rates has a negative effect on the demand for some life insurance products; it is noted that there have been growing dissatisfactions in terms of payouts received from some of the UK life assurance products, namely, with-profits products (O'Brien, 2009b). As for insurers; many studies highlight that the decline in interest rates has led to many with-profits insurers to close to new business (FSA, 2004; 2005; O'Brien and Diacon, 2005) and there have been significant changes in ownership structures over the period 1985-2010 (FSA, 2004; 2005; O'Brien and Diacon, 2005, Carter and Falush, 2009; O'Brien, 2009b).

This chapter reviews the developments in the regulatory and macroeconomic environments of the UK life insurers since 1980s; including financial deregulations at the UK and EU levels, growth, inflation, interest rates and changes in accounting and solvency based regulations. It goes further to explain the data source concerning the UK life insurers that is based on the regulatory returns filed to the FSA over the period 1985-2010; the chapter includes detailed explanations for all regulatory return forms as well as all key variables included in the empirical chapters of the thesis. The chapter also provides detailed explanations concerning sample firms

in terms of number of years for each sample firm and sample period, ownership for each firm and changes in the ownership concerning legal form, parents regarding country of origin and industry. The chapter also reviews the implications of the changes in the external environment in terms of product structures, ownership structures, backed assets and liabilities as well as revenues and expenses; the chapter employs analytical approach based on ratio and trend analysis using regulatory data about all the UK life insurers over the period 1985-2010. Furthermore, the flow of funds account is also constructed to analyse noticeable changes in the source and usage of funds in the UK life insurance business. This analysis is also extended to liability and backed asset structures.

It is revealed that there have been significant changes in product structures and product segments as well as composition of assets held by insurers to back up their liabilities. The most noticeable change is the unparalleled increase in the life assurance products by which investment risks transferred to policyholders and payouts linked to the value of underlying assets. However, as the proportion of policyholders' assets held to match linked product liabilities increases, the value of policyholders' assets becomes more sensitive to market shocks. Concerning source and usage of funds, the amount by which the value of assets increases, valuation gain (unrealised gain), has become a major source of funds to match liabilities, whereas investment income (realised gain only) declined steadily over the period. However, the valuation gain (unrealised gain) cyclically fluctuated over the period with significant increase in amount of valuation losses over the period. It is also revealed that there are significant variations between assets held to match linked funds and other assets in terms of sensitivity to market shocks, valuation gain (unrealised gain) and investment income (realised gain). The chapter also shows that the surrenders claims have become the major cash out follow for the industry and over the period 2008-2010 the amount paid to policyholders in

terms of claims exceeded premiums received. With regard to ownership structures, the analysis shows that the industry is now dominated by proprietary life insurers compared to almost equally controlled industry between proprietary and mutual insurers in 1980s. The chapter also shows that proprietary life insurers; banks and other financial service owned life insurers as well as foreign life insurers operating in the UK life assurance market are predominantly focused on linked products; whereas substantial amount of overseas business written by the UK life insurers are still in participation forms.

The remainder of the chapter is organised as follows. Section 2 reviews the macroeconomic and regulatory environments of the UK saving industry. Section 3 presents the data and sample. Section 4 describes life insurance products and summarises the latest developments in the UK life insurance market. Section 5 presents the flow of funds and capital structure in the life insurance business; it contains an extensive analysis over the period 1985-2010. Section 6 contains conclusion.

2.2. The Macroeconomic and Regulatory Environments of the UK Saving Industry

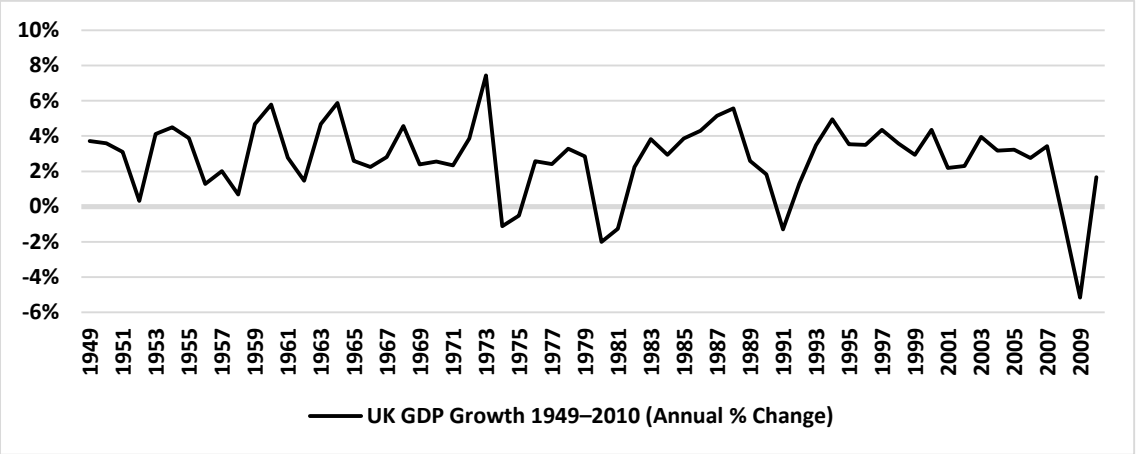
2.2.1. The Performance of the UK Economy since the 1970s

2.2.1.1. Growth

From 1949 to 1973, the UK GDP increased rapidly, it grew at an average 3.3% per annum with regular and mild cycles see Figure 1. However, the period 1973-2010 characterised with the collapse of Bretton Woods and the rise of free-market economics and policies (see Kitson, 2004), the growth rate slowed to 2.3% (2.7% 1985-2010) with more pronounced and irregular cycles see Figure 1. This period was characterised by a number of external and internal shocks which generated deep recessions, including the 1973 oil shock, the 1979 shock following the

introduction of a new policy regime[12] (see Kitson, 2004), a 1989 financial market shock followed by the collapse in housing prices, the 2001-2002 dot com bubble and the 2008-2010 subprime mortgage crisis.

Figure 1: The UK GDP Growth 1949–2010 (Annual % Change)



Source: the author — the Office for National Statistics (ONS); reference 'ABMI' (ONS, 2013a).

2.2.1.2. Inflation

By 1970s, the UK governments abandoned having balance-of-payments targets and adopted the floating system, giving priority to domestic targets such as employment, growth or inflation (see Tomlinson, 2004). Since the 1950, the UK has modest inflation with exception of the 1970s and early 1980s mainly due to change in the monetary policy (Kitson, 2004; Tomlinson, 2004), see Figure 2. The period 1993-2010 characterised with low-inflation[13][14], the Retail Price

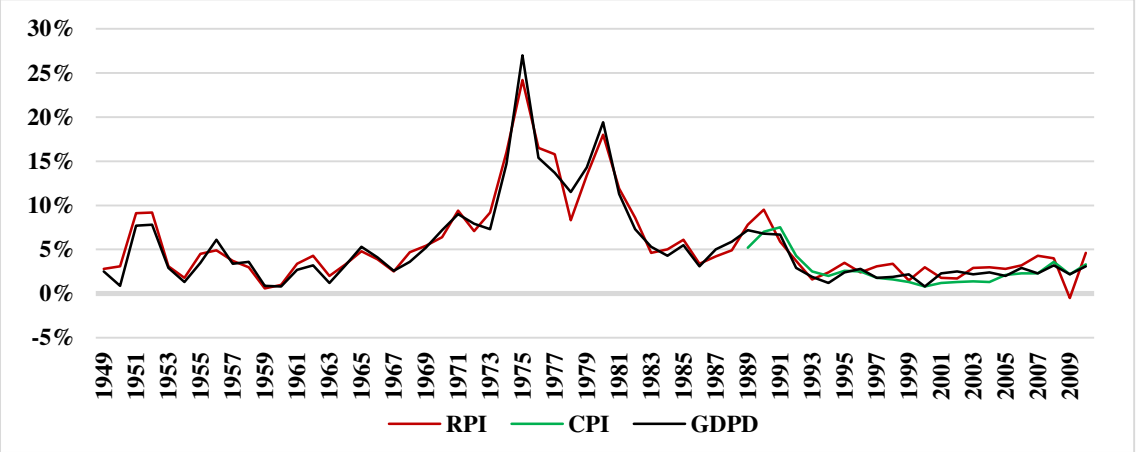
[12] It includes achieving a monetary target defined in terms of £M3, raising the Value Added Tax (VAT) from 8% to 15% and abolishing the exchange control in in 1979 (see Howson, 2004).

[13] There are two main measures of inflation in the UK, namely, the Producer Price Index (PPI) and the Services Producer Price Index (SPPI). The PPI measures the price changes of goods bought and sold by the UK manufacturers, and the SPPI measures the price changes of services provided by the UK businesses to other businesses and government (HM Treasury, 2013). Furthermore, the GDP deflator (GDPD) is viewed as a measure of general inflation in the whole economy (HM Treasury, 2013); it includes the price changes of goods bought and sold by the UK manufacturers and services provided by the UK businesses to other businesses and government as well as the prices.

[14] The GDP deflator is a much broader price index than the CPI, the RPI (which only measures consumer prices) or the PPI as it reflects the prices of all domestically produced goods and services in the economy (HM Treasury, 2013).

Index (RPI[15]) was negative in 2009; see Figure 2. Similarly for other monetary tool, namely, interest rates, the interest rates have gradually declined since the 1993 to their lowest level ever since 2009 at 0.5% as shown in Figure 3. Low interest rates are clearly a significant issue for insurers (see Swiss Re, 2012b and Basse et.al., 2013). This low interest problem is particularly significant for life insurers as interest based income is the major source of earnings (Swiss Re, 2012b). Furthermore, low interest rates have a negative effect on the demand for insurance products. Therefore, low interest rates may lead to decrease in the economic value of insurance companies. Swiss Re (2012b) showed that the market value of insurers fell faster than the book value as the interest rates declined over the period 2000-2011 using a sample of global insurers.

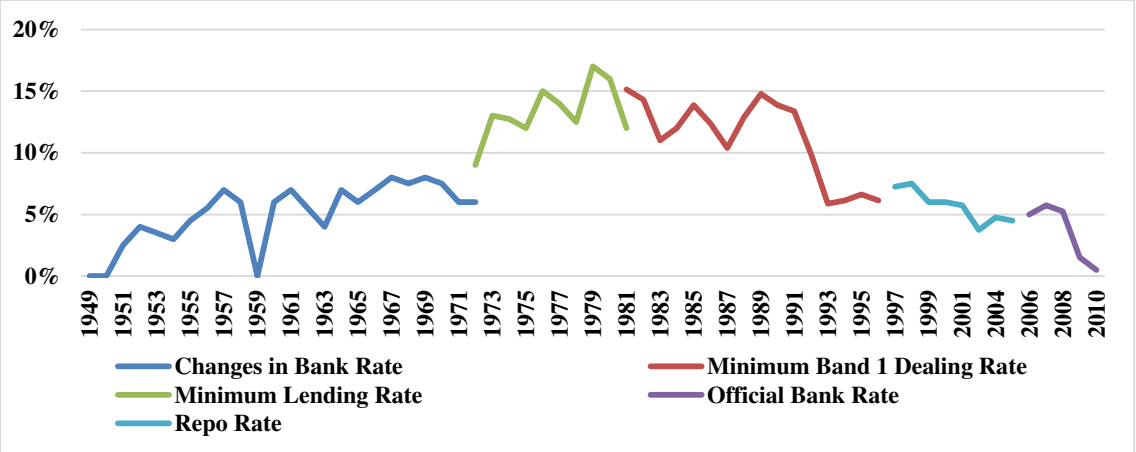
Figure 2: The Inflation Measured by the CPI, the RPI and the GDP Deflator 1949–2010 (Annual % Change)



Source: the author — ONS; reference 'CZBH' (RPI), 'D7G7' (CPI) and 'IHYS' (GDPD) (ONS, 2013a;b).

[15] The PRI was first calculated in 1947; it has been replaced by the Consumer Price Index (CPI) (introduced in 1975) since 2011; however, the state pensions would go up by the greater of the CPI, the RPI or 2.5% (HM Treasury, 2011). The CPI is estimated using price indices for a basket of goods and services (food and non-alcoholic beverages, alcohol and tobacco, clothing and footwear, housing and household services, furniture and household goods, health, transport, communication, recreation and culture, education, restaurants and hotels and miscellaneous good and services) bought by consumers (households), it measures the speed at which the prices of these goods and services rise or fall (ONS, 2013c). The CPI is produced according to international standards and in line with European regulations (Eurostat, 2013); the Harmonised Index of Consumer Prices (HICP) (introduced in 1997) is used for monetary policy purposes (inflation target) as well as uprating pensions, wages and benefits (ONS, 2013c). However, the CPI does not include the owner occupiers' housing costs (OOH) that includes the costs associated with owning, maintaining and living in one's own home but it exudes utility bills included in the CPI (ONS, 2013c), the ONS has published a new measure of the CPI that includes the OOH called the CPIH.

Figure 3: Changes in Bank Rate, Minimum Lending Rate, Minimum Band 1 Dealing Rate, Repo Rate and Official Bank Rate 1949–2010

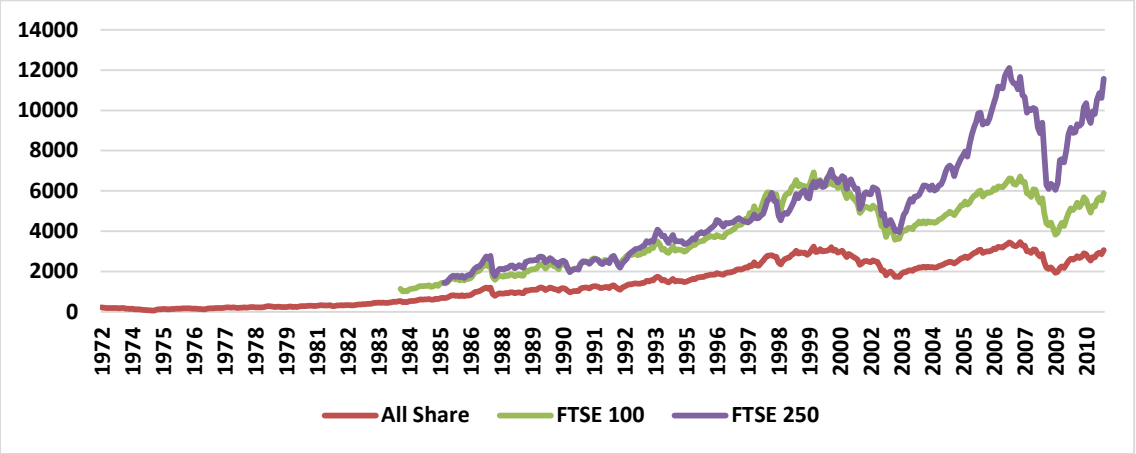


Source: the author — the Bank of England (the Bank of England, 2013).

2.2.1.3. The Financial Market

Since the 1980s, the UK financial market indicators, namely, FTSE all shares, FTSE 100 and FTSE 250, have generally risen over time. However, from 1995 they showed much sharper movements reflecting global events as shown in Figure 4. Indeed, during the 1996-1999 period, all indices experienced sharp raised driven by the dot com bubble; however, all indices plummeted during the 2000-2003 period when the bubble burst. Slimily, all indices increased rapidly during the 2004-2007; however, all indices almost fell by 50% during the subprime mortgage crisis in 2008.

Figure 4: FTSE All Shares, FTSE 100 and FTSE 250 Indices 1972-2010



Source: the author — Yahoo Finance (monthly close price).

The 1985-2010 period characterised with a slow rate of economic growth, decline in the interest rates to their lowest level and minimum inflation rate. However, this period experienced many financial crises that significantly affected the whole performance of economy in general and the financial market in particular.

2.2.2. Regulatory Developments of the UK Life Insurance Industry

2.2.2.1. Single Passport

Regarding the European reform, the UK secured a full membership in the European Economic Community in 1973, which was established in the 1958 Treaty establishing the European Economic Community (Rome Treaty) and aimed to secure free movements of goods, services, labour and capital within member states (EU, 2014a). However, the European economic performance was perceived for being impeded by a failure in pursuing complementary economic objectives among the member states in 1980s, leading to the European Commission to investigate the issues and publish the White Paper in 1985 (EU, 1985). This paper outlines a programme designed to 'complete the internal market' by 1992; this has been enforced in the Single European Act in 1987 (EU, 1986; 2014b). The objective of this reform is to achieve

sustainable economic growth, price stability and high employment; this has been implemented by creating a single European market through harmonisation of the financial regulations regarding provision of financial services (including insurance) among member states (EU, 1986; 2014b). There have been several key directives for harmonising financial regulations concerning provision of the insurance and other financial services. Foremost of these was the third council life insurance directives (92/49/eec partially repealed by 2002/83/EC) or 'Single Passport' in 1994 (EU, 1992; 2002). Similar directives have been introduced for banking; investment services combined with directives to enhance customer protection and financial stability (see Watson, 2004). This has established the single financial service institution licence; allowing domestically authorised financial institutions (including foreign institutions) of any EU member country to operate freely within the EU. This deregulates of the European insurance market with the exception of the solvency based regulation that is carried out by the insurer's home country; however, the Solvency II project aims to harmonise the solvency regulations in the EU.

2.2.2.2. Solvency II

In 1999, the EU decided to review the existing solvency system (solvency I[16]) based on Müller's (1997) report (EU, 1999); this project later became the Solvency II project. The review included six areas, namely, technical provision, assets and investment risk, assets and liabilities management, reinsurance, solvency margin requirement and accounting issues (EU, 1999). A working group was set up to continue the project, at the same time; series of studies were conducted to examine solvency issues of the European insurers (see KPMG, 2002; McDonnell, 2002 and Sharma, 2002). In 2001, the European Commission (EC) discussed a

[16] For life insurance, directives has been combined into a consolidated EU directive (2002/83) on life assurance (EU, 2002a).

proposal for the Solvency II based on the Basel II project and the Risk-Based Capital (RBC) system (EU, 2001). After a series of studies and consultations to build the foundation for the project (see Sandström, 2005; 2010), the first proposal was published in 2004 and subsequently was amended after consultation among different stakeholders. The first draft of the Solvency II Directive was published in 2007, and an amended version was published in 2008; however, the Solvency II Directive was adopted in 2009 (EU, 2009a). In accordance with the Article 311 of the Solvency II Directive (EU, 2009a), the Directive will be in force from 1 January 2016 (see EU, 2015).

The Solvency II project is considered to be '*a ground-breaking revision of the EU insurance law designed to improve consumer protection, modernise supervision, deepen market integration and increase the international competitiveness of European insurers*' (EU, 2007). Under this new system, insurers will be required to consider all risks to which they are exposed to enable them to manage these risks effectively. Furthermore, the new system will enable the European supervisory authorities to monitor insurance groups as a whole. Following the Basel II project, the Solvency II project is structured into three pillars, namely, Pillar I quantitative requirements, Pillar II supervisory activities and Pillar II supervisory reporting and public disclosure.

2.2.2.3. Regulatory Reform in the UK

As for the UK level, there has been 'internal' regulatory reforms called the 'financial deregulation', this has been influenced by the European reforms and high-profile financial scandals[17] in 1980s. This includes: (1) The lifting of foreign exchange controls in 1979. (2) The abolishing of the Supplementary Special Deposits Scheme by the Bank of England in 1980.

[17] Such as Norton Warburg (investment management) in 1981 and Johnson Matthey Bank in 1984.

(3) Abolishing of the Bank of England's reserve assets ratio in 1981. (4) Lifting all government restrictions on hire purchase in 1982 (allowing suppliers of goods to set their own terms for loans). (5) Abolishing the fixed commission charges in 1986 (removing the Restrictive Practices Act of 1956). (6) Permitting building societies (through Building Societies Act 1986) to expand their activities beyond the savings and mortgage markets, such as insurance, pension, current-account banking activities and foreign-exchange trading etc. (7) Prompting self-regulations of the financial institutions; following concerns about adequacy supervisory requirements by Wilson committees (Wilson Report, 1981) through The Financial Services Act of 1986 (effective in in 1988) by the Securities and Investments Board (SIB) to number of the Self-Regulatory Organisations[18] (SROs). However, self-regulations have been criticised on the ground of effectiveness such as failure to prevent Maxwell pension fraud in 1991 and inefficiency due to duplication of activities, it is estimated that self-regulation costed roughly 9% (£169–£330 million) of premiums of the life assurance industry in 1994 (Harrison, 2000).

To address this, a single statutory regulatory authority (for the financial services industry) in the UK was established; the Securities and Investment Board changed its name to the Financial Services Authority (FSA) in 1997. The Bank of England Act of 1998 transferred supervisory responsibility for banking services from the Bank of England to the FSA, and the 2000 (effective December 2001) the Financial Services and Markets Act imposed the statutory objectives[19] to the FSA, namely, market confidence, financial stability, consumer protection, reduction of financial crime. In 2004, the FSA took the responsibility to regulate mortgages

[18] The Securities Association (TSA); the Investment Regulatory Organisation (IMRO); the Financial Intermediaries, Managers and Brokers Regulatory Association (FIMBRA); the Life Assurance and Unit Trust Regulatory Organisation (LAUTRO) and the Association of Futures, Brokers and Dealers (AFBD). The AFBD merged with the TSA to form the Securities and Futures Association (SFA) in 1991, and in 1992 the LAUTRO and the FIMBRA merged to form the Personal Investment Authority (PIA) to avoid duplication of supervisory activities, and, hence, costs (see Thomas, 2004).

[19] There were supported by regulatory principles, namely, efficiency and economy, role of management, proportionality, innovation, international character and competition.

and in 2005 took responsibility to regulate general insurance. The FSA received criticisms on ground of failure to protect customers such as the Payment Protection Insurance (PPI), handling the issues of near collapsed of the Equitable Life Assurance Society in 2001, regulatory failure during 2008 financial crisis. To address this, the 2012 the Financial Services Act abolished the FSA (from April 2013), and split the supervisory responsibility between two newly established agencies, namely, the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA) and the Bank of England.

2.2.2.4. Financial Reporting Reform

The long-term nature of the life insurance business implies difficulty in assessing the current financial position and financial performance due to uncertainties regarding future interest rates, mortality estimates, expected returns on investments and persistency rates (Horton, Macve and Serafeim, 2007). In recent years, life insurance accounting has undergone a dramatic change due to a combination of many factors: (1) The widespread concern of investment committees that life insurance firms were undervalued by the financial market in the late 1980s and the beginning of the 1990s (Salmon and Fine, 1991; Horton, 2007). (2) The conservatism in the statutory reporting. (3) The adoption of the unregulated Embedded Value (EV) as the basis for supplementary reporting. (4) The adoption of the IFRSs by European life insurers. These developments can be subdivided into three main categories: (1) The developments in the statutory reporting. (2) The supplementary reporting. (3) The International Accounting Standards Board (IASB) project for insurance contracts.

2.2.2.4.1. The Developments in Statutory Reporting

Traditionally, the UK jurisdictions require very prudent assumptions for estimating life insurer financial positions. The amounts reported in the statutory accounts reflected the Statutory

Solvency Basis (SSB), which was introduced by the 1870 Life Insurance Companies Act. This methodology required that profits should be distributed in line with a professional actuarial valuation to certify a fund adequacy to meet its liabilities. It was oriented towards a delay in the recognition and distribution of profits[20] by applying overly conservative estimates; in particular, the discount rates (O'Brien, 2009b) and initial acquisition costs were written off as expenses. Consequently, a new life insurance policy was reported initially at a negative net present value, which was called the 'new business strain'. This initial deficit was covered by reserves; consequently, the accounting result for a single policy led to losses for the first three to six years of the policy duration (Horton and Macve, 1994; 1995; 1997; 1998; Horton, 2007; Horton, Macve and Serafeim, 2007).

The EU Insurance Accounts Directive (IAD) was introduced in 1991 (EU, 1991) and became effective from 1 January 1995 outlaws the SSB and introduces the Modified Statutory Solvency Basis (MSSB), which enables life insurers to defer the initial acquisition costs of new life business and amortise the costs over the life of the policy, and, hence, eliminates the initial deficit. However, the MSSB requires excessively conservative estimation (less than the SSB), in particular discount rates that unwind to profits over the life insurance policy life (Horton, 2007). Moreover, the Value of New Business (VNB) acquired during the period for which the financial statements are prepared and the future of profits from existing business are omitted from financial statements prepared under the MSSB. As a result, the life insurer financial statements are still unable to show whether 'the current financial result' is related to business

[20] O'Brien (1994) argued that the reported profits under the SSB could not be the profits that reflect a true and fair view since: (1) Surplus that was reported as excess of regulatory value of assets and liabilities after deduction of claims, expenses and tax was overly conservative because of the prudence of the valuation of assets and liabilities on a basis designed to monitor solvency. (2) The amount of surplus distributed to shareholders was related to rules on surplus sharing between policyholders and shareholders. (3) High initial expenses meant that profits were understated when levels of new business were high. (4) The amount of undistributed surplus was not transferrable, and, hence, there was a reduction of the amount of surplus transferred to shareholders.

acquired during the period for which financial statements are prepared or business acquired in the past periods, and from which business profitability is derived (Horton, 2007).

2.2.2.4.2. The Supplementary Reporting

In the early 1990s in the UK, the Association of British Insurers (ABI) proposed an alternative methodology with the aims of reporting shareholders' profits and recognising profits in shareholders' funds. These profits comprise the present value of shareholders' interest in the life assurance business that are related to shareholders' net assets. However, these efforts are constrained by the IAD (EU, 1991), which requires life insurers to report profits that are consistent with accounting principles. Consequently, life insurers are only permitted to use the MSSB and are prohibited from using the EV that includes the value of profits that have not been made (O'Brien, 1994). Meanwhile, the Accounting Standards Board (ASB) prohibits the UK life insurers from using the EV in statutory accounts. Similarly, the ABI included this restriction in the Statement of Recommended Practice (SORP) (ABI, 2006). Consequently, life insurers voluntarily disclose the EV based information in their supplementary accounts (Almezweq and Liu, 2012; 2013).

The CFO Forum launched a project to standardise[21] the financial disclosures of the EV in 2004. The project aims are to provide a basis for European insurers for preparing and disclosing their EV reports and eliminating diversifications in practice for the EV calculations and disclosures (CFO Forum, 2004a;b). The CFO Forum published the European Embedded Value Principles (EEVP) in May 2004 (CFO Forum, 2004a;b). Later, they published additional guidance in

[21] Prior to 2004, there was no standardised methodology to calculate and report the EV for either European or worldwide life insurers with the exception of the UK. The British life insurers had disclosed the EV calculated in accordance with the ABI guidance from the 1990s until 2005 (Horton, 2007; Almezweq and Liu, 2012; 2013). This traditional EV was subject to criticism, as it did not take into account the time value of options and guarantees sold with insurance policies when computing the PVIF, and, hence, the PVIF value was overstated (Almezweq and Liu, 2012; 2013).

October 2005 (CFO Forum, 2005). In June 2008, the CFO Forum published the Market Consistent European Embedded Value Principles (MCEVP) (CFO Forum, 2008a;b). The stated aim is to bring a greater consistency and improved disclosure to the EEV disclosures by European life insurers. The CFO Forum intended to make the MCEVP the only recognised format of the EV reporting from 31 December 2011 and the CFO Forum permitted early adoption of the MCEVP. However, in April 2011, the CFO Forum withdrew the requirement that the MCEVP is the only recognised format of the EV from 31 December 2011; the reason given was that the withdrawal reflects the ongoing development of insurance reporting under the Solvency II project and the IASB project for insurance contracts (CFO Forum, 2012).

The EV gives life insurers a huge advantage compared to statutory reporting. It enables life insurers to report the Present Value of In-force Business (PVIF), which is omitted from statutory reports. The PVIF provides the basis for assessing the financial performance of life insurers; the PVIF enables users to assess the abilities of life insurers to generate future profits. Furthermore, the EV also enables life insurers to report the VNB, which is a component of the profits reported under the EV (PEV). The VNB shows the proportion of future profits (PVIF) attributed to underwriting activities for each financial year. The VNB value shows the future profits from new policies that are acquired in each reporting period, and, hence, it provides a basis for assessing underwriting performance of life insurers. As for management use, decision makers in life insurance companies consider the EV to be a very useful tool for management purposes, such as, decision-making and valuation (Horton, Macve and Serafeim, 2006).

2.2.2.4.3. The IASB Project for Insurance Contracts

The European law has required all European listed companies to adopt the IFRSs in their consolidated accounts since January 1st 2005 (EU, 2002b). The IFRSs made limited improvements to accounting practices for insurance contracts as the main accounting standard

is still under development. This project began in 1997 when the Board's predecessor organisation, the International Accounting Standards Committee (IASC), commenced work on a project on insurance contracts because: (1) The IASC had not issued any standards on insurance contracts. (2) Insurance contracts were excluded from the scope of other relevant IASC standards. (3) There was diversification in accounting practices for insurance contracts. (4) The accounting practice for insurance contracts was often different from practices in other sectors. (5) Users of insurer financial statements argued that they were difficult to understand (IASB, 2007).

The first output of the project appeared in 1999 when the IASC Steering Committee published an issue paper, which attracted 138 comment letters. The Steering Committee concluded its work by developing a 'draft statement of principles'. The IASB included this project in its initial work plan in 2001. The project was divided into two phases mainly due to it not being feasible to complete the project for implementation in 2005, the time when all listed companies adopted the IASB standards.

Phase I was completed in 2004, when the IASB issued 'IFRS 4 insurance contracts'. The main objectives of the phase were: (1) To make limited improvements to accounting practices for insurance contracts. (2) To avoid requiring major changes that Phase II might reverse. (3) To achieve this, IFRS 4 permits most previous accounting practices for insurance contracts to continue. IFRS 4 also exempts insurers from a hierarchy of criteria, specified in International Accounting Standard 8 (IAS 8): accounting policies, changes in accounting estimates and errors (IASB, 2003). (4) To require an insurer to disclose information relating to insurance contracts (IASB, 2004).

The first output of Phase II was in 2007, when the board published a discussion paper 'Preliminary views on insurance contracts' (IASB, 2007). The paper proposed that life insurers should measure their insurance contracts at the current exit value (CEV), representing the amount insurers would expect to pay on reporting date to transfer their remaining contractual rights and obligations immediately to another entity. The discussion paper proposed that insurers should determine this amount using the following three building blocks: (1) Explicit, unbiased, market-consistent, probability-weighted and current estimates of the contractual cash flows. (2) Current market discount rates that adjust the estimated future cash flows for the time value of money. (3) An explicit and unbiased estimate of the margin that market participants require for bearing risk (a risk margin) and for providing other services (a service margin), if any (IASB, 2007).

The respondents for the discussion paper in general found the three building blocks a helpful tool for analysis; however, almost all the respondents had concerns regarding the CEV measurement approach. They suggested that the measurement approach should reflect the fact that insurers generally expect to fulfil their liabilities as they become due over time by paying benefits and claims to policyholders, rather than reflect an estimate of the price for a transfer of the liabilities to a third party. They stated that a transfer objective is the wrong principle for items that will not be, and often cannot be, transferred (IASB, 2010a;b).

Consistent with respondents' suggestions, the board modified the measurement approach in the exposure draft published in July 2010 (IASB, 2010a; b). The new approach measures life insurance contracts as the sum of: (1) The expected present value of the future cash outflows less future cash inflows that will arise as insurers fulfil insurance contracts, adjusted for the effects of uncertainty with respect to the amount and timing of those future cash flows (present value of the fulfilment cash flows). (2) A residual margin that eliminates any gain at inception

of the contract, which arises when the present value of the fulfilment cash flows is less than zero (for instance, when the expected present value of the future cash outflows plus the risk adjustment is less than the expected present value of the future cash inflows) (IASB, 2010a;b). However, on 28/09/2012, the IASB realised news that the board has decided to make adjustments to the current proposal through republishing a new exposure draft in 2013 (IASB, 2012). The new exposure draft published on 20th of June 2013 (IASB, 2013a), this includes the exposure draft (IASB, 2013b), the basis for conclusion (IASB, 2013c), illustrative examples (IASB, 2013d) and summary (snapshot) (IASB, 2013e). The new exposure draft maintains the fulfilment cash flow model for measuring insurance contracts; however, the IASB proposed amendment regarding presentation, accounting treatments for adjustments in future value, determinant of expense and the requirements for first time adoption (IASB, 2013b; c; d; e). It is expected the new standard will enhance the transparency and reduce complexity of insurer financial statements (IASB, 2013b, c, d, e); however, it is expected the new standard to increase the volatility of the profit/loss and equity (KPMG, 2013).

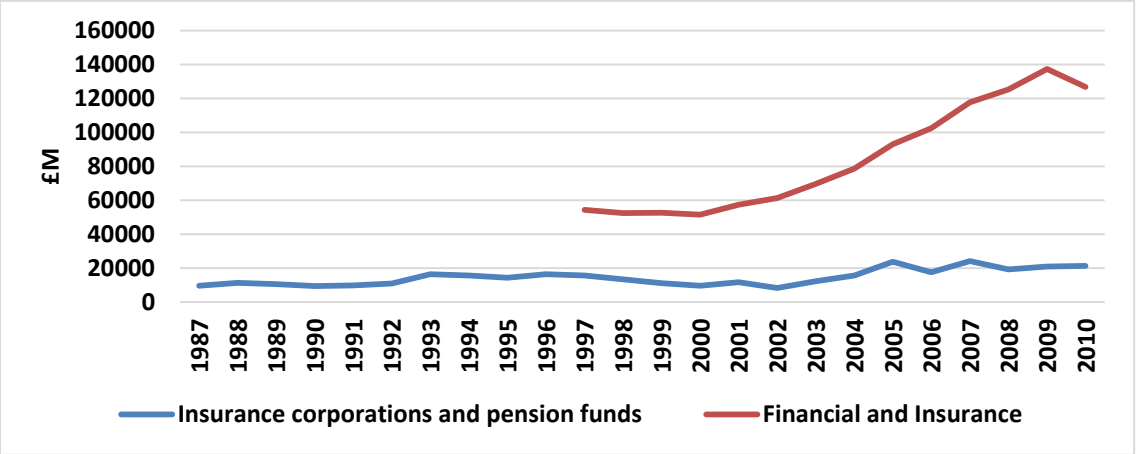
2.2.3. The British Insurance Industry Since 1970s

Historically, it is argued the financial agglomeration[22] in the London in 19th century attracted financial intermediaries such as life insurance companies (Quinn, 2004), these companies held about 20% of total financial intermediary assets in 1873 (Davis and Gallman, 2000; Quinn, 2004). It is argued that life insurance companies were most important groups in the London Stock Exchange in the early 20th century, they held over £450 million value of assets in 1910, accounting to more than 20% of national income (Clapham, 1938; Thomas, 2004). The life insurance companies grew by 3.3% over the period 1913-1938 (Clapham, 1938; Thomas, 2004). Since 1980, there has been considerable increased in the contributions of the insurance

[22] The value of securities on the London Stock Exchange was £2.3 Billion in 1873 (Michie, 1999).

industry (and financial sector in general) to the British economy measured using the Gross Value Added[23] (GVA) as shown in Figure 5 with average 2% of the total UK GVA over the same period compared to about 8% for the financial sector.

Figure 5: The GVA of the British Insurance Industry 1987-2010



Source: the author — the ONS, reference 'NRHH' and 'KKK9' (ONS, 2013d).

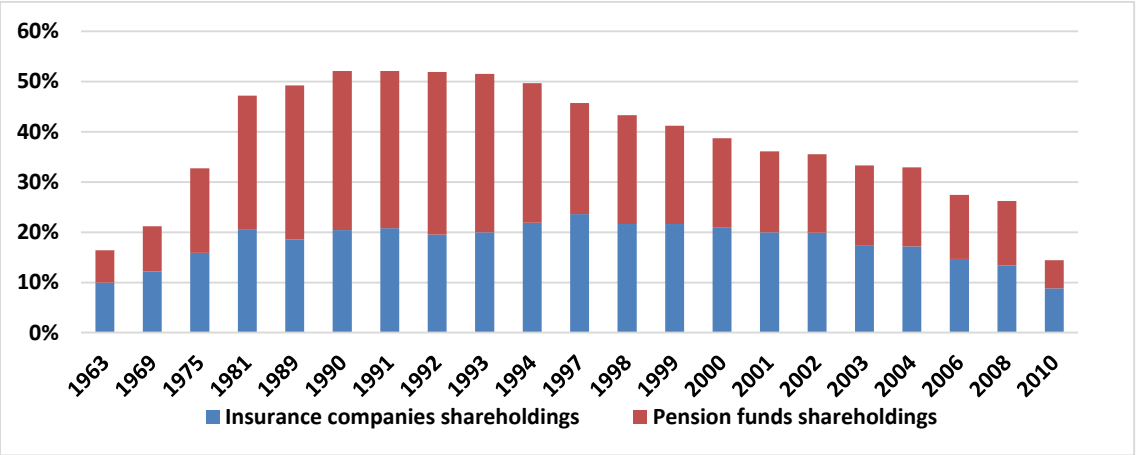
It is argued three factors are the key for the developments of the British insurance industry since 1980s. These factors are: (1) the significant increase in the demand for insurance products in particular pension since 1980s. (2) The liberalisation of the European insurance market as well as the globalisation of the insurance industry. (3) The technological changes.

As for significant increase in the life insurance demand since 1980s, the life insurance business has grown significantly since 1945, this can be related to the adopting of life cover and mortgage based investment products (Watson, 2004), which has created a significant growth in the long-term financial instruments, such as fixed-interest mortgages and loans. However, life insurers have moved towards investment in equity, it is argued this trend is evidenced during the interwar period; however, the most of adopting of the equity instruments took place post the war period (see Watson, 2004). As for pension, it is argued that the demographic

[23] It measures the contribution of a sector to the economy net of intermediate consumption.

changes, social changes, economic incentives and fiscal incentives influence the significant expansion in the private pension sector; this expansion is evident in 1980s as individuals were allowed / encouraged to contract out of the State Earnings Related Pension Scheme (see Watson, 2004). Statistically, insurance providers (including pension funds) have become key active institutional investors in the UK since 1980s; holding over 40% of the value of the UK quoted shares in 1981 and over 50% in 1990 see Figure 6, whereas all British institutional investors were only hold a third of the equities issued by British companies in 1958 (see Watson, 2004). However, since the 1992 the proportion of shares held by insurance providers (including pension funds) has been falling gradually to reach its lowest level just over 14% in 2010. This can be related to the fact that insurance providers have broadened their portfolios to spread risk and seek higher return.

Figure 6: The Proportion of the UK Quoted Shares Held by Insurers 1963-2010



Source: the author — the ONS, reference 'DEYG' and 'DEYH' (ONS, 2013e).

Regarding the liberalisation of the insurance market, this can be divided into internal reform and European reform; however, both reforms are closely linked (see regulatory developments of the UK life insurance industry).

Finally technological changes, it is argued the increasing the usage of computer-based service delivery systems has enabled firms to build customer databases regarding financial products

and using this information in marketing and market segmentation. However, the lower cost financial services has attracted interest from retailers such as supermarkets to enter the British insurance market; creating a new source of competition for conventional market players (see Thomas, 2004) (a detailed analysis of the UK insurer ownership by the non-insurance institutions is provided in Table 31 in Appendix). Furthermore, access to customer information enables life insurers to focus on relations to increase their retentions and target desirable customers with products which reward loyalty (Thomas, 2004; Ennew and Waite, 2007).

These developments in the in British financial services market (including the insurance industry) have some key implications reflected in the structure and delivery of insurance products. (1) Since the early 1980s, the activities of the individual financial institution have become more varied, making distinction between banks such building societies and non-banks such as asset management and insurers less sharp (Watson, 2004). In contrast, the developments of the financial intermediary in the UK during the 19th century characterised by existence of clear market segmentations, including banks, brokers, building societies, insurance companies (Thomas, 2004). The dimension of the financial service market segments on the institutional and functional levels has led to broaden the scope of operations which intermediaries can access; creating intensively competitive market and putting pressure on firms to reduce the unit costs of their delivery (Thomas, 2004); a detailed analysis of the UK insurer ownership by non-insurance institutions is provided in Table 31 in Appendix. (2) The European directives treat foreign financial institutions (from non-member states) that are authorised to operate within a single member state as member states financial institutions (home institutions); permitting the foreign financial institutions operating in the UK to access the European market. This has promoted competition between financial institutions in Europe and increased the attraction of the London base (Thomas, 2004). (3) The liberalization of the

European insurance market increases competiveness pressure leading to cost cutting, and, hence, enhance the overall efficiency and productivity of the European insurers (Swiss Re, 1996; Fenn et. al., 2008; Vencappa, Fenn and Diacon, 2013). (4) Increase in the concentration within the industry, making the whole industry dominated by smaller number of groups (see Diacon, Starkey and O'Brien 2002 and Davutyan and Klumpes, 2008) (see Table 31 in Appendix).

2.3. Data and Sample

This section introduces the regulatory returns and then explains the data and final sample for all empirical chapters of this thesis.

2.3.1. The FSA Returns

Part of the regulatory requirements for the UK life insurers, they must submit annual returns to the supervisory authority (the FSA and formerly the Department of Trade and Industry (DTI)) on the legal entity level (not the group level) including braches operating in the UK. The returns are submitted in separate statutory forms for general and life insurance businesses (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). Given that this thesis focuses on the life insurance industry using data from the SynThesys life database (version 10.1, 15-August 2011 released), only forms that are available in the SynThesys life database will be explained briefly below, see Table 1.

Table 1: The Classification of the FSA Returns as in the SynThesys Life Database

Classification	Classification	Form	Name
Solvency and Capital	**General**	Form 01	Statement of solvency - general insurance business
		Form 11	Calculation of general insurance capital requirement - premiums amount and brought forward amount
		Form 12	Calculation of general insurance capital requirement - claims amount and result
	Life	Form 02	Statement of solvency - long-term insurance business (see Table 16 in Appendix)
		Form 03	Components of capital resources
		Form 10	Statement of net assets
		Form 60	Long-term insurance capital requirement
Assets and Liabilities	**Policyholders**	Form 13	Analysis of admissible assets (see Table 17 in Appendix)
		Form 14	Long-term insurance business liabilities and margins (see Table 20 in Appendix)
		Form 17	Analysis of derivative contracts (see Table 19 in Appendix)
		Form 18	With-profits insurance capital component for the fund
		Form 19	Realistic balance sheet
		Form 44	Long-term insurance business: Linked funds balance sheet (see Table 18 in Appendix)
		Form 48	Long-term insurance business: Assets not held to match linked liabilities
		Form 49	Long-term insurance business: Fixed and variable interest assets
		Form 50	Long-term insurance business: Summary of mathematical reserves (see Table 21 in Appendix)
		Form 51	Long-term insurance business: Valuation summary of non-linked contracts (other than accumulating with-profits contracts)
		Form 52	Long-term insurance business: Valuation summary of accumulating with-profits contracts
		Form 53	Long-term insurance business: Valuation summary of property linked contracts
		Form 54	Long-term insurance business: Valuation summary of index linked contracts
		Form 56	Long-term insurance business: Index linked business
	Shareholders	Form 13*	Analysis of admissible assets (see Table 17 in Appendix)
		Form 15	Liabilities (other than long-term insurance business)
		Form 17*	Analysis of derivative contracts (see Table19 in Appendix)
Income and Expense	**Policyholders**	Form 40	Long-term insurance business: Revenue account (see Table 22 in Appendix)
		Form 41	Long-term insurance business: Analysis of premiums (see Table 23 in Appendix)
		Form 42	Long-term insurance business: Analysis of claims (see Table 24 in Appendix)
		Form 43	Long-term insurance business: Analysis of expenses (see Table 25 in Appendix)
		Form 45	Long-term insurance business: Revenue account for internal linked funds (see Table 27 in Appendix)
		Form 46	Long-term insurance business: Summary of new business (see Table 28 in Appendix)
		Form 47	Long-term insurance business: Analysis of new business (see Table 29 in Appendix)
		Form 58	Long-term insurance business: Distribution of surplus (see Table 26 in Appendix)
		Form 59A	Long-term insurance business: With-profits payouts on maturity (normal retirement)
		Form 59B	Long-term insurance business: With-profits payouts on surrender
	Shareholders	Form 16	Profit and loss account (non-technical account) (see Table 30 in Appendix)

Source: the author.
Where:
Forms 13 and 17 are available separately for the LTIB (life) and the OLTIB (general's and shareholders' assets).

Forms report separately for assets, liabilities, revenues, expenses and capital; they also report separately for policyholders' (long-terms insurance business (LTIB)) assets, liabilities, revenues, expenses and capital; and shareholders' (other than long-term insurance business assets (OLTIB)) assets, liabilities, revenues, expenses and capital. The OLTIB includes shareholders' assets, liabilities, revenues, expenses and capital and the general insurance business's assets, liabilities, revenues, expenses and capital if the life insurer is a composite insurer (life and general insurer). It is surprising that the SynThesys life database version 10.1 15-August 2011 released includes forms for the general insurance business only, namely, Form 1; Form 11 and Form 12, these forms are related to general insurer capital (see FSA, 2008a;

KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). There are two forms, namely, Form 13 and Form 17 are available separately for the LTIB and the OLTIB.

For purpose of this analysis, forms are subdivided into three main categories, namely, solvency and capital, assets and liabilities, income and expense, see Table 1. Firstly solvency and capital forms, these forms are available for general and life insurers separately. For the general insurance business, Form 11 and Form 12 present the detailed calculation of the general insurance business minimum capital requirements, whereas Form 2 summaries the capital resource and capital requirements as well as solvency margin for general insurers (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012), it is noticeable these forms are blank in the SynThesys life database version 10.1 unless the life insurers are composite insurers. As for the life business, there are four forms for solvency and capital, namely, Form 2, Form 3, Form 10 and Form 60. Form 60 presents the detailed calculations of the capital requirements of the life insurance business, whereas Form 2 presents a summary of the capital resources, capital requirements and solvency margin for the life insurance business (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). Form 10 is used to present the financial position of the entity including the capital requirements; however, this form has been replaced by Form 3 since 2004, which summaries the capital requirements subdivided into different tiers as part of the FSA efforts to enhance the solvency requirements following the near collapsed of the Equitable Life in 2000 (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). However, Form 10 is still required from some branches as they are exempted from Form 3 (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). Given that Form 2 is a key form for this thesis and many variables are based on this form, it is presented in Table 16 in Appendix.

Regarding asset and liability forms, they are available for policyholders' assets and liabilities only, namely, Form 13, Form 14, Form 17, Form 18, Form 19, Form 44, Form 48 and Form 50; and for shareholders only Form 13, Form 15 and Form 17. As for assets, Form 13 (LTIB) summaries in details assets held by life insurers, namely, policyholders' admissible assets and it reconciles the admissible value of these assets to the GAAP / IFRSs value (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012); see Table 17 in Appendix. This form is also available for shareholders' assets (including the general insurance business based assets for composite insurers) (OLTIB). For purpose of this thesis, admissible assets reported in the Form 13 has been classified into nine categories, namely, land and buildings, affiliates (investments), equities, linked assets, other assets, mortgages and loans, cash, debtors and accrued income based on the classification reported in the Standard and Poor's guidance for the SynThesys life database, (Standard and Poor's, 2010), see Table 17 in Appendix. Admissible assets reported in this form is also classified into assets held to back up linked liabilities and assets held to back non-linked liabilities, see Table 17 in Appendix. Form 44 reports assets held to back linked liabilities (property unit-linked) in details see Table 18 in Appendix, whereas Form 48 reports assets held to back non-linked liabilities in details; unfortunately Form 48 has only become available for non-profit, with-profits and unitised with-profits since 2005 (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012), prior to this it was only available at the aggregated level for all non-linked products based assets. Similarly, Form 56 reports assets held to back up linked liabilities (index unit-linked); however, it has become only available since 2008.

Finally, Form 17 reports assets and liabilities under derivative contracts separately, it also reports derivative has been bought or sold over the financial year; see Table 19 in Appendix. Similar to Form 13, Form 17 is also available for the LTIB and the OLTIB. In 2008, the FSA

has changed the requirements with respect to Form 17 (FSA, 2008b); this change provides more details to the derivative instruments that are being used by UK life insurers. Finally, prior to 1994, derivatives reported only in Form 13 in a single line as there was no Form 17. As for liabilities, Form 14 reports policyholders' liabilities and reconciles admissible value of these liabilities to its GAAP / IFRSs based valuation, see Table 20 in Appendix, whereas Form 15 reports shareholders' liabilities; the OLTIB. The mathematical reserves are reported in Form 50 (see Table 21 in Appendix), which summaries the valuation of mathematical reserves reported in Form 51, Form 52, Form 53, Form 54 at the product line level. Finally, the FSA introduced a new valuation ('the realistic balance sheet') for with-profits funds in 2004 (FSA, 2003b; Sheldon and Smith, 2004; O'Brien, 2009a). This valuation requires with-profits insurers to value with-profits assets and liabilities on a market-consistent basis, if the with-profits liabilities exceed £500 million. Unlike the premium (conventional) valuation, the new valuation includes the value of future bonuses in insurers' liabilities, and it values guarantees and options in the same method capital markets would value them (modern portfolio theory; taking into account time value of option and guarantees) . The realistic balance sheet has been reported in Forms 18 and 19 since 2004 (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012).

Income and expense, these forms report revenue and expense streams for the LTIB and the OLTIB separately as well as the distribution of funds for the LTIB. There is one form, Form 16 (see Table 30 in Appendix), reports revenue and expense streams for shareholders, the OLTIB, it is similar to profit and loss account, it only reports amount of surplus transferred to non-technical accounts as the main revenue stream for shareholders. Unfortunately, this form does not report fees charged to linked funds as part of shareholders revenues as they are reported as part of expenses in Form 40 (see Table 22 in Appendix); making linked based life

insurers report almost no revenues from the LTIB in Form 16. As for policyholders' forms, it is noticeable that these forms report stream of revenues and expenses related to policyholders; this makes it is possible to examine the revenue and expense streams from policyholders' perspective. As for Form 40 (see Table 22 in Appendix); this is a summary form concerning premiums reported in Form 41 (see Table 23 in Appendix); claims reported in Form 42 (see Table 24 in Appendix) and expenses reported in Form 43 (see Table 25 in Appendix), it also shows the realised and unrealised gains as well as tax and other expenses. This form also reconciles the available funds at the beginning of the period (value of policyholders' assets) and new funds (raised during the current period). This form reports shareholders' shares in surplus as the amount transferred to non-technical account (transferred to Form 16) but it reports fees charged to linked funds as part of expense. This form is linked to Form 58 (see Table 26 in Appendix), which shows the distribution of funds to mathematical reserves and surpluses. Form 41 (Table 23 in Appendix), Form 42 (Table 24 in Appendix) and Form 43 (Table 25 in Appendix) report premiums, claims and expenses, respectively at the aggregated level and the segmental level, namely, life, pension and overseas; however, the segmental level in Form 43 has become only available since 2005.

Furthermore, new premiums (including number of new policyholders) are reported in Form 46 (Table 28 in Appendix) and Form 47 (Table 29 in Appendix). Form 46 can be considered as summary for Form 47; however, Form 46 reports new premiums and number of new policyholders at aggregated and segmental levels; whereas Form 47 reports new premiums and number of new policyholders by product lines, namely, with-profits, non-profit, unitised with-profits, property unit-linked and index unit-linked, and by segments. Moreover, Form 45 (Table 27 in Appendix) reports revenues and expenses related to the unit-linked business; it is similar to Form 40. Finally, Form 59 A and B report maturity payouts and surrenders payouts for with-

profits life assurance policies, respectively. Form 49 reports interest revenues on different class of policyholders' assets since 2005; however, it is only available at the aggregated level prior to 2005.

2.3.2. Data and Sample

The data is derived from the SynThesys life database (version 10.1, 15-August 2011 released) provided by the Standard and Poor's (S&P); the data is available in separate forms (see Table 1). All variables used in this thesis are based on the following forms: Form 2 (Table 16 in Appendix), Form 13 (Table 17 in Appendix), Form 14 (Table 20 in Appendix), Form 17 (Table 19 in Appendix), Form 40 (Table 22 in Appendix), Form 41 (Table 23 in Appendix), Form 42 (Table 24 in Appendix), Form 43 (Table 25 in Appendix), Form 44 (Table 18 in Appendix), Form 45 (Table 27 in Appendix), Form 46 (Table 28 in Appendix), Form 47 (Table 29 in Appendix), Form 50 (Table 21 in Appendix) and Form 58 (Table 26 in Appendix).

The sample consists of three hundred and sixty nine companies; however, one firm has no data, namely, Legal and General Pensions Ltd, the remaining initial sample is 368 firms. A firm is only included in the sample if it reports Form 40 and Form 13, and Line 59 (fund carried forward) in Form 40 has non-zero value (it cannot be negative) for a particular period (during the terminal year the sum of negative value reported in Line 39 in From 40 (Increase /decrease in fund in financial year) and positive value reported in Line 49 in From 40 (Fund brought forward) is equally to zero). The sample consists of 5601 observations for 368 firms over the period 1985-2010. The Table 31 (in Appendix) shows that the sample period for each firm; including which years and how many years are included for each firm. It shows whether the firm is mutual or proprietary, the UK based or overseas based and whether the firm is an insurer, a bank, other financial services or non-financial services for each year over the sample

period. The author classifies insurers to mutual and proprietary; the UK and international; insurers, banks, financial services and non-financial services based on the parent status; noting for some firms the parent is the firm itself such as some mutual firms or individually operating firms (neither branch nor subsidiary). All original parents and changes in the parents; ownership, over the period 1985-2010 information / data is collected manually for each firm based on the SynThesys life database user guide (Standard and Poor's, 2010: pp. 36-53), the individual firm website (if it is available), parent website (the group website), Fame database, Thomson one Banker, companies house, ABI website, relevant previous publications or reports about the industry, Google, etc. This has been done by determining the parent (s) for each firm for each year over the sample period, then determining whether the parent is mutual or proprietary; the UK based or overseas based (firms based on these countries were found: Australia, Belgium, Bermuda, Canada, Denmark, France, Germany, India, Ireland, Italy, Netherlands, Pakistan, Russian, Saudi Arabia, South Africa, Spain, Sweden and Switzerland, USA); and whether the parents are insurer, bank, other financial services (such as asset management) and non-financial services (mainly retailers). A comprehensive list is presented in Table 31 in Appendix showing the mutual / proprietary status, the UK / international status and insurer / bank / other financial services and non-financial services status for each firm over the period 1985-2010; a completed copy is also available upon request.

The sample includes independently operating and reporting the UK based life insurance companies (including composite insurers). It also includes six branches filing their annual returns concerning their UK operations and one reinsurer branch filing its returns regarding the UK and overseas operations. The data covers the authorised UK life insurers; however, it does not cover the European Economic Area (EEA) based life insurers operating in the UK. These insurers are no longer required to submit returns since the adoption of the third council life

insurance directives (92/49/eec partially repealed by 2002/83/EC) or 'Single Passport' in 1994 (EU, 1992; 2002).

The number of the UK life insurers has declined considerably over the period since 1980s due to the M&A (Swiss Re, 2006; Carter and Falush, 2009). It went down from 229 (1985) to 143 (2010). The number includes the proprietary and mutual UK life insurers; however, the number of mutual life insurers has declined considerable due to demutualisation and the M&A activities (Swiss Re, 1999; Carter and Falush, 2009).

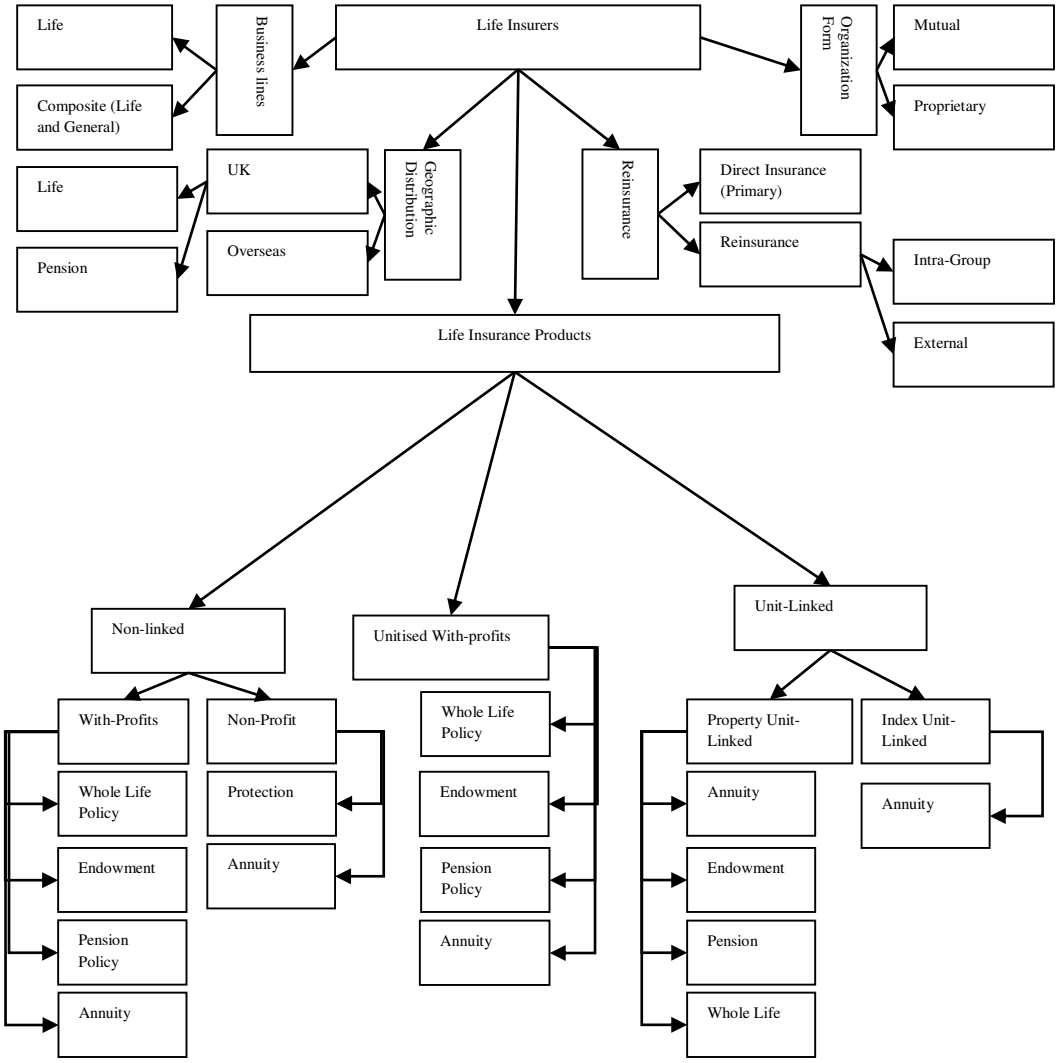
In this chapter, to ensure inter-temporal comparability of figures and tables the financial data were deflated by the UK GDP deflator index (HM Treasury, 2012). This means all of variables are in real value term of the 2010 price.

2.4. Products, Ownership and their Developments

2.4.1. The UK life Insurance Products

The life insurance business products can be subdivided into non-linked and unit-linked life assurance business products as shown in Figure 7 (see Table 29 in Appendix). The non-linked business is the life assurance business in which the financial health of insurers is directly connected to liabilities contained within tranches of the business. This business can be subdivided into with-profits and non-profit. The unit-linked business, it is the life insurance business in which the benefits paid to policyholders are related to the performance of the underlying assets that are invested in a linked fund; this business is subdivided into property unit-linked and index unit-linked. There is a hybrid life insurance business called unitised with-profits that combines some features of the unit-linked and the with-profits business.

Figure 7: The Structure of the UK Life Insurance and Products



Source: the author.

2.4.1.1. The With-Profits Life Insurance Business

The with-profits life insurance business is also referred as 'Participating Business' or conventional with-profits. A with-profits life insurance contract is typically a long-term saving contract; premiums are invested in a pooled fund made up of a range of assets, such as equities and property. It contains a certain minimum guarantee regarding the payout, which usually increases over the lifetime of the policy as annual bonuses[24] are declared and added to the policy amount of premium funds invested by insurers. Moreover, it has a payout that reflects 'smoothing' to cushion policyholders from the extreme fluctuations in the property and equity markets, and gives policyholders the right to share in a certain amount of profits or losses, which include those arising from mortality risks and expense risks and any distributions from 'inherited estate'[25]. With-profits policies are long-term in nature and serve as a general investment / saving vehicle, the majority of policies have one of the following aims: repaying a mortgage; financing a pension; providing a regular income from savings.

A policyholder purchases a with-profits policy through the payment of premiums, either as single premiums (single lump sum) or recurrent single premiums (a series of non-contractual lump sums) or regular premiums (a series of regular contractual amounts). A with-profits policy has as a clearly defined initial guaranteed amount (known as the sum assured on non-pension policies) which increase from the initial level throughout the duration of the policy by the addition, usually annually, of regular bonuses which once added cannot be removed (FSA, 2001). The bonuses are the share of with-profits policyholders in with-profits funds surpluses, which can be subdivided into three main types, namely, reversionary bonuses, interim bonuses

[24] The Equitable Life Assurance Society was the first to grant the first bonuses to holders of with-profits policies in 1781; the Society distributed the accumulated surplus rising as result of better than expected mortality experience (Needleman and Roff, 1995).
[25] The excess of with-profits fund assets over and above liabilities.

and terminal bonuses. Unlike interim and terminal bonuses, reversionary bonuses once declared are added to life insurer liabilities, while terminal bonuses are additional payments at the time of a claim, and interim bonuses are additional payments to policyholders who have a claim between declarations of reversionary bonus as these policyholders might otherwise be treated unfairly (O'Brien, 2004). Moreover, bonuses may be paid in cash form, instead policyholders can use dividends to buy additional benefits, or they may use the dividends to reduce the amount of regular premiums payable under their policies (Ramlau-Hansen, 1991; O'Brien, 2004).

The current guaranteed amount (the initial guaranteed amount plus the total of any regular bonuses and interim bonus added) will be paid when a claim is made on death, maturity, retirement, or some other specified date usually together with an additional, discretionary, terminal bonus either a cash amount, or an annuity. However, if a policyholder elects to surrender, the surrender benefit will usually be subject to life insurers' discretions.

Regarding with-profits surplus distribution, 100% of surplus is distributed to policyholders of mutual life insurers. In contrast, only 90% of surplus from the with-profits fund is distributed to policyholders of proprietary life insurers (O'Brien, 2009b). Concerning with-profits policies, there are many types and legal forms with respect to how long they last, what events will trigger a claim payment, and how any guaranteed benefits are expressed. The main with-profits policy types are: whole life policy, endowment policy, pension policy and with-profits annuity.

2.4.1.2. The Non-Profit Life Insurance Business

The non-profit life insurance business consists of non-profit insurance contracts at which life insurers make all decisions with respect to asset allocation, switching and timing. Moreover, life insurers determine investment policy in accordance with the FSA regulations. Holders of

non-profit policies are entitled to promised benefits under the contractual terms; however, they do not have a share of any surplus. The policies come in a variety of types and legal forms; the main non-profit policy types are non-profit annuity, critical illness cover and income protection.

2.4.1.3. The Unitised With-Profits Life Insurance Business

The unitised with-profits life insurance business emerged in the early 1980s as a means to offer a hybrid solution. It can be made to combine some of the capital advantages to insurers of the unit-linked business, while freeing policyholders and their financial advisers from making asset allocation decisions (Richards, 2004). Moreover, it provides policyholders with greater flexibility over the timing of premiums payments and facilitates, through a single policy, partial investment in with-profits funds and in other, unit-linked funds offered by the insurer. The premiums paid by a policyholder are used to purchase units in the unitised with-profits fund at the current unit price. The guaranteed amount receive under a unitised with-profits policy is the number of units allocated to the policy times the current unit price (this is known as the face value of units) and the terminal bonus may then be added to this amount. However, the guaranteed payment to the policyholder could be reduced in certain circumstances, at the discretion of the insurer, below the face value of units; this is can be done through the application of the Market Value Reduction (MVR).

The main difference between with-profits and unitised with-profits is the guaranteed benefits. In the with-profits business, the guaranteed benefit is determined with reference to the total sum of the premiums paid through the lifetime of the policy. In unitised with-profits, in contrast, the guaranteed benefit is determined with reference to units bought only as each premium payment is used to buy units in a unitised with-profits fund that provide a guaranteed

benefit. Therefore, the guaranteed benefit of unitised with-profits grows more slowly than with with-profits (Myners, 2001; O'Brien, 2009b). On the other hand, the main difference between unitised the with-profits and unit-linked business is that the value of a unitised with-profits policy depends on the bonuses added and the market value of the units bought, while the value of the unit-linked business depends directly on the market value of the underlying assets. The unitised with-profits policies come in a variety of types and legal forms with respect to how long they last, what events will trigger a claim payment and how any guaranteed benefits are expressed. The main unitised with-profits policy types are whole life policy, endowment policy, pension policy and unitised with-profits annuity.

For purpose of this thesis, the unitised with-profits life insurance business will be considered as part of the with-profits life insurance business, and, hence, the non-linked life insurance business. This can be justified as follows: (1) The unitised with-profits life insurance business was developed in the 1980s but separate data has become only available since 1996. (2) The market share of the with-profits business including the unitised with-profits life insurance business was about 5% of new premiums in 2010 (see Figure 8).

2.4.1.4. The Unit-Linked Life Insurance Business (Property and Index)

The unit-linked insurance business involves the policyholders (or their financial advisers) in determining the investment strategies for their individual policies. In the unit-linked business, life insurers maintain a separate and explicit asset account for each policy, and, hence, each policy can be invested entirely and independently of the others. Moreover, in the unit-linked business the investment flexibility is under the control of policyholders, not the life insurers (Richards, 2004). The value of a unit-linked policy is directly linked to the investment performance of the unitised funds selected by the policyholders (Richards, 2004).

The unit-linked contracts give policyholders (or their financial advisers) greater investment choice and flexibility, combined with greater clarity over charging structures and freedom from seemingly arbitrary changes in bonus rates (Richards, 2004). Moreover, it allows policyholders to take more aggressive (or defensive) investment stances than life insurers may be willing or able to take. Similarly, the unit-linked business enables financial advisers to tailor the investment strategies of their clients.

The unit-linked business gives life insurers a number of very important advantages compared to the non-linked business: (1) It transfers the investment risk to policyholders (Brennan and Schwartz, 1976; Knights and Willmott, 1993; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a,b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011; Aviva Plc, 2008; 2009; 2010; 2011; 2012; 2013). (2) It is much less capital intensive than the non-linked business. For instance, the non-linked business demands a solvency margin (in accordance with European regulation) of 4% of the basic technical provision, whereas a unit-linked business without investment or expense guarantees can have a solvency margin rate of 0% (Diacon et. al., 2004; Richards, 2004). (3) Life insurers can deduct unit-linked policy fees directly from the unit-linked funds irrespective of premiums payments, which means that life insurers have reduced the risk of premiums not being paid by policyholders, assuming that sufficient premiums have been paid to provide a fund from which to deduct such charges in the first place. The non-linked policies come in a variety of types and legal forms with respect to how long they last and what events will trigger a claim payment.

The differences between non-profit, with-profits, unitised with-profits and unit-linked products can be summarised as follows as shown in Table 2:

Table 2: The Structure of the UK Life Insurance Products

	Non-linked			Unit-linked	
	Non-Profit	**With-Profits**	**Unitised With-Profits**	**Property Unit-Linked**	**Index Unit-Linked**
Risks	Risks are borne by insurers.	Risks are usually borne by insurers.	Risks are usually borne by insurers.	Risks are usually borne by policyholders.	Risks are usually borne by policyholders.
Payouts to Policyholders	Contractual terms.	Sum assured plus accumulating reversionary bonuses plus terminal bonus.	Market value of units bought plus reversionary bonuses.	Market value of units at maturity.	Market value of units at maturity.
Exit and Persistency	Very high exit penalty.	Very high exit penalty.	Very high exit penalty.	Designed to be flexibly concerning exit.	Designed to be flexibly concerning exit.
Guarantees and Capital Intensity	Payouts are guaranteed.	Policyholders' contributions and reversionary bonuses are guaranteed so it is very capital intensive.	Policyholders' contributions (the value of units when policyholders bought them) are guaranteed plus reversionary bonuses; however, the original guaranteed payment could be discretionarily reduced in certain circumstances. Less capital intensive compared to with-profits as guaranteed amount are based on unit bought not original sum assured.	There are no guarantees unless it is bough separately. No guarantees concerning returns. Zero capital requirements if there are no guarantees.	There are no guarantees unless it is bough separately. No guarantees concerning returns. Zero capital requirements if there are no guarantees.
Transparency and Discretion	Payouts are specified in contractual terms.	Insurers have the discretion over surplus distribution rates (reversionary bonuses), terminal bonus as well as investment decisions.	Policyholders or / and their agents make investment decisions but insurers still have discretion over bonus and policyholders could be paid lower than the face value of units (original price).	Policyholders or / and their agents make investment and policyholders bear investment risks; the price of units is published on a daily basis.	Policyholders or / and their agents make investment and policyholders bear investment risks; the price of units is published on a daily basis.
Fund Structures	Funds are managed and controlled by insurers.	Funds are managed and controlled by insurers.	The funds are unitised and policyholders buy units in the funds that are managed by insurers.	The funds are unitised and policyholders buy units in the funds that are managed by insurers.	The funds are unitised and policyholders buy units in the funds that are managed by insurers.
Basis for Insurers' Revenue	Insurers make revenue on the basis of pooling risk and then price it to customers through contractual terms.	Reported surpluses following a statutory solvency valuation are distributed on a 9:1 basis (9 for policyholders to 1 for insurers) for proprietary and 100% for policyholders concerning mutual.	Reported surpluses following a statutory solvency valuation are distributed on a 9:1 basis (9 for policyholders to 1 for insurers) for proprietary and 100% for policyholders concerning mutual.	There is no surplus. The policyholders will receive the value of units (assets and liabilities are linked together). Insurers make revenue through charging discretionary management fees on either a monthly or a yearly basis. These fees consist of actual spending on running the funds plus profits.	There is no surplus. The policyholders will receive the value of units (assets and liabilities are linked together). Insurers make revenue through charging discretionary management fees on either a monthly or a yearly basis. These fees consist of actual spending on running the funds plus profits.

Source: the author.

2.4.2. The Market Trend in the UK Life Insurance Business 1985-2010

2.4.2.1. The Market Trend for Life Insurance Products

There has been a radical change in the compositions of product portfolios and segmental[26] distributions of new premiums in the British life market since 1985. The pension segment has become the dominant segment, while unit-linked products have become the dominant business in the UK life insurance market since 1997. The proportion of unit-linked new premiums, measured using the Annual Premiums Equivalent (APE)[27] (Diacon et. al., 2004), increased substantially over the period 1985-2010; it went up from £2.8 billion (41% of the total APE) in 1985 to £15 billion (80% of the total APE) in 2010. Moreover, the share of the pension segment in new premiums reached an unparalleled level in 2010 at 82% of the total APE (£15.4 billion) compared to 41% (£2.7 billion) in 1985. In contrast, the shares of the life segment and the with-profits business declined dramatically over the period 1985-2010. The share of the with-profits business in new premiums went down from 41% (1985) to only 4% (2010), while the share of the life segment in new premiums fell from 52% (1985) to 14% (2010) as shown in Figures 8 and 9 (see Table 32 in Appendix).

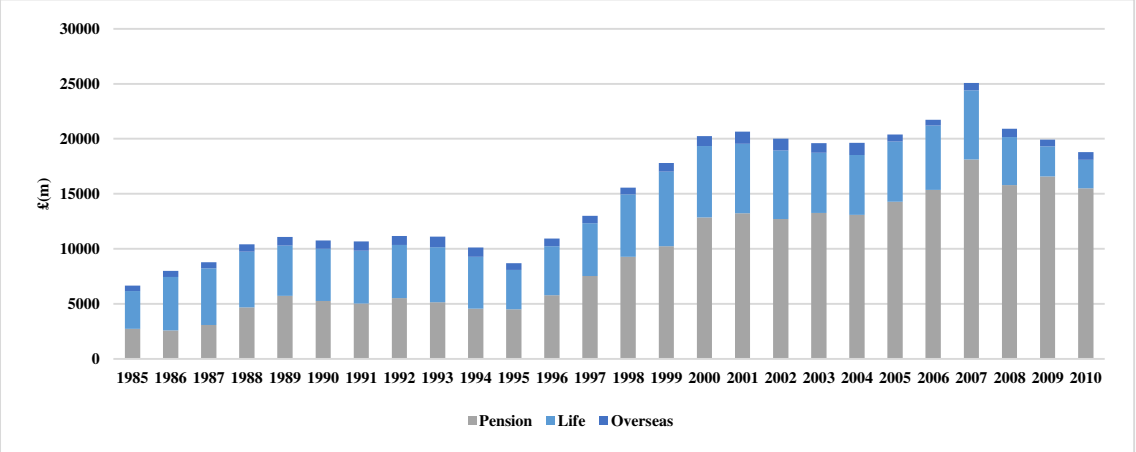
The segment-product analysis confirm above result as shown in Figures 10, 11 and 12 (see Table 32 in Appendix). The growth in the share of the pension segment combined with paralleled growth in the share of linked products in the pension segment. For instance, the share

[26] There are three segments, namely, life, pension and overseas. The overseas business means the life insurance business, which is the overseas life assurance business or the overseas permanent health insurance and sickness business as defined by the Incomes and Corporation Taxes Act 1988 or business written overseas by an insurer, which does not report its overseas life assurance business separately for taxation purposes (FSA, 2008).

[27] It is common in the long-term insurance business to use the APE to allow comparisons of the amount of new business gained in a period by insurance companies with different proportions of single premium and regular premium business. Since the regular premiums involved series of payment at fixed intervals during the life of the policy, the APE is used to allow comparisons of the amount of new business gained in a period by life insurance companies. The APE is the total amount of regular premiums from new business plus 10% of the total amount of single premiums on business written during the year.

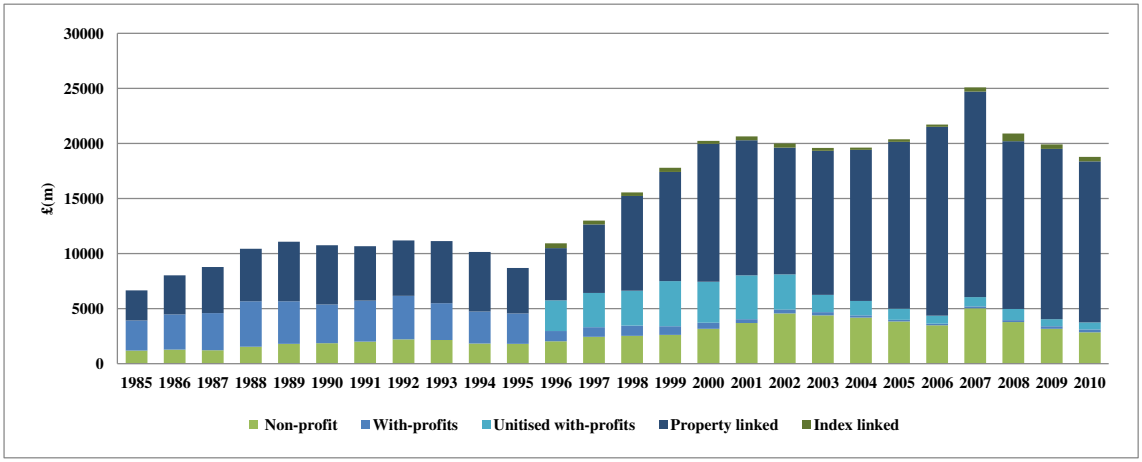
of the pension segment in the UK market went up from 41% (1985) to 82% (2010), at the same time the share of unit-linked products in the pension segment increased from 51% (1985) to 88% (2010); in 2010 the pension segment had about 91% of unit-linked products. In contrast, the decline in the market share of the life segment combined with the decline in the share with-profits products in the life segment as show in Figures 10, 11 and 12 (see Table 32 in Appendix). As for the overseas segment, the analysis shows that the UK life insurers wrote most of their overseas businesses in with-profits forms; however, in recent years the share of linked products increased significantly.

Figure 8: The Segmental Distribution of the APE 1985-2010



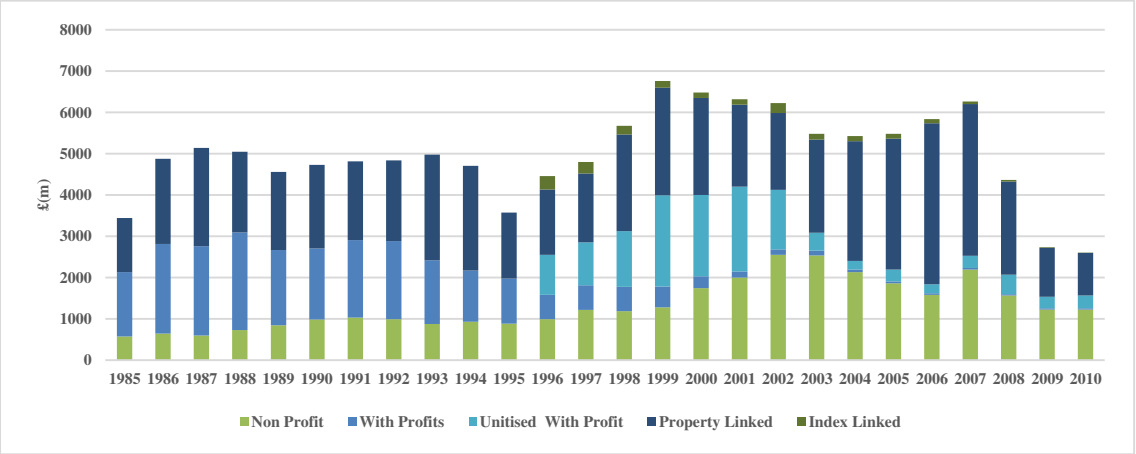
Source: the author — Pension (F46; L24+L28*10%, C3), Life (F46; L24+L28*10%, C1) and Overseas (F46; L24+L28*10%, C3).

Figure 9: The Share of Business Lines in the APE 1985-2010



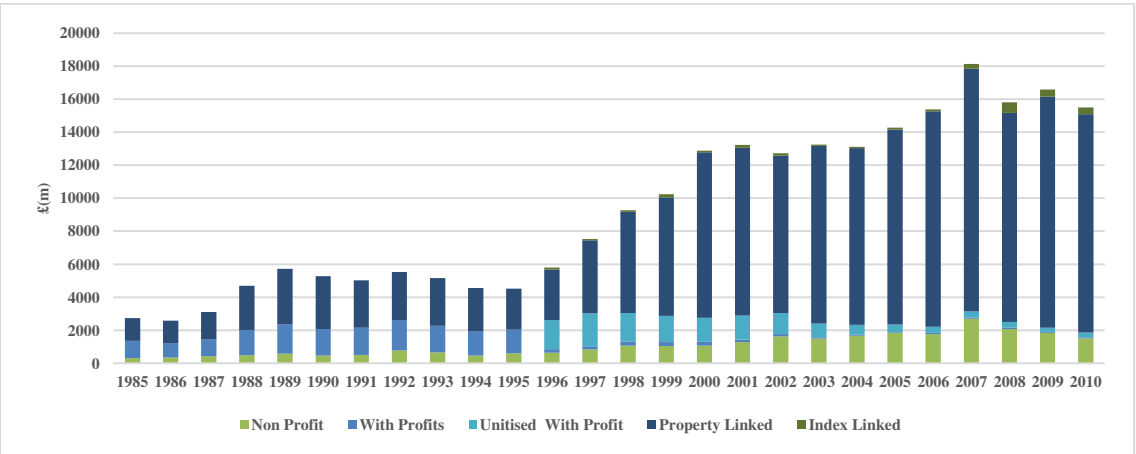
Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%; UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Table 29 in Appendix).

Figure 10: The Share of Business Lines in the Life Segment APE 1985-2010



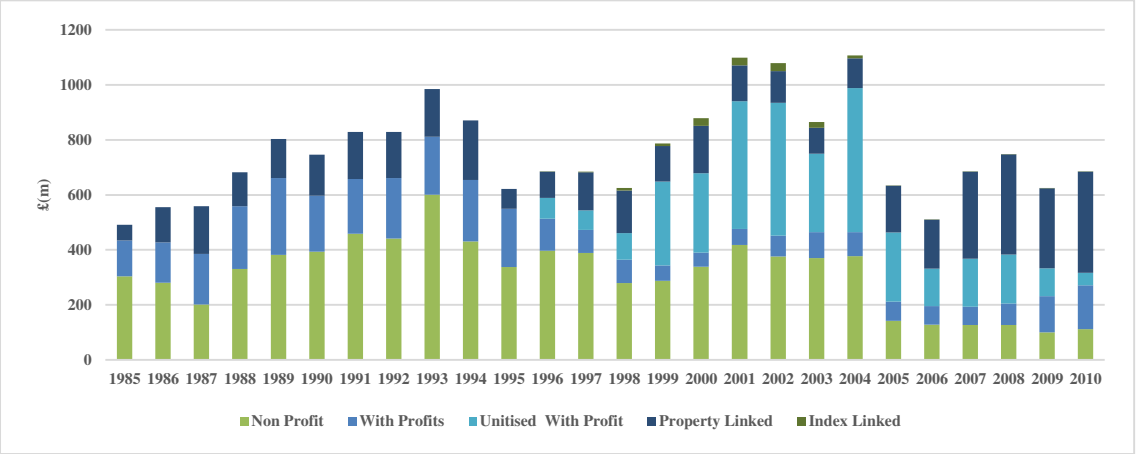
Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE and UKL_RG. With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE and UKL_RG. Unitised With-Profits (F47; L500-575, C4 + (L 500-575, C6)*10%); UKL_DB, UKL_RE and UKL_RG. Property linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE and UKL_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE and UKL_RG see (see Table 29 in Appendix).

Figure 11: The Share of Business Lines in the Pension Segment APE 1985-2010



Source: the author — Non-Profit (F47; L300-445, C4 + (L 300-445, C6)*10%); UKP_DB, UKP_RE and UKP_RG. With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%; UKP_DB, UKP_RE and UKP_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKP_DB, UKP_RE and UKP_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKP_DB, UKP_RE and UKP_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKP_DB, UKP_RE and UKP_RG (see Table 29 in Appendix).

Figure 12: The Share of Business Lines in the Overseas Segment APE 1985-2010



Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); OS_DB, OS_RE and OS_RG (see Table 29 in Appendix).

The continuous deterioration in the market share of the with-profits products can be related to policyholder and insurer factors. Regarding policyholders, the near collapse of a predominantly with-profits insurer (the Equitable Life in 2000), complexity and lack of transparency and the failure in achieving the aims of investment through with-profits products become common knowledge after disappointing payouts to policyholders have caused significant reputational damage of these products (Clay et. al., 2001; Penrose, 2004; O'Brien, 2006a; O'Brien, 2009b). With respect to insurers, with-profits insurers may not be willing to offer with-profits products due to significant increase in the cost of guarantees attached to these products as a result of unparalleled fall in interest rates. Indeed, many with-profits insurers experienced financial difficulties leading to cease writing new policies, whereas the with-profits life assurance market noticed substantial consolidation and changes in ownership structures (FSA, 2004; 2005; O'Brien and Diacon, 2005; Carter and Falush, 2009; O'Brien, 2009b).

In contrast to the with-profits, the analysis shows that the unit-linked business (particularly property unit-linked) has become the dominant business in the UK life insurance industry. This

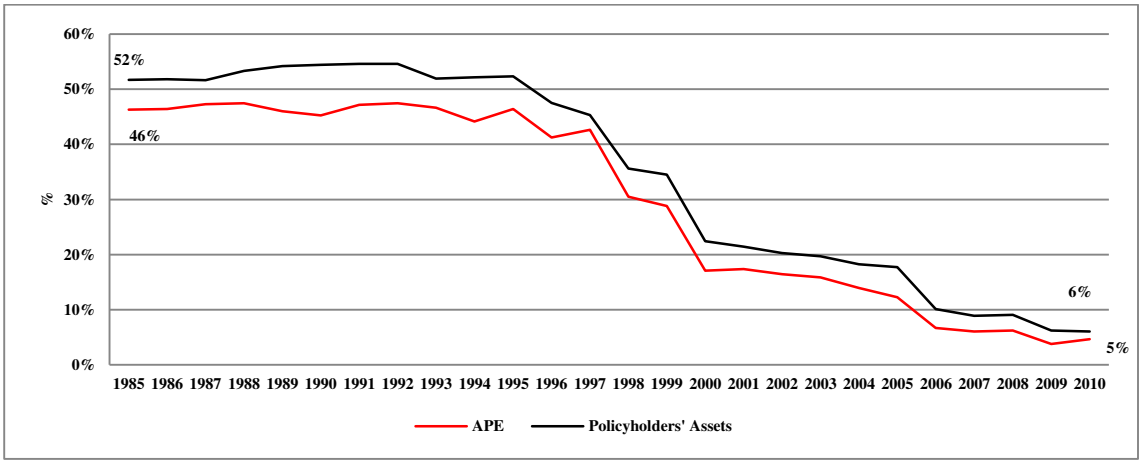
can be related to some factors: (1) the British taxation regime has played a main role (Carter and Falush, 2009); for instance, British tax payers find it makes more sense to invest indirectly in the unit-linked contracts because of tax relief available on pension contributions (personal and occupational) than invest their savings in a unit trust directly. (2) Unit-linked products enable policyholders to form their individual fund (their own account), and, hence, free themselves from the rules of surplus distribution in the participation fund (with-profits fund). Indeed, the unit-linked life insurance business is considered to be a solution to complexity and lack of transparency of the participating life insurance business (Müller and Steffensen, 2007). (3) Life insurers and agents have their own incentives to sell unit-linked contracts. For instance, the unit-linked business enables life insurers to reduce the capital requirement for a given volume of business or write a greater volume of business for a certain amount of capital, whereas agents can receive greater commissions from selling unit-linked contracts than from selling the same volume of business as a unit trust (Richards, 2004).

2.4.2.2. Mutuality Status 1985-2010

The British life insurance industry is an example of a business in which competing companies differ in their ownership structures; however, they offer the same range of products. Mutual life insurers are owned by their policyholders; proprietary life insurers are owned by their shareholders. There has been a long-standing debate in insurance-based literature concerning the relative merits of these different forms of an organisation. However, the share of mutual life insurers in new premiums (measured using the APE) declined dramatically over the period 1985-2010; it went down from about 46% (1985) to about 5% (2010). Similarly, the share of mutual life insurers in admissible assets (policyholders' assets) fell from 52% (1985) to 6% (2010) as shown in Figure 13 (see Table 32 in Appendix). This can be related to the fact that many mutual insurers demutualised such as Standard Life Plc. in 2006 (Standard Life Plc.,

2007) or been acquired by proprietary insurers, banks, fund management over the period 1985-2010 (Armitage and Kirk, 1994; Swiss Re, 1999; Carter and Falush, 2009; Schertzinger, 2009).

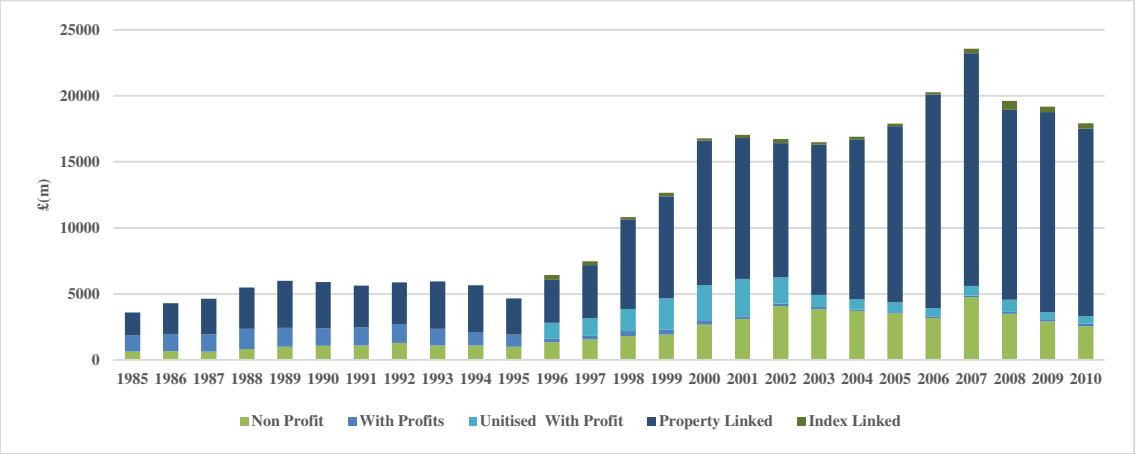
Figure 13: The Share of Mutual Life Insurers in the APE and Assets 1985-2010



Source: the author — the APE (F46; L24+L28*10%, C4) and Assets (F13; L89; LTIB) (see Table 31 in Appendix).

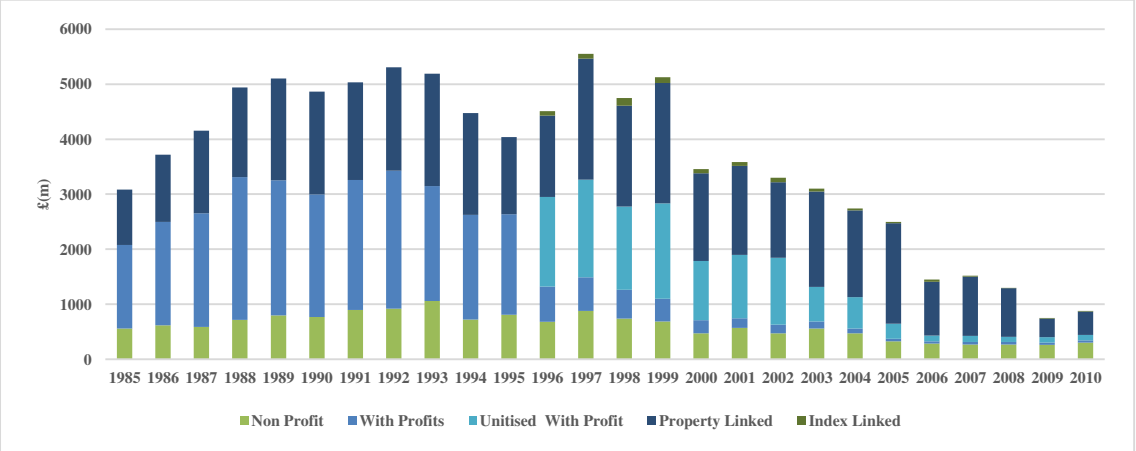
The decline in the market share of mutual life insurers also can be related to the fact that mutual life insurers tend to focus on with-profits products compared to propriety life insurers that mainly focused on unit-linked products as shown in Figure 14 and 15 (see Table 32 in Appendix). The changes in the external environments in terms of unparalleled decline in interest rates and consequently significant increase in the costs of options and guarantees attached to these products as well as the near collapsed of the Equitable Life and deteriorations of the reputation of with-profits products due to disappointing payouts and lack of transparency have led many mutual with-profits insurers to close to new business as well significant changes in ownership (FSA, 2004; 2005; O'Brien and Diacon, 2005; Carter and Falush, 2009; O'Brien, 2009b).

Figure 14: The Share of Business Lines in the Proprietary APE 1985-2010



Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix).

Figure 15: The Share of Business Lines in the Mutual APE 1985-2010



Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix).

2.4.2.3. Parental Issues 1985-2010

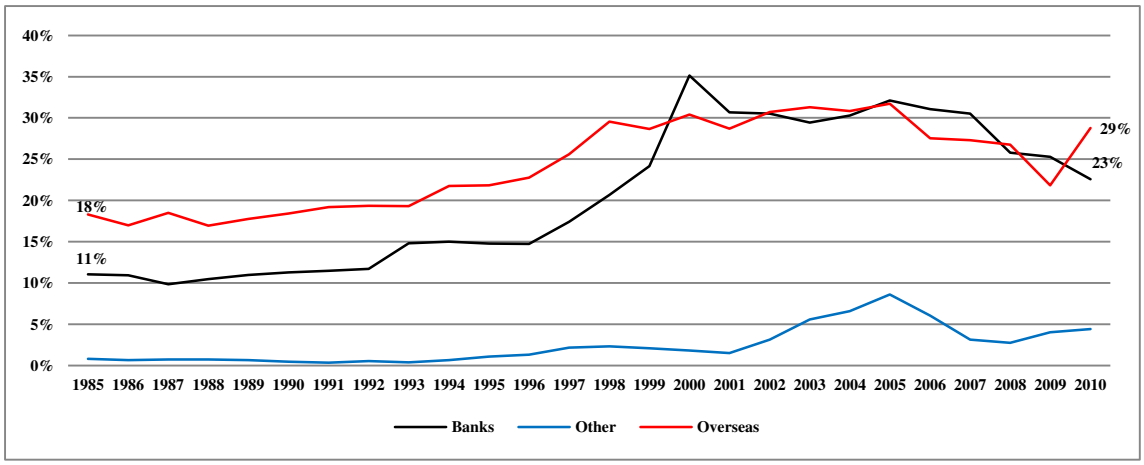
Bancassurance can be defined as the joint effort of banks and insurers to provide insurance services to the bank's customer base (Swiss Re, 2003; 2007; Carter and Falush, 2009). Alternatively, Bancassurance is '*strategy adopted banks or insurance companies aiming to operate in the financial market in a more or less integrated manor*' (Swiss Re, 2007). Bancassurance emerged as a force in the British life insurance market, it can be considered as one of the products of the 1990s financial services revolution (Carter and Falush, 2009). There has been considerable increase in the share of bancassurance in the British life insurance market. In 2010, 23% of the APE written by bank owned subsidiaries compared to only 11% in 1985. However, the bancassurance share in the British life insurance is considerably limited compared to the European counterparts (such as France, Italy, etc.) due the restrict regulations against miss-selling of life assurance products and the strong role of the IFA (Swiss Re, 2007). Furthermore, it was found that bancassurance were mainly focused on selling 'simple and standardised life assurance products' such as unit-linked products, and they were less successful in selling more complex products (Swiss Re, 2007). In the UK, the existence of a mature private pension and the emergence of complex assurance products have created an important competitive advantage of non-banks brokers and limited the role of the banks in the UK life insurance market (Swiss Re, 2007). Indeed, the product analysis of banks owned insurers compared to insurers owned insurers shows that bancassurance focused on less complex products (and less capital intensive) such as unit-linked products as shown in Figures 17, 18 and 19 (see Table 32 in Appendix).

Banks are not the only financial institution having life insurance subsidiaries, assets management, retailers and other institutions control small proportion in the British life insurance market; for purpose of this analysis non-bank and non-insurer parents are called other

parents. Similar to banks; these firms entered to the UK life assurance market via less complex products (and less capital intensive) such as unit-linked products as shown in Figures 17, 18 and 19 (see Table 32 in Appendix).

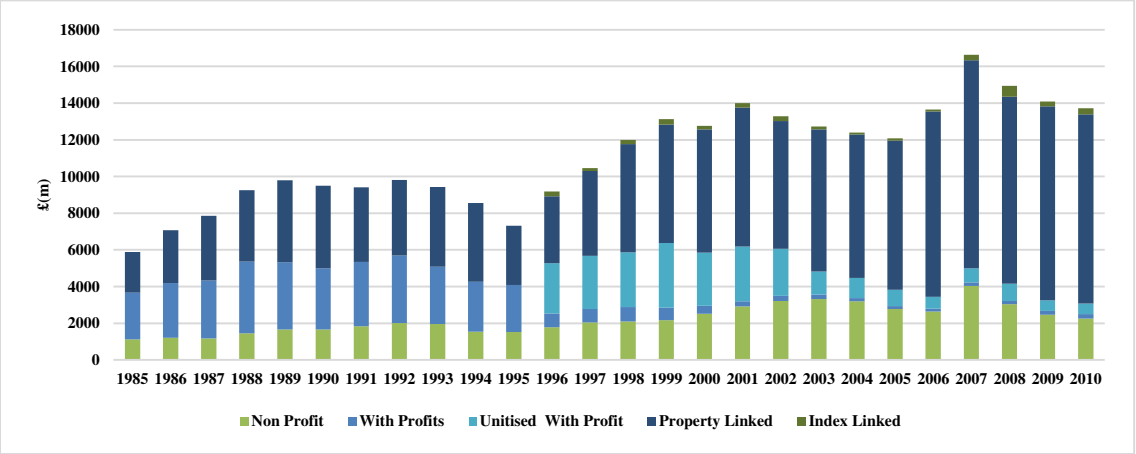
On the other hand, foreign groups control some subsidiaries operating in the UK life insurance market, the share of overseas-owned subsidiaries in the APE increased from 18% (1985) to 29% in 2010 as shown in Figure 16 (see Table 32 in Appendix). It sees that the argument that banks and other financial and non-financial groups enter the UK life assurance market for less complex and less capital intensive products holds for overseas insurers enter the UK life assurance market as shown in Figures 20 and 21 (see Table 32 in Appendix).

Figure 16: The Distribution of the APE among Different Ownership Forms 1985-2010



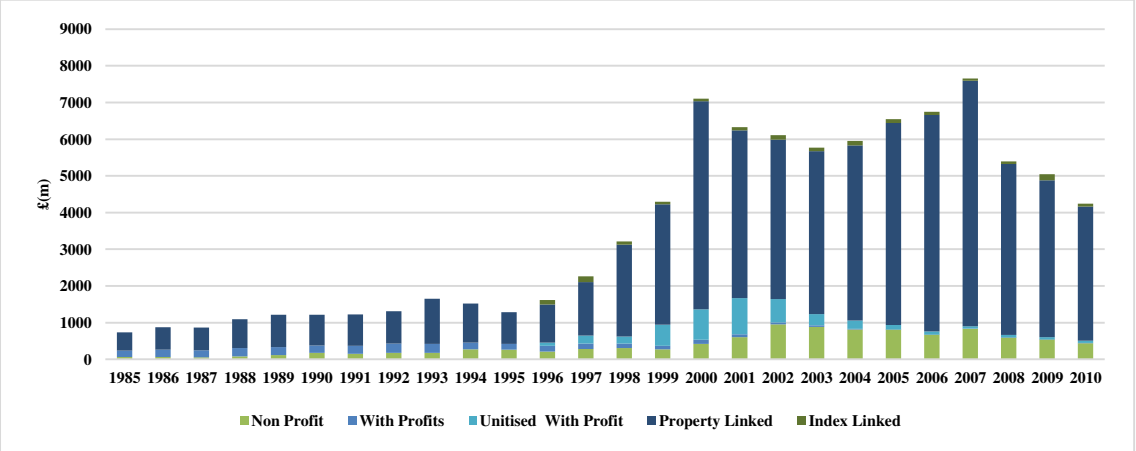
Source: the author — APE (F46; L24+L28*10%, C4), Other (other financial services; other than insurers and banks; see Table 31 in Appendix) and Overseas (overseas based parents; see Table 31 in Appendix).

Figure 17: The Share of Business Lines in the Insurer Parent in APE 1985-2010



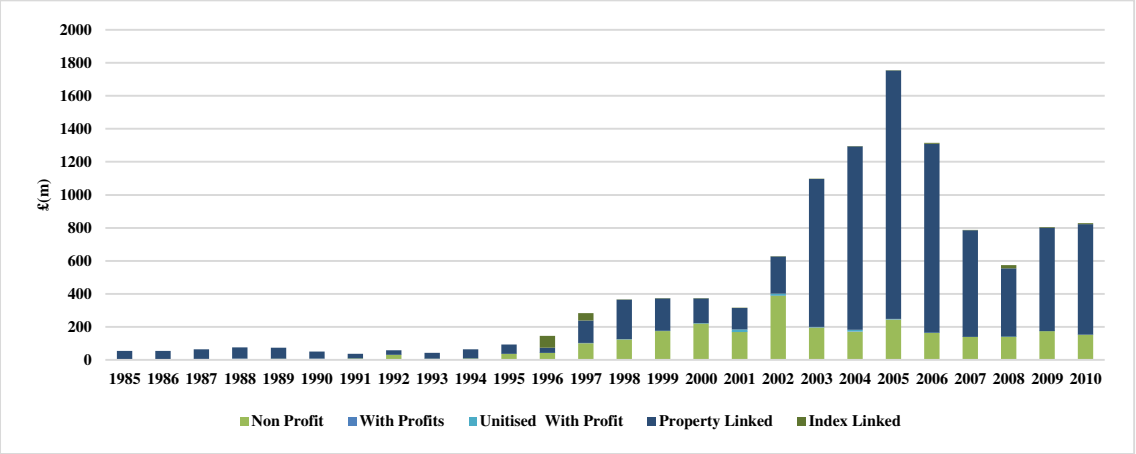
Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix).

Figure 18: The Share of Business Lines in the Bank Parent APE 1985-2010



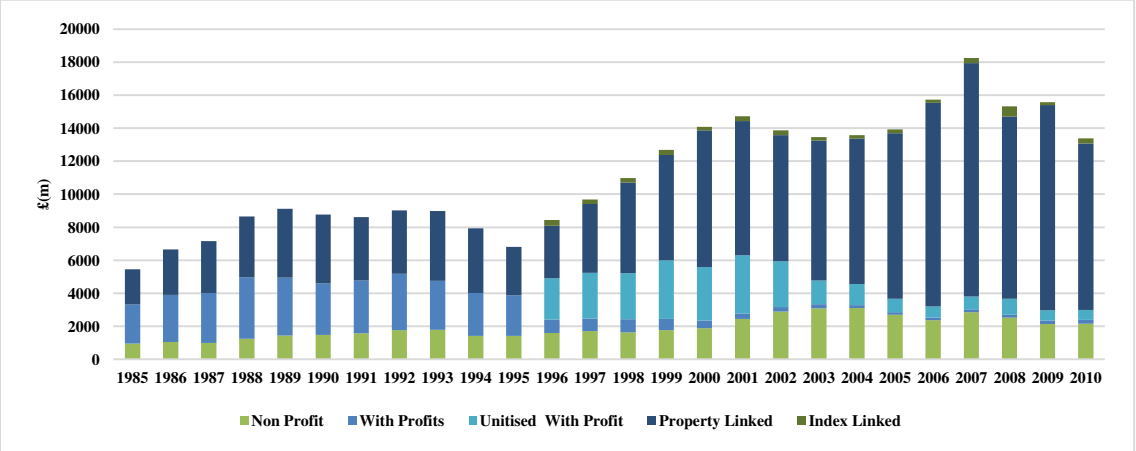
Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix).

Figure 19: The Share of Business Lines in the other Parent APE 1985-2010



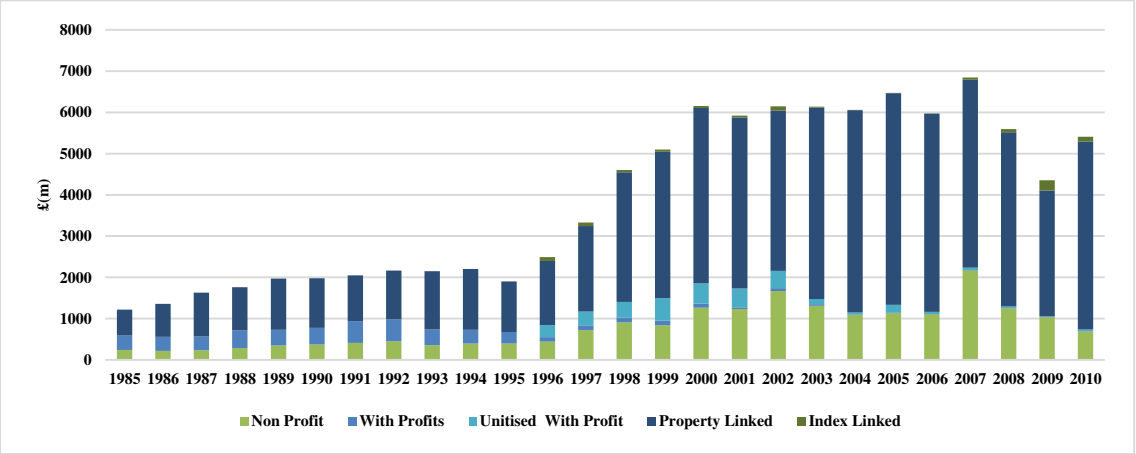
Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix). Other: (other financial services and non-financial services; see Table 31in Appendix).

Figure 20: The Share of Business Lines in the UK Parent APE 1985-2010



Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix).

Figure 21: The Share of Business Lines in the Overseas Parent APE 1985-2010

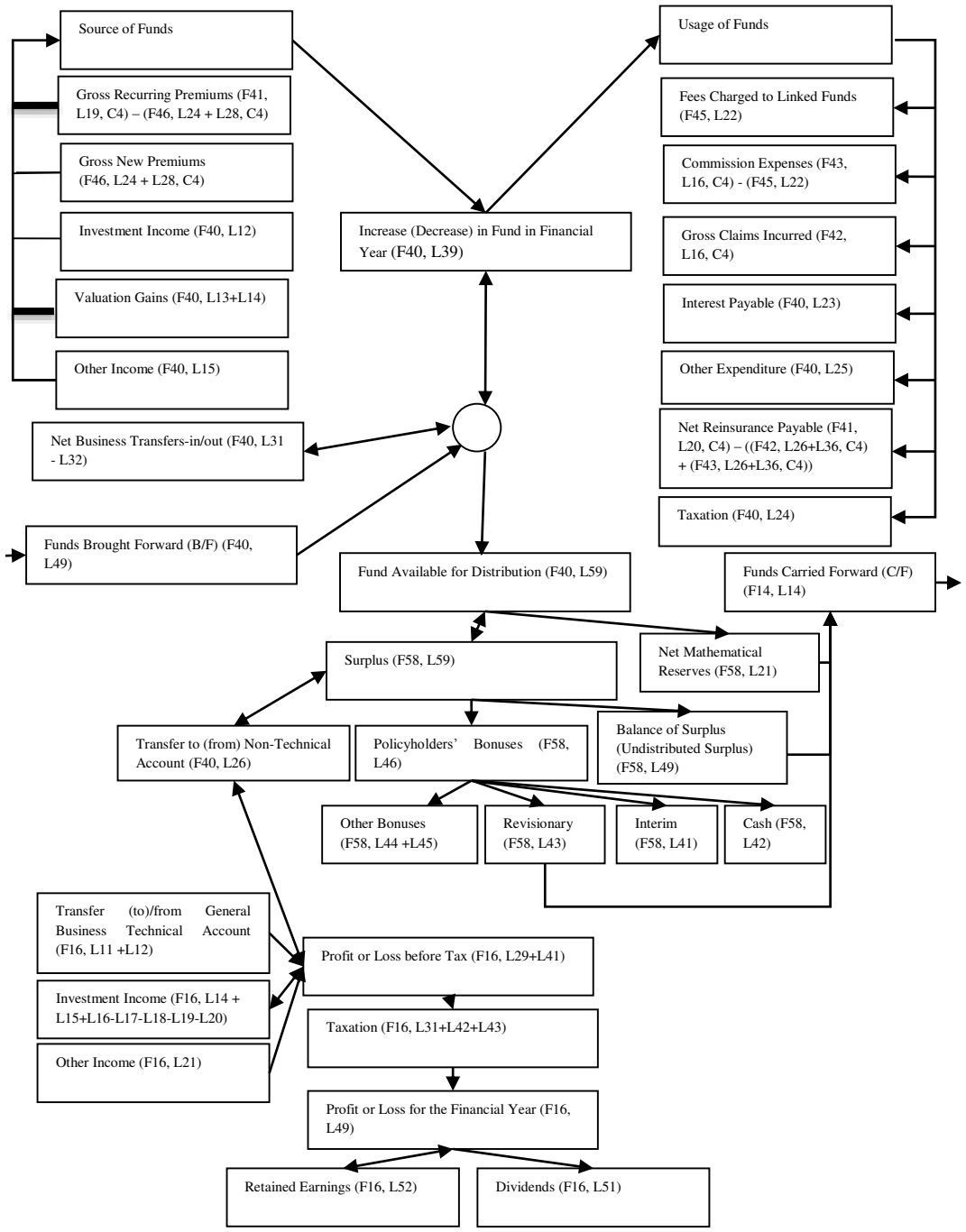


Source: the author — Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%), UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. With-Profits (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG. Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG (see Tables 29 and 31 in Appendix).

2.5. The Flow of Funds, Assets and Liabilities

The flow of funds is constructed to analyse the funds cycle in the life insurance business and link this cycle to capital structure. Analysing the flow of funds as well as capital structure over the period 1985-2010, gives the opportunity to analyse changes in funds cycle and capital structure of the UK life insurers. The flow of funds, as shown in Figure 22, can be subdivided into two main accounts; the policyholders' account (technical account) and the shareholders' account (non-technical account). For the proprietary life insurers, these two accounts are connected through transfer of funds from the technical account to non-technical account and vice versa. Moreover, assets and liabilities related to shareholders and policyholders in the life insurance business shown in Figure 23 and Table 3.

Figure 22: The Flow of Funds Account



Source: author.

Table 3: The Flow of Funds Account

£(m)	Line	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985
Gross New Premiums (F46, L24+ L28; C4)	1	44%	45%	147%	49%	45%	39%	43%	41%	94%	58%	44%	37%	31%	28%	29%	24%	43%	25%	33%	28%	43%	25%	28%	34%	28%	25%
Gross Recurring Premiums (F41, L19; C4) - (F46, L24+ L28; C4)	2	11%	10%	74%	30%	28%	11%	14%	13%	30%	19%	14%	13%	12%	14%	20%	24%	39%	25%	27%	27%	43%	25%	28%	28%	25%	31%
Investment Income % Total Source of Funds (F40, L12)	3	15%	15%	62%	15%	15%	13%	16%	15%	35%	20%	14%	14%	14%	16%	22%	22%	30%	15%	21%	21%	35%	20%	25%	24%	22%	26%
Valuation Gains % Total Source of Funds (F40, L13+L14)	4	29%	29%	-187%	5%	11%	30%	15%	19%	-80%	-32%	3%	25%	29%	28%	14%	24%	-17%	31%	16%	15%	-23%	24%	16%	10%	20%	13%
Other Income % Total Source of Funds (F40, L15)	5	1%	1%	4%	1%	1%	7%	12%	12%	21%	34%	25%	10%	14%	14%	15%	6%	5%	4%	3%	9%	2%	5%	3%	3%	5%	5%
Total Source of Funds (1+2+3+4+5)	6	293972	315957	91741	369942	342524	382195	298993	301666	130342	214343	313604	300475	294531	239698	178627	163792	104293	199578	141365	138039	79899	131021	92472	86687	91321	73183
Fees Charged to Linked Funds %Total Usage of Funds (F45, L22)	7	2%	2%	1%	1%	1%	2%	1%	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	2%	1%	1%	1%
Commission Expenses %Total Usage of Fund (F43, L16;C4) - (F45, L22)	8	4%	4%	4%	4%	5%	6%	7%	8%	10%	9%	8%	12%	11%	12%	14%	15%	15%	15%	18%	19%	21%	22%	22%	21%	19%	20%
Gross Claims Incurred %Total Usage of Fund (F42, L16;C4)	9	89%	86%	85%	84%	76%	91%	71%	77%	78%	71%	64%	74%	72%	74%	77%	74%	67%	62%	67%	62%	66%	67%	68%	74%	67%	69%
Interest Payable %Total Usage of Fund (F40, L22)	10	1%	1%	1%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	1%	1%	1%	2%
Other Expenditure %Total Usage of Fund (F40, L25)	11	1%	1%	0.5%	0%	0%	1%	4%	5%	1%	9%	18%	1%	1%	2%	1%	2%	2%	8%	1%	11%	3%	2%	3%	-6%	5%	1%
Net Reinsurance Payable %Total Usage of Fund	12	3%	6%	8%	9%	15%	-2%	15%	8%	10%	9%	6%	8%	9%	6%	2%	3%	11%	10%	10%	4%	5%	4%	2%	5%	4%	4%
Taxation % Total Usage of Fund (F40, L24)	13	1%	1%	-0.5%	1%	1%	2%	1%	1%	-1%	0%	2%	3%	4%	4%	4%	3%	2%	3%	2%	2%	2%	3%	2%	3%	3%	3%
Total Usage of Funds (7+8+9+10+11+12+13)	14	209014	223972	263477	272384	253274	203490	197154	186501	168053	190353	189060	129539	119715	103862	85630	78960	83792	90599	74811	72556	63390	58605	52419	47691	48402	39270
Increase (Decrease) in Fund in Financial Year (6-14)	15	84959	91984	-171736	97558	89250	178705	101839	115164	-37710	23989	124544	170936	174815	135836	92997	84832	20501	108979	66554	65483	16509	72416	40053	38996	42919	33914
Funds Brought Forward (B/F) (F40, L49)	16	1207067	1143378	1351320	1317233	1308713	1153401	1095930	1017636	1100490	1145626	1061150	921731	783181	678735	627947	566727	561958	466797	413522	369430	384619	333653	305550	283983	247907	203508
Net Business Transfers in/out (15+16-18)	17	-35609	-24823	-34931	-57980	-75301	-20255	-44256	-37595	-45658	-66825	-38170	-30725	-35642	-30812	-41504	-22131	-13985	-12433	-12546	-20045	-30482	-20331	-11079	-16467	-5972	11226
Total Funds Available for Distribution (F40, L59)	18	1256417	1210540	1144653	1356811	1322661	1311852	1153513	1095206	1017121	1102790	1147524	1061943	922355	783759	679440	629428	568473	563343	467531	414868	370646	385739	334524	306513	284853	248648
Mathematical Reserves %Total Funds Available for Distribution (F58, L21)	19	98%	98%	98%	98%	98%	98%	98%	98%	98%	97%	97%	97%	97%	97%	96%	96%	96%	96%	95%	95%	94%	94%	94%	94%	94%	94%
Surplus % Total Funds Available for Distribution (F58, L59)	20	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	4%	4%	4%	4%	5%	5%	6%	6%	6%	6%	6%	6%
Undistributed Surplus (F58, L49) **% Surplus**	21	50%	46%	38%	33%	39%	50%	58%	55%	31%	27%	23%	26%	24%	25%	22%	15%	15%	14%	14%	13%	13%	16%	17%	15%	17%	16%
Policyholders' Bonuses (F58, L46) **% Surplus**	22	36%	36%	56%	45%	39%	36%	41%	48%	71%	66%	72%	71%	74%	73%	75%	78%	77%	80%	83%	80%	81%	78%	79%	79%	77%	79%
Transfer to (from) Non-Technical Account (F40, L26) **% Surplus**	23	14%	18%	6%	22%	22%	14%	1%	-3%	-2%	7%	6%	3%	2%	2%	3%	6%	8%	6%	3%	6%	6%	5%	5%	6%	6%	5%
Funds Carried Forward (C/F) (F58, L15)	24	1253562	1207067	1143378	1351320	1317233	1308713	1153401	1095930	1017636	1100490	1145626	1061150	921731	783181	678735	627947	566727	561958	466797	413522	369430	384619	333653	305550	283983	247907

Source: the author.

The technical account, as shown in Figure 22 and Table 3, illustrates the source of funds, namely, premiums[28] (are subdivided into new premiums and recurring premiums), investment income[29] (subdivided into investment income (realised gain) and valuation gain (unrealised gain[30])) and other income[31], and the usage of funds, namely, claims[32], expense payable[33] (is subdivided in fees charged to linked funds and commissions), net reinsurance payable[34] and other expense[35] and the distributions of funds, namely, mathematical reserves[36] and surplus; the surplus is distributed to with-profits policyholders' bonuses, undistributed surplus and

[28] It is defined as considerations made by policyholders into their policies. It is subdivided into a single premium (a single lump sum) or a regular premium (regular payment at fixed interval usually monthly) or a recurrent single premium (additional payments made by policyholders on a non-contractual basis). The FSA defines single premiums as premiums under contracts insurance when there is no expectation of continuing premiums being paid at regular intervals, additional single premiums paid in respect of existing individual contracts and national insurance rebate received from the department of work and pensions (FSA, 2008). Furthermore, the FSA states that a premium is considered to be regular premiums if it one of a series of payments under the contract: (1) Which are payable over a period that exceed one year in length and dates of payments are certain or ascertainable at the time the contract is made, with the assumption that the contract is not surrendered. (2) or Which the first payment is obligatory and subsequent payments, calculated according to an agreed formula, are payable over a period that exceeds one year in length (FSA, 2010a).

[29] This income is generated from investing policyholders' assets (realised gain). It consists of cash items (interests or dividends) and non-cash items (unrealised gain) (capital gain and loss on revaluation of invested assets).

[30] Life insurers are required to do statutory solvency valuation for assets and liabilities; the market value of assets is matched to the present value of future claims, suggesting an increase / decrease in the market value of the assets, which is also called valuation gain and loss, is fundamental part of the value of the assets to match the value of the liabilities, and, hence, valuation gain and loss (unrealised gain) can be considered as source of funds for life insurers. Furthermore, the value of assets and liabilities is linked together in the linked funds, suggesting an increase in the value of assets will lead to increase in the value of policyholders' benefits, and, hence, insurers' liabilities.

[31] Consist of all incomes other than investment incomes and premiums, such as management fees, surrender charges earned, etc. (Canada Life Limited, 2010).

[32] It is defined as a claim against an insurer under a contract of insurance. It is subdivided into five categories, namely, death or disability lump sums, disability periodic payments, surrender or partial surrender and annuity payments and lump sums on maturity.

[33] Expense is subdivided into acquisition and maintenance. The acquisition expense includes commissions paid to the IFA (FSA, 2007; 2008; 2010a), and expense paid to the AR/CR (FSA, 2008). The maintenance expense is consistent of management non-acquisition expense and other expense that is consist of a nonrecurring nature expense, such as those incurred in developing new systems or new premises or the costs of corporate restructuring (FSA, 2008).

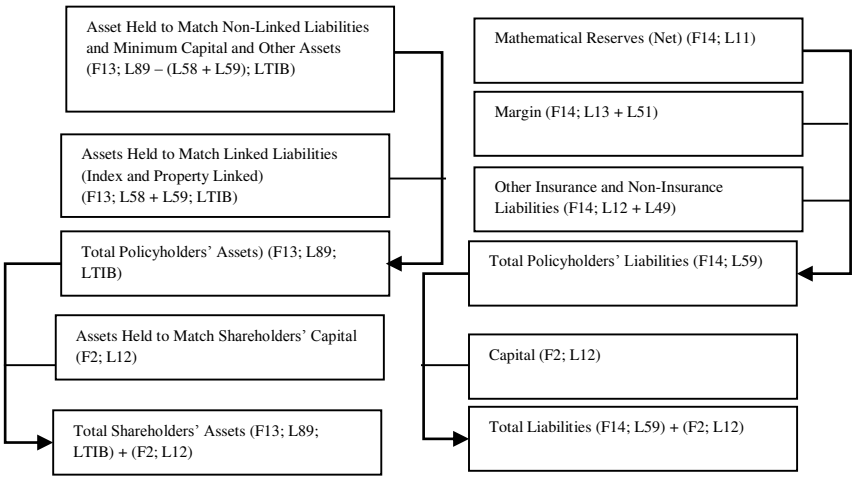
[34] It is reinsurance premiums paid to reinsurers less the amount received from reinsurers with respect to claims and expense.

[35] Consist of all expenses other than claims and expense payable, such as bad debt provisions (Canada Life Limited, 2010).

[36] Mathematical reserves are established on the basis of gross premiums, which represent the total risk borne by life insurers with respect to a financial year. However, life insurers usually transfer part of their risks to a reinsurer, the reinsurance share in the mathematical reserves, which represent the risk transferred to a reinsurer, is deducted for the total mathematical reserves to give the amount that an insurer must established to meet the future policyholders' benefits (FSA, 2010b).

surplus transferred to non-technical account. As for nontechnical accounts, it is similar to the Income statement.

Figure 23: Assets and Liabilities in the Life Insurance Business



Source: the author.

Table 4: Assets and Liabilities in the Life Insurance Business

£(m)	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985
Asset Held to Match Non-Linked Liabilities and Minimum Capital (F13; L89 – (L58 + L59); LTIB)	39%	40%	43%	41%	45%	48%	53%	56%	61%	60%	60%	61%	65%	68%	68%	69%	70%	71%	73%	74%	75%	74%	75%	75%	75%	77%
Assets Held to Match Linked Liabilities (F13; L58 + L59; LTIB)	61%	60%	57%	59%	55%	52%	47%	44%	39%	40%	40%	39%	35%	32%	32%	31%	30%	29%	27%	26%	25%	26%	25%	25%	25%	23%
Total Policyholders' Assets (£m) (F13; L89; LTIB)	1378547	1316858	1242998	1492914	1460741	1434243	1236981	1161848	1063148	1180891	1271278	1227118	1048226	908695	784059	726238	639176	668445	536417	473481	428405	492991	420343	387686	372360	315641
Total Shareholders' Assets (F2; L12)	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0.5%	0.4%	0.3%	0.4%	0.4%	0.4%	0.3%
Total Assets (Policyholders' and Shareholders' Assets)% Policyholders' Assets (F13; L89; LTIB) + (F2; L12)) / (F13; L89; LTIB)	102%	102%	102%	102%	102%	102%	102%	102%	102%	101%	101%	101%	101%	101%	101%	101%	101%	101%	101%	100%	100%	100%	100%	100%	100%	100%
Other Insurance and Non-Insurance Liabilities (F14; L12 + L49)	5%	5%	6%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	4%	4%	3%	4%	3%	3%	4%	5%	4%	5%	5%	5%	5%
Margin (F14; L13 + L51)	5%	5%	4%	7%	8%	7%	6%	5%	3%	6%	9%	13%	11%	13%	13%	13%	11%	16%	13%	13%	14%	22%	20%	20%	23%	21%
Mathematical Reserves (F14; L11)	90%	90%	90%	89%	89%	90%	91%	92%	93%	91%	88%	84%	85%	83%	83%	83%	85%	81%	83%	83%	82%	74%	75%	75%	72%	74%
With-profits % Mathematical Reserves (F50; L41, C4)	8%	9%	10%	10%	11%	12%	14%	15%	18%	19%	19%	20%	24%	25%	27%	43%	44%	42%	45%	45%	46%	43%	45%	44%	43%	45%
Non-profit % Mathematical Reserves (F50; L42, C4)	12%	11%	12%	11%	11%	13%	14%	14%	15%	13%	13%	13%	15%	15%	15%	18%	18%	19%	20%	20%	21%	20%	21%	21%	22%	23%
Accumulative With-Profits % Mathematical Reserves (F50; L43, C4)	12%	14%	15%	13%	15%	17%	20%	22%	24%	23%	21%	20%	19%	19%	19%											
Property Linked %Mathematical Reserves (F50; L44 + L45, C4)	66%	65%	61%	64%	61%	56%	50%	46%	41%	43%	45%	44%	40%	38%	37%	40%	38%	38%	35%	34%	33%	37%	34%	35%	35%	32%
Index Linked %Mathematical Reserves (F50; L46 + L47, C4)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%											
Total Policyholders' Liabilities (£m) (F14; L59)	1378547	1316858	1242998	1492914	1460741	1434243	1236981	1161848	1063148	1180891	1271278	1227118	1048226	908695	784059	726238	639176	668445	536417	473481	428405	492991	420343	387686	372360	315641
Shareholders' Capital (F2; L12)	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0.5%	0.4%	0.3%	0.4%	0.4%	0.4%	0.3%
Total Policyholders' Liabilities and Shareholders' Capital)% Total Policyholders' Liabilities ((F14; L59) + (F2; L12)) / (F14; L59)	102%	102%	102%	102%	102%	102%	102%	102%	102%	101%	101%	101%	101%	101%	101%	101%	101%	101%	101%	100%	100%	100%	100%	100%	100%	100%
Capital Resources (F14; L13 + L51) + (F2; L12)	7%	7%	6%	9%	10%	9%	7%	7%	5%	7%	10%	14%	12%	14%	14%	14%	12%	16%	14%	14%	14%	22%	21%	21%	23%	21%
Capital Requirements (F2; L40)	4%	4%	3%	5%	6%	6%	5%	3%	3%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Free Assets (F14; L13 + L51) + (F2; L12) – (F2; L40)	3%	3%	3%	4%	4%	3%	3%	3%	2%	4%	6%	10%	8%	10%	10%	11%	9%	14%	11%	10%	11%	19%	18%	17%	20%	18%

Source: the author.

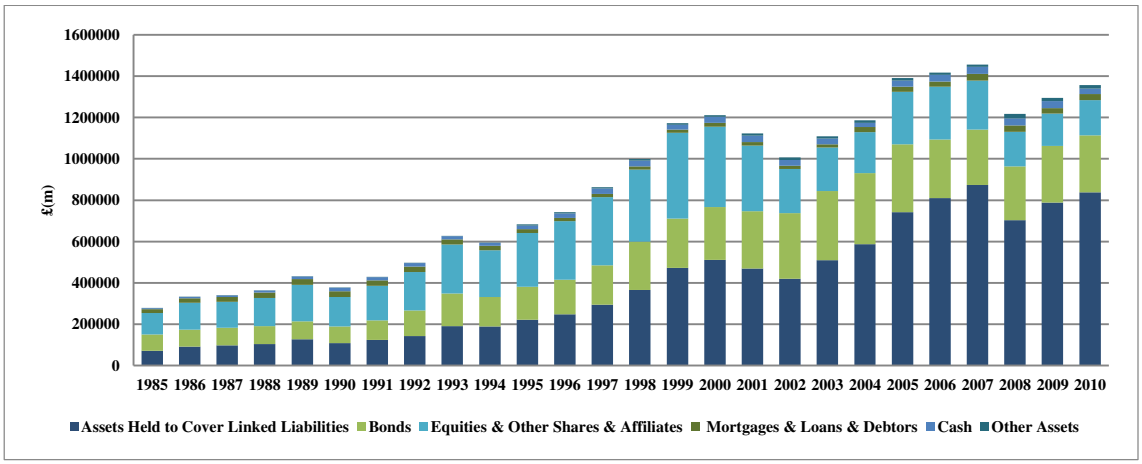
Figure 23 and Table 4 show assets and liabilities related to policyholders and shareholders (for proprietary life insurers). Mathematical reserves and backing assets[37] are the main assets and liabilities[38] related to policyholders, while assets and liabilities related to shareholders are similar to the Statement of Financial Position's items.

The detailed analysis of flow of funds and assets and liabilities of the UK life insurers over the period 1985-2010 as shown in Table 32 in Appendix demonstrates that:

The composition of policyholders' assets — Most of policyholders' assets are invested in linked funds; the amount of linked assets exceeded 60% of total admissible assets in 2010. The proportion of linked assets (mainly property linked) increased substantially over the period; it went up from 23% (£72 billion) in 1985 to 61% (£841 billion) in 2010. Furthermore, the proportion of assets invested in bonds remained constant over the period at about 20%, whereas the proportion of assets invested in shares fell considerable over the period 1985-2010; it decreased from 33% (1985) to only 12% in 2010 as shown in Figure 24. This result suggests transformation from with-profits products to unit-linked products may play a role in shifting investment portfolio composition of the UK life insurers. Given that regulatory investment policies of life insurers vary across life assurance products, changing in product portfolio composition, and, hence, related regulatory requirements may influence changes in investment portfolio composition. This result is consistent with Henebry's and Diamond's (1998) findings concerning the relationship between regulatory requirements and the investment portfolio composition of life insurers.

[37] Backing policyholders' liabilities and the minimum capital requirements.
[38] Consists of predominantly mathematical reserves; however, there are other liabilities such as deposit received from reinsurers, claims outstanding, provisions, etc.

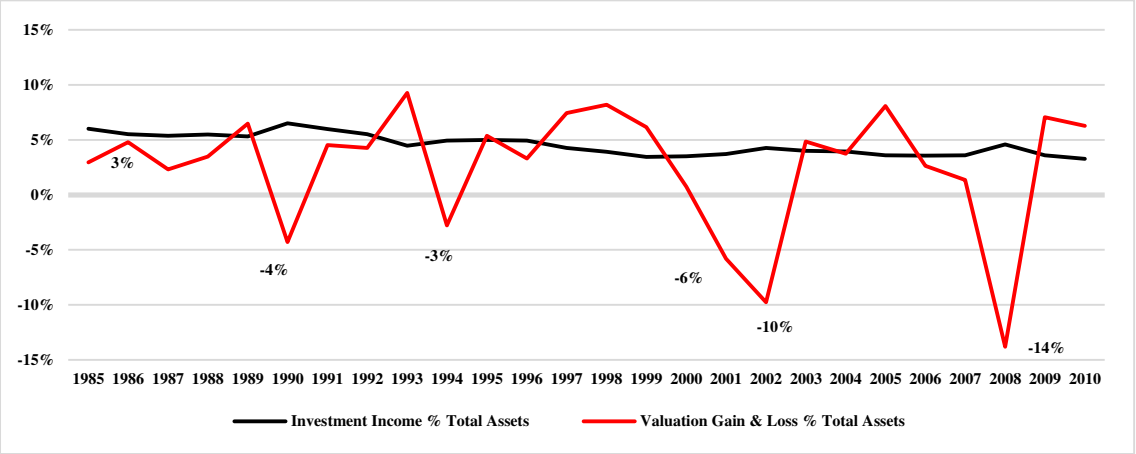
Figure 24: The Composition of Policyholders' Assets 1985-2010



Source: the author — Assets Held to Cover Linked Liabilities (F13; L58 + L59; LTIB), Bonds (F13; L45, L46, L47 + L48; LTIB), Equities and Other Shares and Affiliates (F13; L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L41, L42 + L43; LTIB), Mortgages and Loans and Debtors (F13; L50, L51, L52 + L53; LTIB), Cash (F13; L54, L55, L57, L81 + L82; LTIB) and Other Assets (F13, L11 L44; L49, L56, L60, L61, L62, L63, L80 + L83; LTIB).

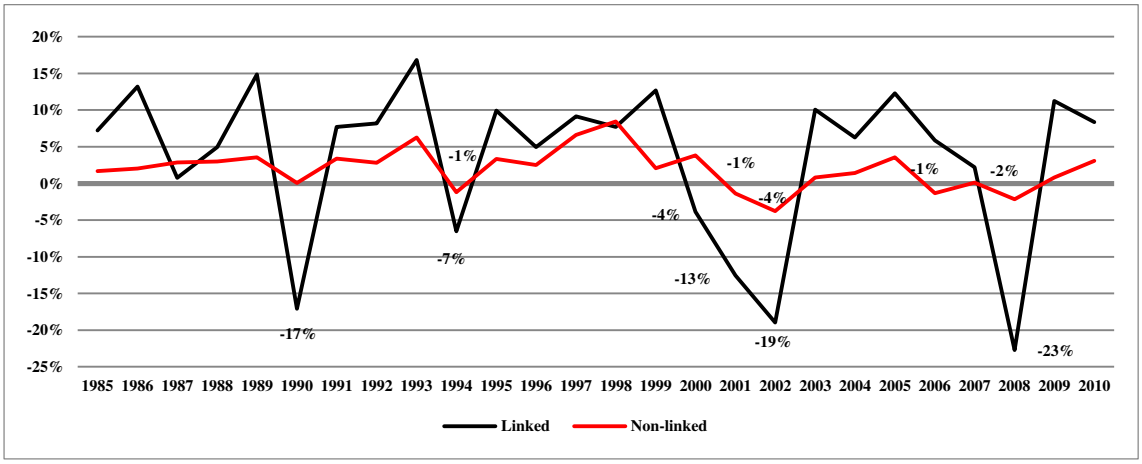
The cyclical fluctuation in the value of policyholders' assets — The value of policyholders' assets fluctuated cyclically over the period 1985-2010. Moreover, the amount of loss on revaluation (unrealised gain) of policyholders' assets increased dramatically over the period 1985-2010 (see Table 32 in Appendix). For instance, the amount of loss on revaluation (unrealised gain) of policyholders' assets was £-18 billion (-4% of total assets) in 1990 compared to £-104 billion (-10% of total assets) in 2002 and £-171 billion (-14% of total assets) in 2008. Most of valuation losses related to linked assets, for instance, in 2008, the valuation loss in the value of linked assets was £-160 billion (23% of the value of linked assets) compared to only £-11 billion (-2% of the value of non-linked assets) as shown in Figure 25. These massive losses (unrealised gain) in value of policyholders' assets raise the question of whether the UK life insurers create value for policyholders. Furthermore, the ratio of investment income (realised gain only) to policyholders' assets fell considerable over the period 1985-2010. It went down from 6% (1985) to only 3% in 2010. This downward trend can be related to the fact that the UK life insurance industry has experienced the lowest rates of interest since the mid of 1990s.

Figure 25: Valuation Gain and Investment Income and Loss as % of Policyholders' Assets 1985-2010



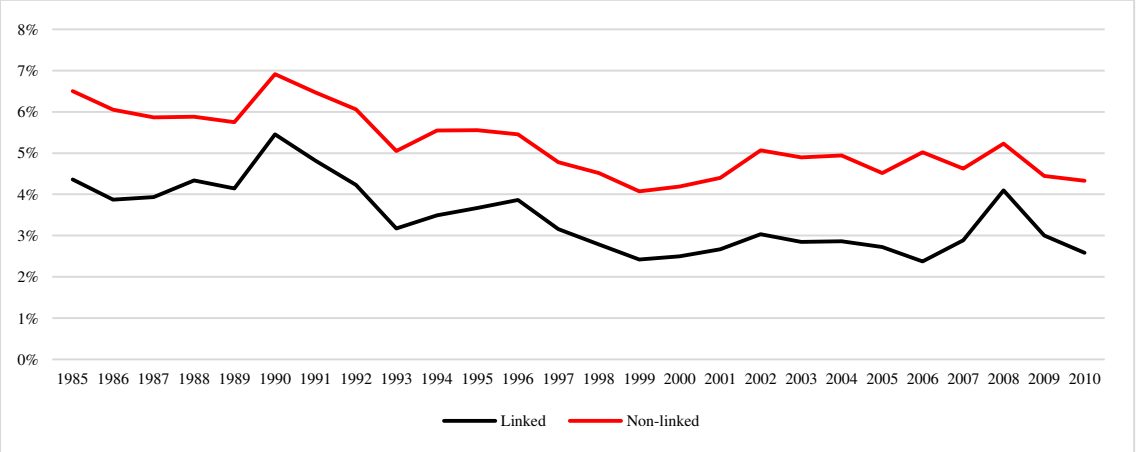
Source: the author — Investment Income (F40; L12) / (F13; L89; LTIB) and Valuation Gain (F40; L13+L14) / (F13; L89; LTIB).

Figure 26: Valuation Gain and Loss as % of Policyholders' Assets Subdivided into Linked and Non-Linked Assets 1985-2010



Source: the author — Linked (F45; L13) or (F40; L14) / (F13; L58+L59; LTIB) and Non-Linked (F40; L13) / (F13; L89-(L58+L59); LTIB).

Figure 27: Investment Income as % of Policyholders' Assets Subdivided into Linked and Non-Linked Assets 1985-2010



Source: the author — Linked (F45; L12) / (F13; L58+L59; LTIB) and Non-linked ((F40; L12) - (F45; L12)) / (F13; L89-(L58+L59); LTIB).

The analysis of valuation gain (unrealised gain) and investment income (realised gain) for linked and non-linked assets as shown in Figures 24 and 27 shows that linked assets are more sensitive to market shocks such as 1990, 1994, 2001, 2002 and 2008 compared to non-linked assets. Furthermore, linked assets on average have lower investment yield (realised gain) than non-linked but higher valuation gain and loss (unrealised gain). Therefore, it can be concluded transferring investment risks to policyholders has effects on insurers' investment strategies; they are now focus on assets that can generate higher growth (unrealised gain) such as shares and property compared to traditional secure investment in bonds to achieve investment yield (realised gain). However, changing in investment strategies comes with costs as these assets seem to generate less investment yield (realised gain) and are more sensitive to market shocks.

The claims are mainly paid in form of surrender[39] and partial[40] surrender claims— The amount of surrender and partial surrender claims increased dramatically over the period 1985-2010. It accounted to almost three quarters of total claims[41] in 2010 (£136 billion) compared to only about half of claims paid in 1985 (£14 billion).

The premiums are the main source of funds — Premiums are the major source of funds for the industry, suggesting the industry is still growing and attracting new premiums.

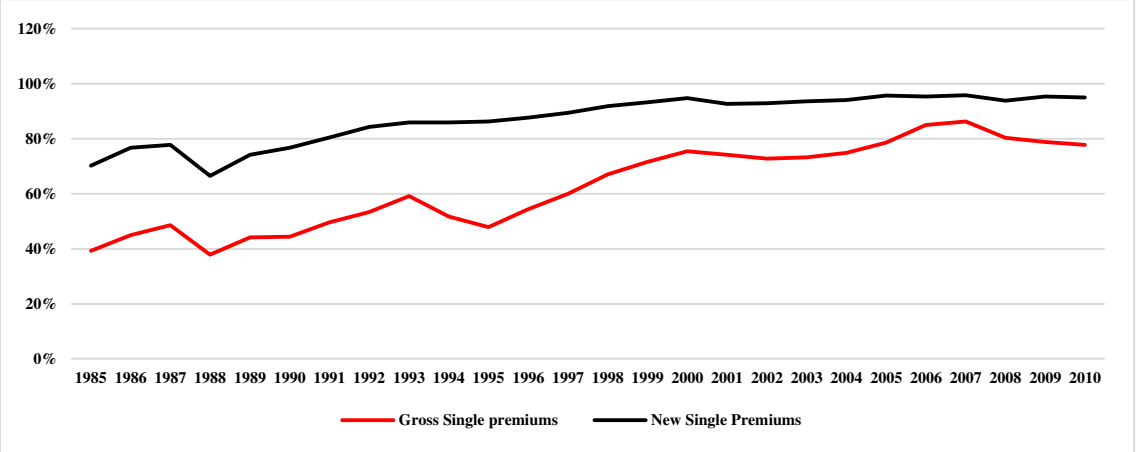
[39] The surrender is the situation at which a policyholder has withdrawn from long-term commitments before his / her contract has expired, and has consequently received a surrender value, that represents poor value for money as it is determined at the discretion of the life insurers. The surrender value is : (1) The amount payable by the life insurer issuing the contract on surrender of the policy, where the contract is a contract of life assurance or a contract for an annuity. (2) The amount payable on the transfer of the investor's accrued rights under that contract to another personal pension scheme or stakeholder pension scheme, where the contract is a personal pension scheme or stakeholder pension scheme. (3) The amount payable by the firm on surrender or before the projection date for the policy; where the contract is a Holloway sickness policy. (4) The amount payable by the firm on the surrender of the policy where the contract is for any other matter (FSA, 2010a). However, the FSA requires insurers to include lump sums on maturity claims paid to other insurers as part of the surrender and partial surrenders claims (FSA, 2010a).

[40] Partial surrender is the removal of a portion of the original cash balance of an insurance policy or annuity.

[41] Gross claims are subdivided into net claims and reinsurance claims. Net claims are the amount of gross claims less reinsurance claims recovered from reinsurers.

Furthermore, it seems single premium products are the main source of premiums for life insurers as shown in Figure 28.

Figure 28: New Single Premiums and Gross single Premiums 1985-2010



Source: the author — Gross Single Premiums (F 41, L12; C4) and New Single Premiums (F 46, L28; C4).

The expense distribution among segments —The amount of expense related to the pension segment was almost equal to the life segment. However, during the period 2005-2010 for which the spreadable data for expense in each segment has become available, the proportion of new premiums, gross premiums and net mathematical reserves related to the life segment was less than 20% compared to about 80% for the pension segments. Furthermore, the expense related to life and pension segments as % of premiums relate to each segment, respectively, showed that average expense to premiums for the life segment over the period 2005-2010 was 17% compare to 4% for the pension segment. This raises the question of whether the life and pension segments are equally efficient.

The size — There has been a considerable increase in the average size of the UK life insurers measured using gross premiums or total admissible assets (Armitage and Kirk, 1994; Genetay, 1999; Hardwick and Letza, 2000; Letza, Hardwick and Kowalski, 2001). The average sample size measured using gross premiums was £1,122 million in 2010 compared to £179 million in 1985. Similarly, the average sample size measured using admissible assets increased from

£1,378 million in 1985 to £9,640 million in 2010. This may be partially related to waves of consolidation in the UK life insurance industry over the period 1985-2010 (Carter and Falush, 2009), for instance, the number of life insurers regulated by the FSA fell from 229 in 1985 to 143 in 2010.

The reinsurance dependency — There has been a considerable increase in the number of reinsurance transactions measured using premiums ceded. More fundamentally, most of the reinsurance transactions in the UK life insurance market can be considered as inter-group[42] as shown for the period for which separable data for external and inter-group reinsurance has become available (2005-2010). For instance, the proportion of reinsurance premiums in gross premiums has increased considerable over the period, it went up from 7% (£3 billion) in 1985 to 20% (£33 billion) 2010. Furthermore, the proportion of inter-group reinsurance premiums paid to total reinsurance premiums was about 70% over the period 2005-2010.

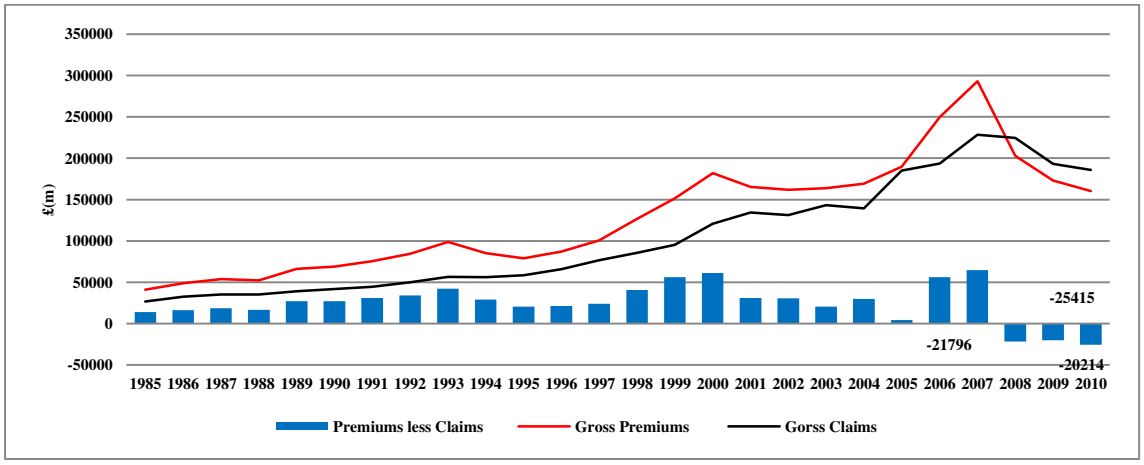
The use of derivatives— There has been a considerable increase in the amount of assets and liabilities under derivative contracts; the amount of assets under the derivative contracts for British life insurers in 2010 was £8,288 million (0.6% of admissible assets) compared to only

[42] Reinsurance is regarded as a method whereby an insurer transfers part of its insurance risks to anther insurer (Berger, Cummins and Tennyson, 1992). The reinsurance transaction can be either within insurance groups (inter-group reinsurance) or with external reinsurers (external reinsurance). Mayers and Smith (1990) argued that reinsurance transaction within insurance groups has many advantages compared to external reinsurance. (1) It allows the affiliated insurers to transfer profits within the group, allowing recognition of profits so that group taxes are reduced. (2) It provides the affiliated insurers by mechanism for lowering expected bankruptcy costs through pooling. (3) It facilitates intra-firm specialization in investment management, for firms with subsidiaries, asset control is maintained by the parent company while regulatory requirements are met by the subsidiary through reinsurance with the parent company, the assets ultimately backing the policy sold by a subsidiary appear on the parent's, not the subsidiary's balance sheet. However, empirically evidence suggests that adverse section and moral hard exist in inter-group reinsurance transactions (Adams and Diacon, 2006), whereas captive insurance was found to have no effects on systematic and unsystematic financial risks (Adams and Hillier, 2000). In the UK, the FSA proposed to change the reporting of reinsurance, which was not split between intra-group and external reinsurers. They proposed by CP202 to split the reinsurance between external and intra-group to '*facilitate analysis of the more complex groups of insurance firms. In cases where there is significant intra-group reinsurance the split of premiums, expenses, new business and in force business is needed to allow us to calculate group ratios. It will also make it easier for us and external users to identify potential risks from intra-group reinsurance*' (FSA, 2003a).

£39 million in 1985. In 2010, one third of the UK life insurers that had either obligation (liabilities) or right (assets) under derivative contracts compared to only 5% in 1985. Moreover, the proportion of proprietary life insurers that have had either obligation (liabilities) or right (assets) under derivative contracts increased considerable over the period to exceed 40%, whereas the proportion of mutual life insurers with either obligation (liabilities) or right (assets) under derivative contracts levelled off at 20% over the period. This evidence is inconsistent with the findings of Hardwick and Adams (1999) that suggested that mutual life insurers had a greater propensity to use derivatives than proprietary life insurance firms. This can be related to the fact that mutual life insurers are more risk-averse (Smith and Stutzer, 1990; Lamm-Tennant and Starks, 1993) as well as they have limited access to capital market to deal with adverse economic conditions (Hardwick and Adams, 1999), and, hence, they are more likely to actively use derivative instruments as a risk management tool (Hardwick and Adams, 1999).

The premiums less claims — The amount of gross premiums were less than gross claims for the first time in 2008, 2009 and 2010 as shown in Figure 29.

Figure 29: Premiums and Claims for the UK Life Insurers 1985-2010



Source: the author — Premium (F 41, L19; C4) and Claims (F 42, L16; C4).

Surplus — There has been considerable increased in the amount of surpluses transferred to non-technical account of proprietary life insurers (see Table 32 in Appendix). It went up from

£677 million in 1985 to £3,593 million in 2010. Similarly, the amount of fees charged to linked funds increased from £245 million in 1985 to £3,451 million in 2010. Furthermore, in 2008 property life insurers transferred £3,472 million to non-technical account compared to £2,568 million transferred from non-technical account (net transferred to non-technical account £904 million). This shows that the industry has managed to deliver value for shareholders despite the financial turmoil. In contrast, 14% of admissible assets (23% of linked assets and 2% of non-linked assets) written off as valuation losses, while the £3,694 million were charged to linked funds as management fees. This suggests the proprietary life insurers were able to make profit despite the dramatic decline in the value of assets under management (23% of the value of linked funds). These raise the question of whether the transformation from the participation life insurance business (with-profits) to the unit-linked business has made proprietary life insurers more profitable.

2.6. Conclusion

This chapter presents the latest developments in the UK life insurance market regarding macroeconomic and regulatory environments, products, segments and ownership structures. This chapter also provides detailed analysis concerning regulatory returns and sample. It also employs ratio and trend analyses to assess the performance of the UK life insurers with respect to investment performance, cash flow and hedging strategies over the period 1985-2010.

It is found that proprietary life insurers regarding ownership, the unit-linked business with respect to products and the pension concerning segmental issues have dominated the UK life insurance market. This change in product structures comes as a response to the changes in the external environment, in particular unparalleled fall in interest rates. The change in market conditions led to many with-profits insurers, in particular mutual, to close to new business and changes in ownership structures in terms of demutualisation, consolidation with other mutual

insurers and the acquisition of mutual insurers by proprietary counterparts. This leads to having predominantly proprietary life insurance industry compared to almost equality controlled industry by mutual and proprietary life insurers in 1980s. It also sees that proprietary life insurers have managed to deal with adverse effects of changes in economic conditions through focusing on less capital intensive products, such as unit-linked products. The analysis of the market trend shows that banks and other financial and non-financial groups as well as foreign groups enter the UK life assurance market through unit-linked products as well as non-profit products, suggesting that these firms focus on standardised and less capital intensive products. In contrast, the UK life insurers still write substantial part of their overseas business in terms of with-profits products.

The analysis is also shows that the UK life insurers have experienced some common features during the period financial turmoil, such as sharp drop in the value of linked assets, increase in proportion of claims paid in terms of surrender or partial surrender claims and excess in the amount of claims over premiums. The trend analysis shows that the amount of valuation losses (unrealised gain) increased in line with the increase in the proportion of assets invested in linked funds. In contrast, it seems that transformation from the participation business to the unit-linked business has enhanced profitability of proprietary life insurers.

3. Chapter 3: Does Saving-Investment Create Value for the Savers? – a Case of the UK Life Insurance Firms

3.1. Introduction

Valuation is one of the central issues in corporate performance assessment. There are many valuation techniques in identifying business value to indicate the performance of a firm from different perspectives. The EVA is one example of a financial accounting technique that has been widely applied to evaluate the financial performance of firms in using capital invested by shareholders. In contrast, to evaluate funds managed by investment management firms from a policyholder's perspective, such as life insurance companies and asset management firms, the current accounting techniques have not advanced to the same extent as methods designed to evaluate investment from a shareholder's perspective, due partly to the accounting complexity of the investment management. This makes a difficulty in judging the performance of the investment firms in managing policyholders' assets. For instance, how does the UK life insurance industry perform? Does its saving products or investments create value for the policyholders? In 2008, the reported value[43] of total assets owned by the UK policyholders was £1,243 billion, £250 billion lower than its value in 2007 (£1,493 billion). Similarly, the value

[43] Ernst & Young (2011) found that *'insurers who are predominantly active in continental Europe and the US market classify more than 60% of their investments* (other than unit-linked assets) *as available for sale'*(Ernst & Young 2011, p.7). This suggests that these non-linked assets (only about 40% of the UK insurers' assets in 2010) must be valued using current prices and must have an active market (IASB, 1999; 2009), whereas less than 40% of non-linked assets are valued using other methods such as fair value through comprehensive income (IASB, 1999; 2009) or amortised cost (IASB, 1999; 2009) (such discounted cash flow, Bowie, 2004). Given that unit-linked assets (60% of the UK insurer assets in 2010) are valued using current prices (market value). Therefore, it is reasonable to assume that the reported value of assets reflects the market value of assets. Indeed, in the UK, life insurers assets are valued as available for sale and trading, whereas liabilities are the present value of future claims against the assets (discounted using asset return) (Swiss Re, 2012b).

of policyholders' benefits (net mathematical reserves) fell by £209 billion in 2008 when compared to their value in 2007 (see Figure 30).

A change in the value of assets over time is commonly regarded as an indication of the creation or reduction of value for saving products invested by policyholders. This indication is measured, partly, by the amount of new additional cash generated from the returns on investment to the policyholders' assets over the period of time, and partly, by the market perception of the assets in terms of their cash worth at any point in time.

The generation of investment returns as a measurement of value creation has been applied by many studies looking at performance in the industry (Boose, 1993; Adams, 1996b; Browne, Carson and Hoyt, 2001; Adams and Buckle, 2003; Shiu, 2004; 2009; Elango, Ma and Pope, 2008; Liebenberg and Sommer, 2008). The measurement is effective in helping to reveal a considerable amount of information on the effort of management in searching for the best investment strategies to improve investment through higher yield. The incomes generated from investment contribute significantly to insurers' operating results and enables them to achieve competitive advantages by reducing premiums and increasing bonus payments to policyholders (Pesando, 1974; Oppenheimer and Schlarbaum, 1983; Smith, 1989; Boose, 1993; Cummins and Grace, 1994; Adams, 1996b).

The second measurement reflects the value of capital gains perceived by the market for the uses of policyholders' funds on investing in various assets that constitute the portfolio of the investment. The market value of policyholders' assets implies the amount of cash that the policyholders can receive if all of their invested assets are liquidated at a point in time. Furthermore, the market value of assets is a vital determinant of the solvency of the life insurance firm. If the value is higher than the amount of the liabilities taken by the business, technically called 'mathematical reserves', the firm is solvent; otherwise, if the value is lower

than the amount of the liabilities, unless the shareholders of the firm pump equity funds into the business, the firm is insolvent. Therefore, the value of assets determines the financial capability of the firm to serve its contractual commitment to the policyholders.

Although both the market perception of the worth and the cash flow generation are prevalent in asset valuation, the two measurements of value have a limit in revealing how much value has been meaningfully created for policyholders in terms of their financial and economic expectation to their invested funds. For instance, a comparison of market value of assets with that of the value of liabilities is commonly used as an indication of financial solvency of a life insurer. When these two values move in the same direction, as shown in Figure 30, the comparison can be misleading as regards an assessment of the financial performance of the firm. Furthermore, the measurement of a change in the value of assets over time can help indicate improvement in value creation but it cannot reveal more as to whether the improvement is sufficiently above policyholders' expectations. From the policyholders' perspective, this failure makes for a difficulty or ambiguity in explicitly answering questions such as whether the saving products create value for the policyholders. Quite often, value creation means the value grows incrementally over time but how this increment is meaningful for the policyholders remains unclear. Recently, there has been a significant increase in the popularity of the life insurance products by which the payouts are linked directly to the value of the underlying assets. As such this requires additionally a good understanding of value performance, which challenges this current valuation methodology and points the way for further research.

To address this need, it is argued that good valuation of the life insurance business shall combine all of the information regarding cash generation, market perception and policyholder

expectation of their invested funds. With this combined information embedded in the measurement, the valuation can be meaningful from the perspective of policyholders.

What is the expectation of a policyholder for its invested saving products? Does the expectation mean the fulfilment of the contractual commitment to investment returns and financial compensation in the event of the unexpected losses of the life? Are there any other expectations? Different policyholders may have different utility functions of investment and therefore their expectations can vary. The expectation for the contractual fulfilment is essential for every policyholder. The law protects this expectation, but a level of investment return is often unspecified or ambiguous in the contract, for example, the unit-linked contract, which depends on the market value of the particular invested assets. Obviously, the legal expectation cannot be equivalent or a proxy for the financial or economic expectation of a policyholder. For the latter expectation, it is argued that any risk-neutral policyholders will expect that the value of its saving shall remain at least constant in terms of the real wealth that the value presents. It is argued here, in this chapter, that this value shall be regarded as the basic economic value of the funds. Any value in excess of the basic economic value implies a gain in terms of wealth creation for the policyholders. The basic economic value is the basic expectation of the value of the policyholders for their invested funds.

In this chapter, to measure the basic expectation of value, the concept of the constant purchasing power of money is taken as an indication of real wealth to value the funds of the policyholders. On the basis of this idea, it is possible to evaluate the funds in real terms. This valuation provides a meaningful value measurement from the perspective of the policyholders. When this value, expected by the policyholders, is compared with the value perceived by the market, the discrepancy will indicate a change in real wealth for the policyholders, since the discrepancy reflects value creation or value losses against the basic economic value expected

by the policyholders. Informatively, the valuation on the basis of this comparative approach has an advantage since it combines information of both market perception and policyholders' expectation.

By applying this new valuation, it is identified that, overall, the UK life insurance firms have created value in total[44] of £11 billion per annum on average over the period from 2001 to 2010, when compared with the average value of £50 billion[45] created each year over the 1990s. Apparently, value creation relative to the basic expectation of the policyholders has dropped significantly over the last decade. This is due to the recent financial turmoil that has lowered the market-perceived value. For instance, the whole UK life industry lost £209 billion[46] of value relative to the policyholders' expectation in 2008. Such scale of value losses in a single year has never been seen in the history of the industry since 1985. This raises concern about the future of the industry for its capability in creating real value for the policyholders.

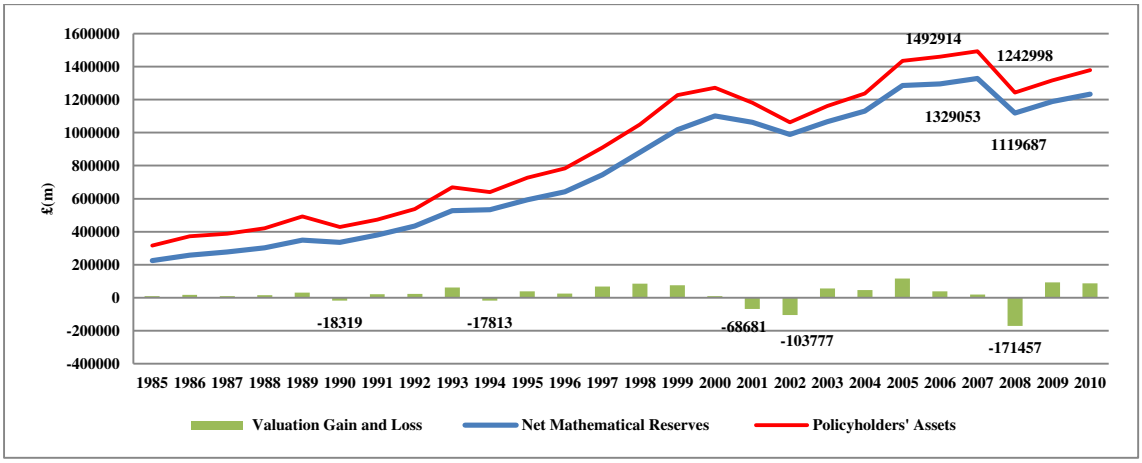
After the introduction of the value creation approach to measure life insurer performance from policyholders' perspective, the chapter moves further to look at how value creation is related to business strategies and performance from three broad perspectives: investment strategies, the performance of business growth and finance and risk-taking attitudes. It is found that a firm with higher value creation is likely to perform better in business growth and finance when compared with one that has lower value creation. The latter has a precautionary behaviour in the demand for more uses of liquid assets, and the reinsurance purchase in investing policyholders' funds.

The remainder of this chapter is organised as follows. Section 2 reviews the relevant literature. Section 3 discusses the theory and accounting calculation of value creation. Section 4 explains

[44] It is based on value creation in flow terms.
[45] It is based on value creation in flow terms.
[46] It is value creation in flow terms in 2008.

the data and sample. Section 5 applies the valuation methodology to assess value creation of the UK life insurance firms. Section 6 discusses how value creation is related to business strategies and performance. The final section summarises and concludes the findings of the chapter.

Figure 30: The Reported Value of Policyholders' Assets, Net Mathematical Reserves and Valuation Gain and Loss for the UK Life Insurers over 1985-2010



Source: the author — this is based on full sample (see Table 31 in Appendix): Valuation gain and loss (F4, L13+L14); Net mathematical reserves (F50, L48, C4) and Policyholders' assets (F13, L89; LTIB).

3.2. Existing Valuation of Savings Products

Valuing an investment or a firm requires stetting a benchmark, a discount rate, to reflect the time value of money, and, hence, using this rate to assess the performance of the firm or a particular investment. For instance, Miller and Modigliani[47] (1961) and Ohlson[48] (1990; 1995) used the risk free rate to discount excess profits and residual income, respectively, to estimate the firm value. However, the cost of capital is considered to be a measure for return required by capital providers, suggesting the rate of cost of capital can be considered to be a target to be achieved to satisfy the capital providers (Exley and Smith, 2006). Modiglian and Miller (1958)

[47] Miller and Modigliani (1961) argued that the value of a firm is the discounted value of the cash flow from existing assets plus discounted the excess profits from future investment opportunities (future assets) over the return would be generated from investing the value of assets in a risk free assets.

[48] Ohlson (1990; 1995) stated that the value of the firm is the value of current book value plus discounted the excess in the value of future income generated from current and future investment over the return would be generated from investing the value of assets in a risk free assets.

argued that the cost of capital for capital providers is the rate of interest for this capital; suggesting a firm will tend to push investment to the point that marginal yield on physical assets is equal to the market rate of interest. They stated that an asset is worth acquiring if it will increase net profits (expected return on the asset must be higher than rate of interest) or market value of firm (market value of the asset plus market value of return generated from the asset must be higher than cost of acquisition plus rate of interest on the asset). In the life insurance business, insurers raise capital from two main source, namely, shareholders and policyholders; it is less likely that life insurers to be leveraged by taking debts. It is argued that deposits paid by the holders of life insurance policies (premiums) can be considered to be as a cheap source of capital for life insurance companies; however, assigning a cost of capital / discount rate to policyholders' assets is challenging. Babbel and Merrill (1999) argued that the valuation (discount rate) of life assurance products, in particular, inflation-indexed pension products, should be made using a valuation model focusing on inflation with a reference real or nominal rate of interest as insurers' liabilities concerning these products are strongly influenced by inflation and interest rates.

Using the rate of inflation to value an investment is well documented in the economics and finance literature. The main stream of literature focuses on benchmarking the market value of the firm against inflated value of the invested assets to assess firm performance (see Brainard and Tobin, 1968; Tobin, 1969; Tobin and Brainard, 1977; Tobin, 1978 and Lindenberg and Ross, 1981). Brainard and Tobin (1968) argued that an asset is worth acquiring if the value of asset is valued higher than replacement cost measured using purchase cost adjusted to reflect the changes in the purchasing power of the monetary unit, inflation. The ratio of market value of shareholders' assets to replacement costs, Tobin's Q thereafter (see Brainard and Tobin, 1968; Tobin, 1969; Tobin and Brainard, 1977; Tobin, 1978 and Lindenberg and Ross, 1981) has been found to be outperformed accounting profits in measuring firm performance

(Simirlock, Gilligan and Marshall, 1984); Tobin's Q has also been found to be closely related to firm performance (Simirlock, Gilligan and Marshall, 1984; Salinger, 1984; Stevens, 1990; Stevens, 1991).

Furthermore, the literature also examines whether the equity market adjusts the market value of the firm to reflect changes in the purchase power of the unit. Indeed, it is argued that the equity market can act as an effective hedging against inflation (see Bodie, 1976 and Basse and Reddemann, 2011); suggesting inflation would lead to higher share prices and higher corporation earnings. Empirically, it is reported that share return is negatively related to inflation (see Bodie, 1976; Fama and Schwert, 1977 and Schwert, 1981); however, the opposite view is also reported (see Boudoukh and Richardson, 1993; Kolari and Anari, 2001 and Luintel and Paudyal, 2006). However, Modigliani (1982) reported that earnings-payout ratio increased by inflation but share price did not change, whereas Basse and Reddemann (2011) showed that dividends are positively related to inflation. However, the net effect of inflation on firm performance / value is inconclusive. It is argued that (see Campbell and Shiller, 1988 and Schotman and Schweitzer, 2000) higher inflation increases dividends, and, hence, expected return on shares; however, higher inflation increases discount rate, and, hence, decreases expected return on shares.

With respect to insurance based literature, it focuses on the calculation of the value of the asset share for with-profits policyholders (see Ranson and Headdon, 1989; Needleman and Westall, 1991; Paul et. al., 1991; Mehta, 1992; Roff, 1992; Eastwood et. al., 1994; Needleman and Roff, 1995; Clay et. al., 2001; Hairs et. al., 2002 and O'Brien, 2009a, c; 2012). Asset share measures the share[49] of a single policy in the with-profits life insurance funds as these funds are not

[49] The value of unit / asset share is calculated as follows:
$AS_{t+1} = AS_t + P_t + I_t - G_t - T_t - C_t - F_t$
Where: P = premiums, I = investment return (including capital gain), G = charges for guarantees, X = expenses, C = claims, T = taxes and F = transfers of profit to shareholders.

unitised[50]. This value of unit (market value) or asset share value; gives policyholders information regarding the changes in the value of units but it is not clear how this value is attributed to premiums paid by policyholders and investment income generated from reinvesting these premiums. Furthermore, it does not show how much wealth has been created from original investment relative to changes in the purchase power of the monetary unit.

The basic idea is how much real wealth has been created for policyholders from a single life assurance policy over the duration of the contract? This requires accumulating[51] the investment based contributions (realised and unrealised) to the value of the unit / asset share in real terms, this would enable the author to measure the changes in real wealth created for policyholders over the duration of the policy; with the assumption there are no guarantees. This measure is also enable the policyholders to assess whether life insurers would be able to keep the value of invested assets in line with changes in the purchasing power of monitory unit. The excess in the real wealth over original investments (paid premiums) can be decomposed into realised gain and unrealised gain.

Given that life insurers are required to make payments to the policyholders according to contractual agreements (O'Brien, 2009c), shareholders run the risk that payments to policyholders exceed backed asset value (Moller and Steffenson, 2007; O'Brien, 2009c); the owners of the insurance company must eventually cover the loss on the insurance portfolio (Moller and Steffenson, 2007). Therefore, a valuation of policyholders' assets that provide

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For simplicity of discussion, $G_t = 0$ the insurance contract does not provide any guarantee. $T_t = 0$ there is no tax implications and $C_t - F_t = CF_t$ where CF_t is net cash outflow such as expense and amount transferred to shareholders' account (for with-profits funds only). Therefore, the above equation can be written as:
$AS_{t+1} = AS_t + P_t + I_t - CF_t$

[50] Most modern life assurance products such unit-linked based products and unitised with-profits, funds are unitised and an account is held for each unit and the prices of these units are published on a daily basis.

[51] It is argued that investors are interested in the magnitude of growth rather than the rate of growth as starting with a low initial value is less attractive compared to a lower rate of growth starting from a higher initial value (Gordon and Shapiro, 1956; Gordon, 1959). The author believes accumulating the returns (realised and unrealised) would be more informative.

information that the assets are kept in line with a particular benchmark, such as inflation, would provide valuable information to shareholders as it may reduce the risk exposure regarding financing the deficient in the value of policyholders' assets compared to contractual liabilities[52], which reduces the overall risk exposure for insurers, and, hence, maximising shareholders wealth by maximising the franchise value[53] of the firm (see Babbel and Merrill, 1999 and Exley and Smith, 2006).

[52] The market value of insurance company owners' equity is the difference between the market value of assets and the market value of liabilities (Babbel and Merrill, 1999; O'Keeffe et. al., 2005).
$\mathrm{MV_t^E} = \mathrm{MV_t^A} - \mathrm{MV_t^L}$
Where: MV_t^E the market value of equity, MV_t^A the market value of assets and MV_t^L the market value of liabilities.
This can be rewritten based on the economic balance sheet (see O'Keeffe et. al., 2005):
$\mathrm{MV_t^E} = \mathrm{FV_t} + \mathrm{MV_t^{TA}} - \mathrm{PV_t^L} + PO_t$
Where: MV_t^E the market value of equity, FV_t Franchise value, MV_t^{TA} market value of tangible assets, PV_t^L present value of liabilities and PO_t put option value.
The franchise value is the present value of 'economic rents' that an insurer is expected to generate because it has scarce resources, scarce capital, charter value, licenses, a distribution network, personnel, reputation, etc. These value dependents on firm insolvency risk (Babbel and Merrill, 1999).
$\mathrm{MV_t^{TA}} - \mathrm{PV_t^L}$: can be netted together to get net tangible value; it is the market value of tangible assets less the present value of liabilities (Babbel and Merrill, 1999). This value is independent of kind of assets held by insurer and solvency risks but it depends on risk (Babbel and Merrill, 1999).
The value of put option, from the limited liability enjoyed by equityholders, increases in value as the insurer takes on more risk.

Assets		**Liabilities**	
Market Value of Tangible Assets.	**1**	Market Consistent Value of Policyholders' Liabilities (100% Credit Risk Free).	**6**
Franchise Value.	**2**	Pension Scheme Deficit.	**7**
Tax Shields.	**3**	Debt and Current Liabilities.	**8**
Limited Liability Put Option.	**4**	Frictional Costs (*Cost of Double Taxation, Cost of Double Investment Expenses, Tax Asymmetries, Regulatory Capital Costs, Agency Costs and Cost of Raising Capital in the Market).*	**9**
		Costs of Financial Distress *(Including 'Burn Through' Cost).*	**10**
		Economic Value (Market Value of Owners' Equity) (5- (6+7+8+9+10)).	**11**
Total Assets (1+2+3+4).	**5**	**Total Liabilities** (6+7+8+9+10+11).	**12**

Source: the author
[53] The market value of the firm is related to its risk exposure. As the firm increases in insolvency risk, firm market value increases, and as it decreases in risk, again there is an increase in firm value. This because the franchise value is inversely related to risk, whereas put option value is positively related to risk. In contrast, the market value of tangible asset and present value of liabilities is independent from risks (Babbel and Merrill, 1999). It is argued that shareholders' wealth is maximised by maximising the franchise value[53] (Exley and Smith, 2006).

3.3. Theory of Value Creation

From the perspective of policyholders' interest, the excess in the market value of invested policyholders' assets over the basic expectation of the policyholders can be regarded as value created by life insurers for policyholders. The value creation in this regard can be written as follows:

$$\Delta V_t = V_t^M - V_t^E \quad (1)$$

Where
ΔV_t: the value creation.
V_t^M : the market value of policyholders' assets at time t; $V_t^M \geq 0$.
V_t^E: the basic expected value of policyholders 'assets at time t; $V_t^E \geq 0$; it is assumed to be based on premiums (contributions from policyholders), and, hence , it represents the principle funds.

The concept of the constant purchasing power of money is employed to measure the basic expected value of policyholders' assets as the amount of real wealth that shall at least remain unchanged over time. This measure can be written as follows:

$$V_t^E = F_0^p \bar{r}^t + F_1^P \bar{r}^{t-1} + F_2^P \bar{r}^{t-2} + F_3^P \bar{r}^{t-3} + \cdots + F_{t-1}^P \bar{r} + F_t^P \quad (2)$$

Where
F_t^p: the initially received premiums denoted as F_0^p at time 0, and subsequently received premiums from policyholders denoted, respectively, as F_1^p at time 1, F_2^p at time 2, F_3^p at time 3 …F_{t-1}^p at time t_{-1} and F_t^p at time t .
V_t^E: the basic expected value of policyholders 'assets at time t; $V_t^E \geq 0$; it is assumed to be based on premiums (contributions from policyholders), and, hence , it represents the principle funds.
r: the inflation rate, it is assumed to be constant over time, and $\bar{r} = 1 + r$.

Concerning the market value of policyholders' assets, using the same methodology, the market value of policyholders' assets can be decomposed into four elements:

$$V_t^M = F_0^p [\bar{g}^t + \bar{i}^t] + F_1^P [\bar{g}^{t-1} + \bar{i}^{t-1}] + F_2^P [\bar{g}^{t-2} + \bar{i}^{t-2}] + F_3^P [\bar{g}^{t-3} + \bar{i}^{t-3}] + \cdots + F_{t-1}^P [\bar{g} + i] + F_t^P \quad (3)$$

Where
g: the growth in the market value of policyholders' assets (valuation / unrealised gain) at time t; $\bar{g} = 1 + g$.
V_t^M : the market value of policyholders' assets at time t; $V_t^M \geq 0$.
i: the rate of return (realised gain) on policyholders' assets at time t; $i \geq 0$; and $\bar{i}^t = (1 + i)^t - 1$.
g and i: are assumed to constant over time.

F_t^p: the initially received premiums denoted as F_0^p at time 0, and subsequently received premiums from policyholders denoted, respectively, as F_1^p at time 1, F_2^p at time 2, F_3^p at time 3 …F_{t-1}^p at time t_{-1} and F_t^p at time t .

In (3), the F_t^p is influenced by both the growth in the market value of assets g (valuation / unrealised gain) and investment returns (realised gain); these returns are assumed to be reinvested at the same rate i.

By subtracting (2) from (3), the theory of value creation relative to the basic expected by the policyholders for their assets can be obtained as follows:

$$\Delta V_t = \left\{F_0^p\left[\bar{g}^t - \bar{r}^t\right] + F_1^p\left[\bar{g}^{t-1} - \bar{r}^{t-1}\right] + F_2^p\left[\bar{g}^{t-2} - \bar{r}^{t-2}\right] + F_3^p\left[\bar{g}^{t-3} - \bar{r}^{t-3}\right] + \cdots + F_{t-1}^p\left[\bar{g} - \bar{r}\right]\right\}$$
$$+ \left\{F_0^p\bar{\imath}^t + F_1^p\bar{\imath}^{t-1} + F_2^p\bar{\imath}^{t-2} + F_3^p\bar{\imath}^{t-3} + \ldots + F_{t-1}^p i\right\} \quad (4)$$

Where
$\bar{g} = 1 + g$.
$\bar{r} = 1 + r$.

Obviously, (4) provides theoretical foundation in explaining what determines the value creation from the policyholders perspective. First, g as the growth in the market value of assets (valuation / unrealised gain) shall be higher than the rate of price inflation in the real goods market $r \geq 0$, indicated by $\bar{g} - \bar{r} > 0$. Secondly, the rate of investment returns (realised gain) on invested policyholders' assets $i \geq 0$. The two theoretical properties of the valuation in (4) implies that, for the creation of real wealth from policyholders' assets invested by insurers, the value creation consists of two basic determinants: capital gains (unrealised gain) and investment returns (realised gain). On the basis of these two properties, the value creation in (4) can be written as follows:

$$\Delta V_t = V_t^M - V_t^E = \Delta V_t^K + \Delta V_t^I \quad (5)$$

Where
ΔV_t^K: the first part of (4) capturing the capital gains (unrealised gain) from the growth in the value of invested policyholders' assets relative to the inflation.
ΔV_t^I: the second part of the (4) measuring the investment returns made by life insurers from investing policyholders' assets.
V_t^{ET}: the total economic value; $V_t^{ET} = \Delta V_t^I + V_t^E$ *and* $\Delta V_t^K = V_t^M - V_t^{ET}$; V_t^{ET} represents the economic value of premiums (principle funds) plus investment income.

The relationship among four elements in (5), namely, real capital gains ΔV_t^K, economic value of investment income ΔV_t^I, the market value of policyholders' assets V_t^M and the economic value of principle funds V_t^E can be illustrated in Figure 31 below, which identifies three value creation scenarios:

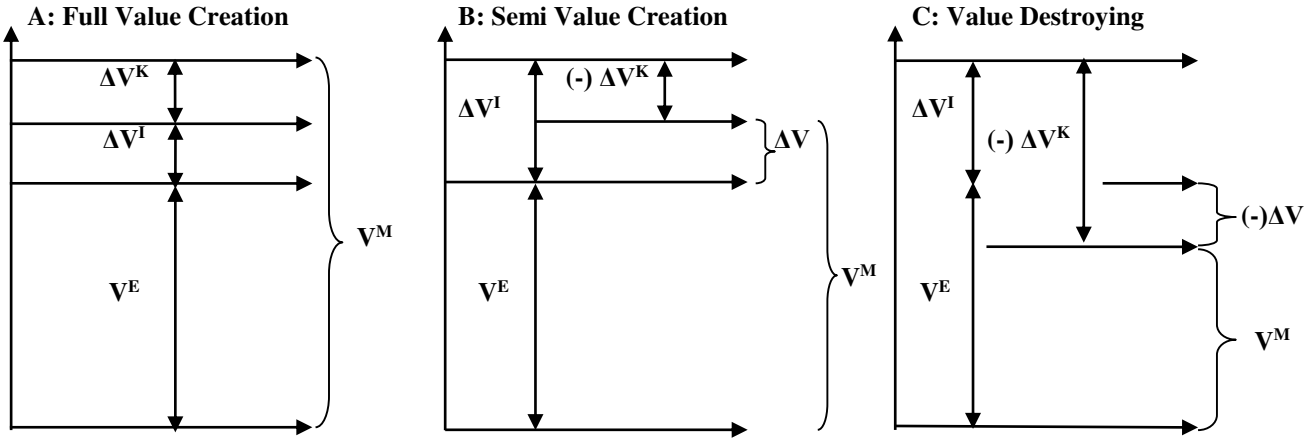
A. Full value creation when $\Delta V_t \geq 0$ with both $\Delta V_t^K \geq 0$ and $\Delta V_t^I \geq 0$

B. Semi value creation when $\Delta V_t \geq 0$ with $\Delta V_t^I \geq 0$ and ΔV_t^K <0 and $\Delta V_t^I \geq |\Delta V_t^K|$

C. Value destroying when ΔV_t <0 with $V_t^M < V_t^E$, possibly due to a large loss in capital gains, implying $\Delta V_t^I \geq 0$ and ΔV_t^K <0 and $\Delta V_t^I < |\Delta V_t^K|$.

Figure 31 illustrates the three cases above in classifying the value creation of the life insurance business.

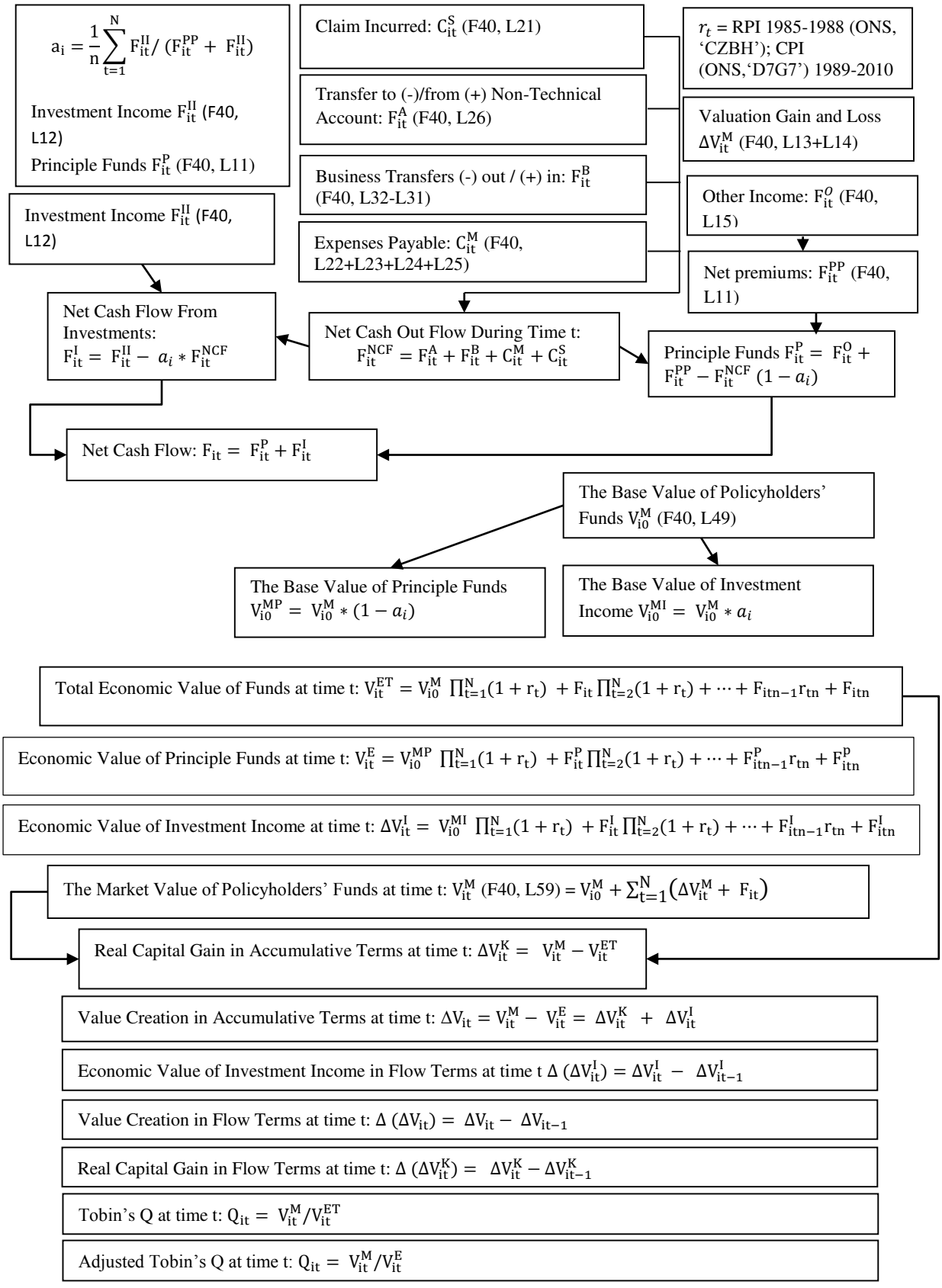
Figure 31: The Three Scenarios of Value Creation



Source: the author.

Table 5 provides simple numerical illustration of value creation compared to Tobin's Q. Furthermore, Figure 32 illustrates how value creation is derived from the FSA returns; including illustration of the relationship between value creation and Tobin's Q.

Figure 32: The Calculation of Value Calculation and Tobin's Q Based on the FSA Returns



Source[545556]: the author.

[54] Regarding α_{it} the author tried differecnt methods to split F_{it} and V_{i0}^{M} into investment and premium (principle) elements; however, the author believes average cash flow from investment to sum of cash flow from investment and premiums is the best available option as: (1) Policyholders' funds are formed either from policyholders' contributions or investment income generated from investing these contributions. (2) All the UK life insurers involved, at least once, in the M&A and most parents (groups) used to transfer funds between subsidiaries, suggesting it is not possible to follow the source of the funds (principle or investment income); the amount of funds transferred include premium elements and investment income elements. (3) Not only transferred funds between subsidiaries but also surrender and partial surrender claims paid for policyholders (73% of 2010 claims; see Table 32 in Appendix); making the lag assumption between the date of receiving investment income and date of claim payments for policyholders is not applicable practically.

[55] Regarding α_{it}, the 26-year-average asssmption is valide as: (1) Only 55 out of 368 firms have data from 26 years; with sample average around 15 years. (2) Long-term average reduces the effect of the volatility caused trasfering funds between firms on $\alpha_{it.}$

[56] The main issue of the calculation V_{it}^{TE} and V_{it}^{T} is the treatment of negative cash flow ($F_{it} = F_{it}^{P} + F_{it}^{I} < 0$). In this case, part of funds transferred out of the business, and, hence, $V_{it}^{TE} < V_{it-1}^{TE}$. For instance, if $V_{it-1}^{M} = 15$, $V_{it-1}^{TE} = 10$ and consequently $\Delta V_{it-1}^{K} = V_{it-1}^{M} - V_{it-1}^{TE} = 5$, and at time t it is assumed that $F_{it} = -5$ and $\overline{g} = \overline{r} = 1.03$. This means that $V_{it}^{TE} = 10 * 1.03 - 5 = 5.3$, $V_{it}^{M} = 15 * 1.03 - 5 = 10.45$ and $\Delta V_{it}^{K} = 10.45 - 5.3 = 5.15$. However, the firm transferred about the third (5/15.45= 0.324) of its funds, and, hence, the third of the economic value of the funds (10.3*0.324 = 3.33) should be transferred only not (-5) or the market value of funds transferred. This means that $V_{it}^{TE} = 10.3 - 3.33 = 6.967$ and $\Delta V_{it-1}^{K} = 10.45 - 6.967 = 3.48$. This adjustment is very important for downsizing firms, having negative cash flow ($F_{it} < 0$), for relatively long period of time. Indeed, ignoring this adjustment will inflate ΔV_{it-1}^{K} for firm having negative cash flow. This adjustment assumes that transfer of negative cash flow took place the end of the period.

Table 5: A Simple Example Illustrating the Calculation of Value Calculation

Time t	**1/1/2XX1**	**31/12/2XX1**	**31/12/2XX2**	**31/12/2XX3**	**31/12/2XX4**	**31/12/2XX5**
The initially received premiums (principle funds) at time t : F_t^p	100	25	25	25	25	
The growth in the market value of policyholders' assets (unrealised gain) at time t : g	0.02					
The inflation rate at time t: r	0.01					
The rate of return (realised gain) on policyholders' assets at time t: i	0.04					
The Market Value of Policyholders' Funds at time t: V_{it}^M		131	164	199	236	250
Economic Value of Principle Funds at time t: V_{it}^E		126	152	179	206	208
Total Economic Value of Funds at time t: V_{it}^{ET}		130	162	195	229	241
Economic Value of Investment Income at time t: ΔV_{it}^I		4	9	16	24	33
Real Capital Gain in Accumulative Terms at time t: ΔV_{it}^K		1	2	4	6	9
Value Creation in Accumulative Terms at time t: ΔV_{it}		5	12	20	30	42
Tobin's Q at time t: Q_{it}		1.01	1.01	1.02	1.03	1.04
Adjusted Tobin's Q at time t: Q_{it}		1.04	1.08	1.11	1.15	1.20

Source: the author.
The caclculation is based on Equation 1-5, using the same assumption addressed in the discussion with respect to g, r and i.
All values are assumed to be in pound (£).

3.4. Sample and Data

The data is obtained from the SynThesys life database (version 10.1, 15-August 2011 released). The sample is based on the initial sample in Chapter 2 and Table 31 in the Appendix; it consists of 368 firms over the period 1985-2010. The calculation of the value creation is still possible even when the firm has one observation given the value of policyholders' funds at the beginning of the period is reported in From 40; Line 49 (see Table 22 in the Appendix) as well as the value of policyholders' funds at the end of period Form 40; Line 59. The value creation has been calculated for 368 firms as it has been described in the previous section, all values are reported in Tables 33, 34 and 35 in Appendix and they are available upon request from the author. No adjustment has been made with the exception of: (1) Any negative net premiums (Form 40; L11) are reported as cash outflow. (2) The value of policyholders' assets at the end of the period (Form 40; L59) is reconciled with the value of policyholders' funds at the beginning of the period (Form 40; L49) to ensure all adjustments have been recorded. A conformation from the S&P's SynThesys life data base has been obtained to confirm that some adjustments used to be reported in the notes of the FSA returns prior to 2005 (it is available upon requests), and, hence, it needs to be added or removed to reconcile opening and closing balances; all these adjustments, if any, are added to Form 40; Line 31 if it is cash inflow and Form 40; Line 32 if it is cash outflow. In this chapter, to ensure inter-temporal comparability of figures and tables the financial data were deflated by the UK GDP deflator index (HM Treasury, 2012). This means all real values are in 2010 prices.

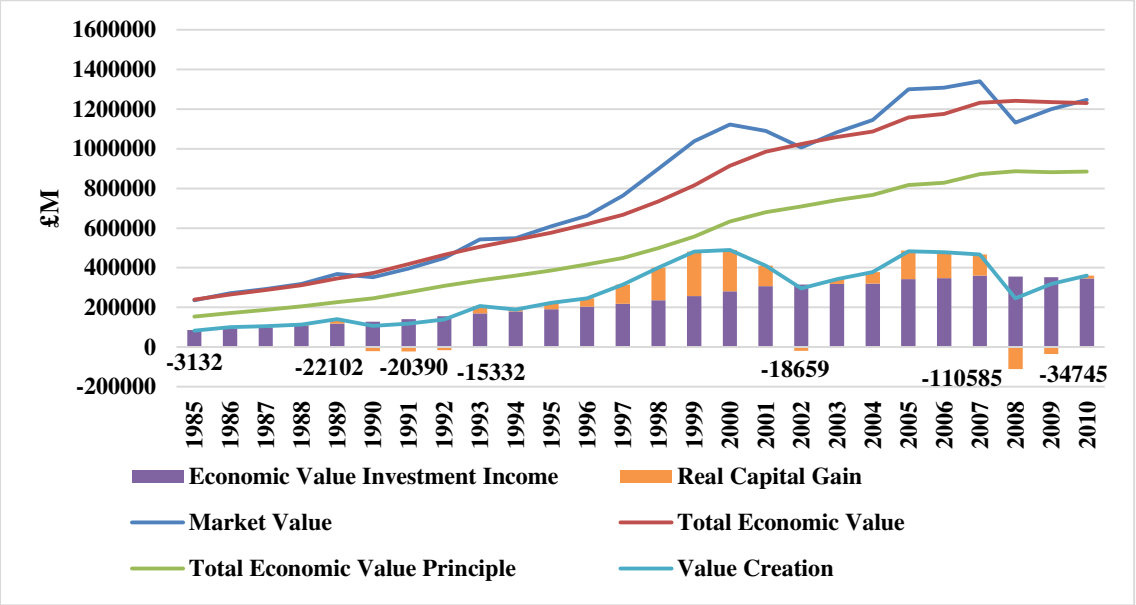
Given that the calculation of value creation and real capital gain have been made for all firms over the period 1985-2010, it was possible to include all sample (368 firm and 5,601 observation; see Table 31 in the Appendix). However, for empirical analysis, all firms with less than 5 observations (25 firms) are excluded, and any firm with less than 5 million average

value of assets over period are also excluded (20 firms). The Final sample regarding the empirical analysis includes 5,181 observations for 323 firms.

3.5. Value Creation of Life Insurance Firms in the UK

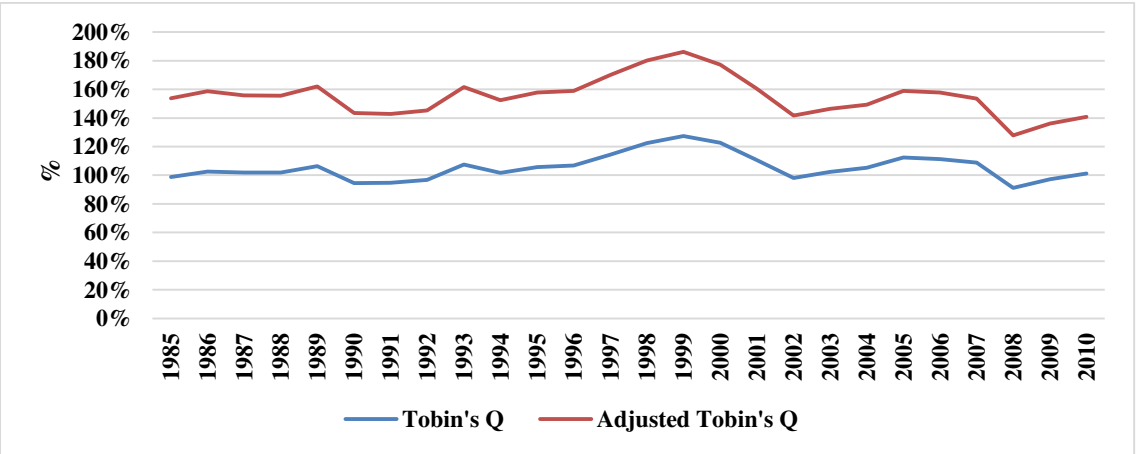
3.5.1. The Overall Value Creation of the UK Life Industry

Figure 33: Comparison between Market Value and Economic Value of Policyholders' Assets for all the UK life Insurers over 1985-2010



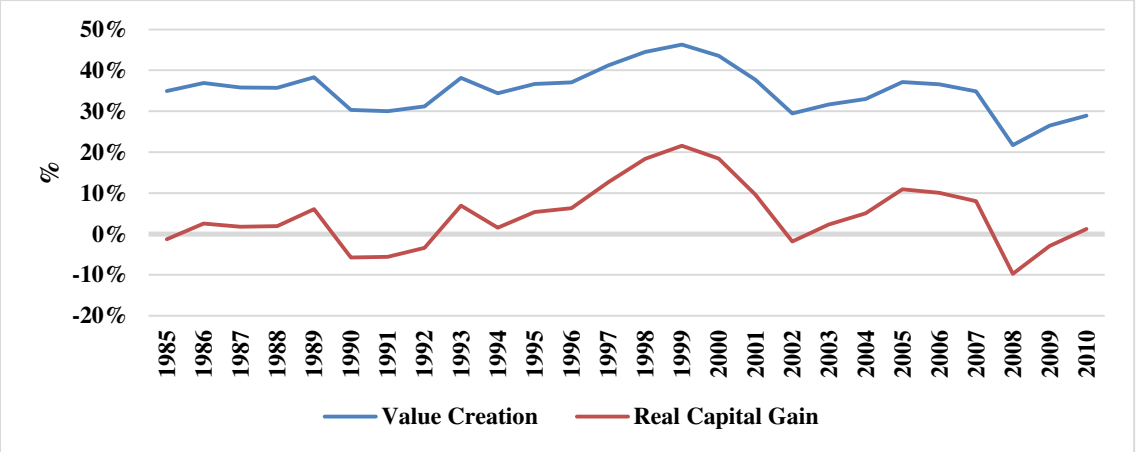
Source: the author — market value (F40, L59) and remaining values are derived by the author.

Figure 34: Tobin's Q for all the UK Life Insurers over 1985-2010



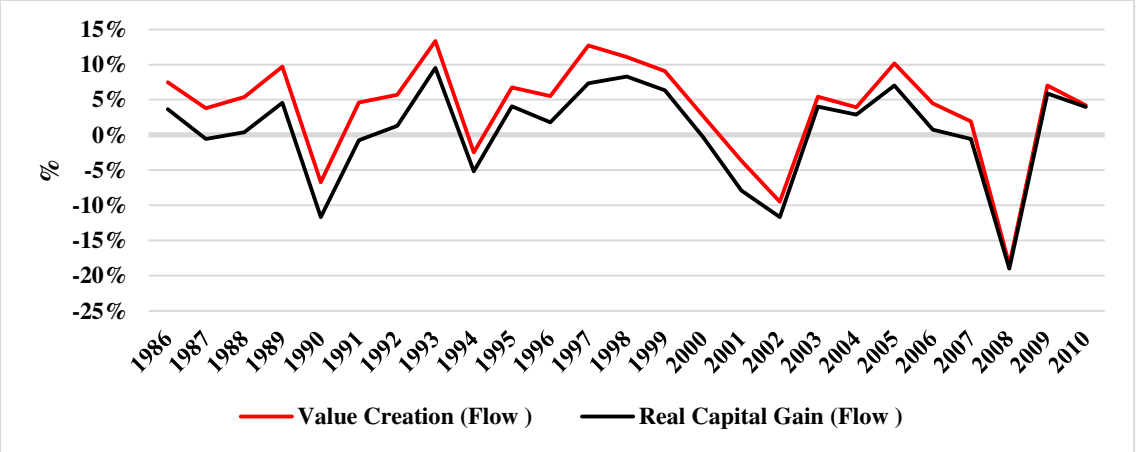
Source: the author — all values are derived by the author.

Figure 35: Capital Gain and Value Creation as % of the Market Value of the UK life Insurers over 1985-2010 (All Values are in Accumulative Terms)



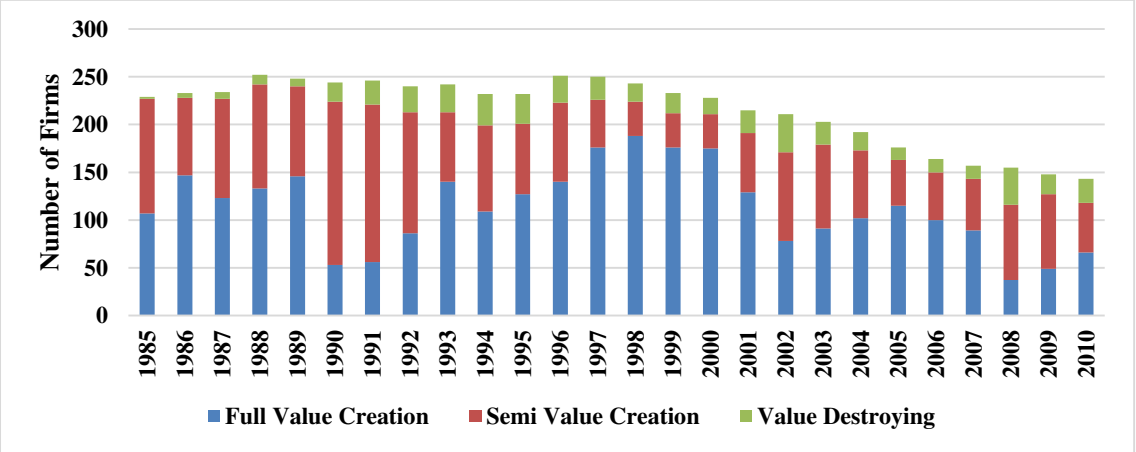
Source: the author — market value (F40, L59) and remaining values are derived by the author.

Figure 36: Capital Gain and Value Creation as % of the Market Value of the UK life Insurers over 1985-2010 (all Values are in Flow Terms)



Source: the author — market value (F40, L59) and remaining values are derived by the author.

Figure 37: The Number of Firms with the Full Value Creation, Semi Value Creation and Value Destroying over 1985-2010



Source: the author — all values are derived by the author.

Figure 36 shows that the amount of value creation (in flow terms) in 2008 was negative at £-209 billion, indicating that the UK life insurance industry lost value for policyholders' funds that amounted to 18% of the 2008 market value of the assets. This implies that, with other things unchanged, £1 invested in the UK life insurance industry at the beginning 2008 would only be worth £0.82, a loss of £0.18 relative to the constant purchase power of money, if the one pound invested in the past was cashed in at the end of 2008. Similarly, the market of policyholders' assets relative to replacement costs, Tobin's Q as shown in Figure 34 (see Brainard and Tobin, 1968; Tobin, 1969; Tobin and Brainard, 1977; Tobin, 1978 and Lindenberg and Ross, 1981), was 91% in 2008 increased to 97% in 2009 and just exceeded 100% in in 2010 (detailed analysis is provided in Tables 33, 34 and 35 in Appendix).

Furthermore, Figure 37 shows that non-value creating firms (semi value creation and value destroying) have risen to 52% on average over the period 2001-2010 from 43% in the 1990s. Three times over the 1985-2000 period and three times in the last decade over 60% of the UK life insurers are classified either semi value creation or value destroying. Apparently, the overall productivity of value creation by the UK life insurance industry has declined in recent years. The decline was particularly serious in 2008 when 51% of the firms became semi value creation and 20% became value destroying. The decline in value creation may imply that the UK savings industry needs a significant review of its investment strategies.

3.5.2. Value Creators vs. Value Destroyers

In Table 6, the top 10 and the bottom 10 of the UK life insurance firms in terms of their value creation in 2010 are listed. For a policyholder, on average, it could receive 40% more than the basic economic value of his/her invested funds if the top 10 firms had been invested in and the funds were redeemed in 2010. Otherwise, he/she could receive only 5% more than the basic

economic value of his/her invested funds if the bottom 10 firms had been invested in and the funds were redeemed in 2010.

Although the two groups for their value creation in 2010 are compared, it is interesting to notice that the scenario of full value creation occurred in 24 out of the 26 years during 1985-2010 for the firms ranked in the top 10 on average. In contrast, the value destroying or semi value creation appeared in 20 out of the 26 years for the bottom group. The firms in the latter group appeared as value destroying in 2008; (detailed analysis is provided in Tables 33, 34 and 35 in Appendix).

Regardless of value creation between the two groups, their cyclical patterns of creation of value over time have been very similar as shown in Figure 38, reflecting the effect of economic conditions on value creation and financial performance. This phenomenon is consistent with the view argued by Browne and Hoyt (1995); Browne, Carson and Hoyt (1999; 2001), Shiu (2004; 2005; 2009) and Brewer et. al. (2007).

In Table 6, the best value creator in the industry over the last decade has been Prudential Assurance Co Ltd in contrast to the lowest one that has been American Life Insurance Co UK Branch. The comparison of the two firms in Figure 39 highlights further the power of the value creation based valuation to distinguish firms through persistent underperformance and persistent outperformance for value creation over time.

Table 6: The Top vs. Bottom Value Creating Firms

Company(1)	Number of Years	The Full Value Creation	Semi Value Creation	Value Destroying	Average Size £(m)(2)	Capital Gain(3) £(m)	Value Creation(4) £(m)	Tobin's Q	Top/Bottom
Top 10									
Abbey Life Assurance Co Ltd	26	69%	31%	0%	10213	974	2143	108%	top
Co-operative Insurance Society Ltd	26	62%	38%	0%	17901	996	4631	107%	top
Legal and General Assurance (Pensions Management) Ltd	26	85%	15%	0%	70125	12367	89378	111%	top
Legal and General Assurance Society Ltd	26	81%	19%	0%	36425	4187	15097	109%	top
National Farmers Union Mutual Insurance Society Ltd	26	85%	15%	0%	4543	455	2610	116%	top
Pearl Assurance Ltd	26	92%	8%	0%	16007	1575	4104	128%	top
Phoenix and London Assurance Ltd	26	96%	4%	0%	8713	612	2080	119%	top
Prudential Assurance Co Ltd (The)	26	100%	0%	0%	76213	17116	41013	122%	top
Scottish Widows Unit Funds Ltd	26	81%	19%	0%	7896	775	4358	114%	top
Wesleyan Assurance Society	26	62%	38%	0%	2840	357	1506	108%	top
Bottom 10									
American Life Insurance Co UK Branch	26	0%	73%	27%	4159	-1196	-1196	90%	bottom
Friends Provident Life Assurance Ltd	26	35%	65%	0%	2646	-516	718	95%	bottom
Guardian Assurance plc	26	27%	73%	0%	7595	-1305	606	95%	bottom
Hannover Life Reassurance (UK) Ltd	26	0%	77%	23%	170	-41	33	90%	bottom
Liverpool Victoria Life Co Ltd	26	42%	46%	12%	866	-69	-69	97%	bottom
London Life Ltd	26	54%	46%	0%	2033	-455	51	98%	bottom
Pacific Life Re Ltd	26	0%	46%	54%	179	-28	9	81%	bottom
Pinnacle Insurance plc	26	15%	50%	35%	297	-23	-23	87%	bottom
Suffolk Life Annuities Ltd	26	50%	50%	0%	757	-160	718	101%	bottom
UNUM Ltd	26	4%	92%	4%	899	-376	111	88%	bottom
Average Top 10	26	81%	19%	0%	25088	3941	16692	114%	
Average Bottom 10	26	23%	62%	15%	1960	-417	96	92%	
Difference (T-Value)(5)	n/a	-0.5846***(6) (-16.4186)	0.4308*** (11.1192)	0.1538*** (6.8623)	-23127.6** (-10.1719)	4358.367** (-2.3050	16596.41* (-1.8677)	-0.2206*** (-17.3430)	
Top 1									
Prudential Assurance Co Ltd (The)	26	100%	0%	0%	76213	17116	41013	122%	top
Bottom 1									
American Life Insurance Co UK Branch	26	0%	73%	27%	4159	-1196	-1196	90%	bottom
Difference (T-Value)(7)	n/a	-1	0.7308*** (8.2375)	0.2692*** (3.0349)	-72054.12*** (-12.3650)	-18311.72	-42208.88	-0.3135*** (-11.8610)	

Source: the author.

Where:

(1) A firm ranked top 10 or bottom 10 if: (1) The data is available in 26 out of 26 year over 1985-2010. This because there has been considerable fluctuation in the wealth creating ability over the period 1985-2010, such as the considerable increase in the wealth creating ability in the 1990-2000 and then the significant decline in the real wealth creating ability over the period 2000-2010. To examine the characteristics of life insurers delivered the best/ worst value to policyholders during the period 1985-2010, the author decided to include only the life insurers for which the data is available over the period 1985-2010. (2) The firm with respect to top 10 should have been classified as a full value creation for more than 13 years over 26 years. In contrast, bottom 10 firms should have been classified either value destroying or semi value creation over 13 years of 26 years[57] (full rankling for 369 firms over the period 1985-2010 with respect to value creation and capital gain as well as the actual values in 2010 prices are provided in Tables 33, 34 and 35 in Appendix). (3) The firm has constant ranking over the period 1985-2010. (4) The firms is classified full value creation in 2010 for top 10, and value destroying/ semi value creation with respect to bottom 10. Given that only 54 firm out of 369 firms included in the chapter have data over the period 1985-2010, the analysis is restricted to top 10 and bottom 10.

(2) It is the average value of policyholders' assets over the period 1985-2010 (F13, L89, LTIB).

(3) It is capital gain in accumulative terms in 2010.

(4) It is value creation in accumulative terms in 2010.

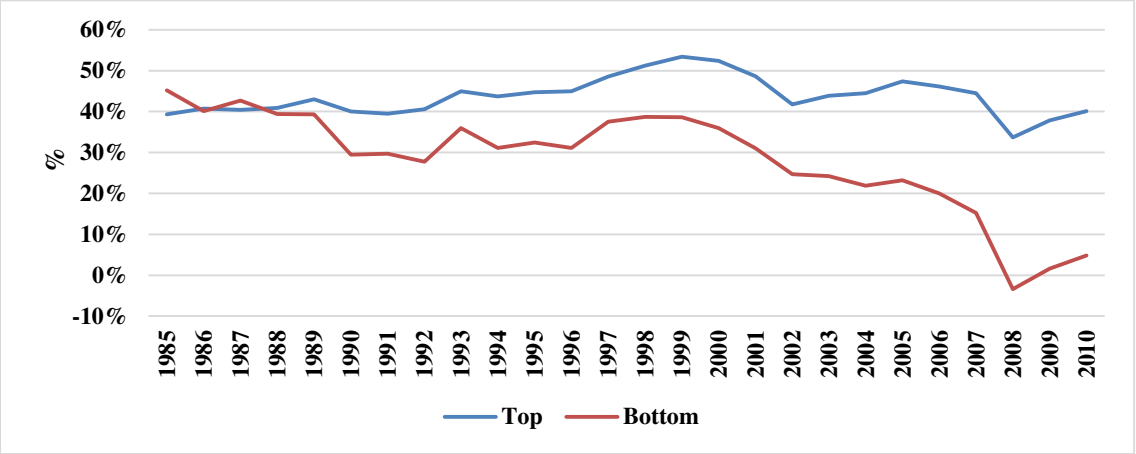
(5) H_0: difference (mean of bottom 10 - mean of top10 = 0). The t-value is calculated under the assumption that two samples have different variances.

(6) ***, ** and * represent statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

(7) H_0: difference (mean of bottom 1 - mean of top 1 = 0). The t-value is calculated under the assumption that two samples have different variances.

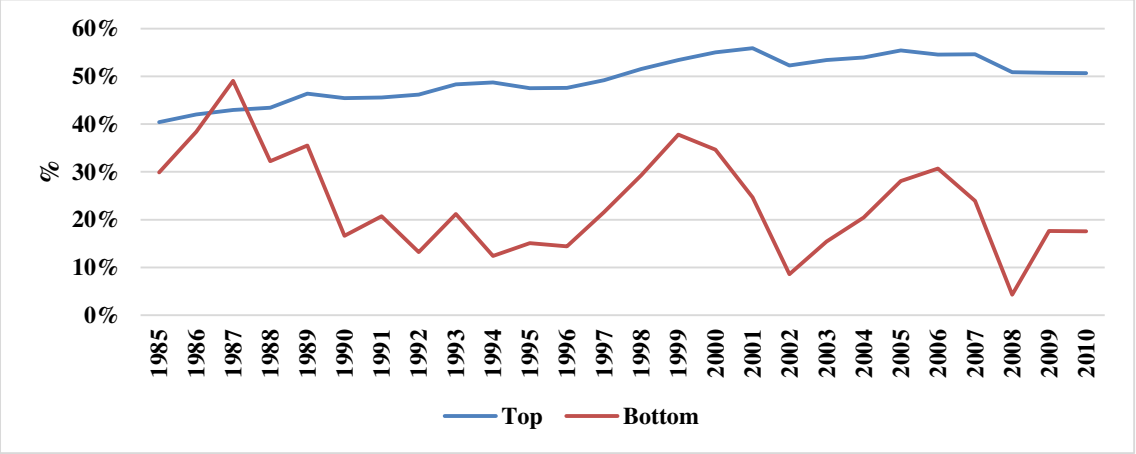
[57] London Life Ltd is classified value destroying/ semi value creation for 12 out 26 years, this is the only exception.

Figure 38: Top10 vs. Bottom 10 — Value Creation



Source: the author — Value Creation as % of market value of assets (F40, L59).

Figure 39: Top 1 vs. Bottom 1 — Value Creation



Source: the author — Value Creation as % of market value of assets (F40, L59).

3.5.3. Value Creation and Corporate Governance

Interestingly, many of the two opposite value creators in Table 6 come from two distinct classes of ownership in the UK life insurance industry. There is a long-standing debate in the literature about the relative merits of these two forms of organisations, see Mayers and Smith (1981; 1982; 1986; 1988; 1990; 1992; 1994), Smith and Stutzer (1990), Lamm-Tennant and Starks (1993), Wells, Cox and Gaver (1995), Adams (1995; 1996a; 1996b), Adams and Hossain (1998) and Adams, Hardwick and Zou (2008). Furthermore, Cummins, Weiss and Zi (1999),

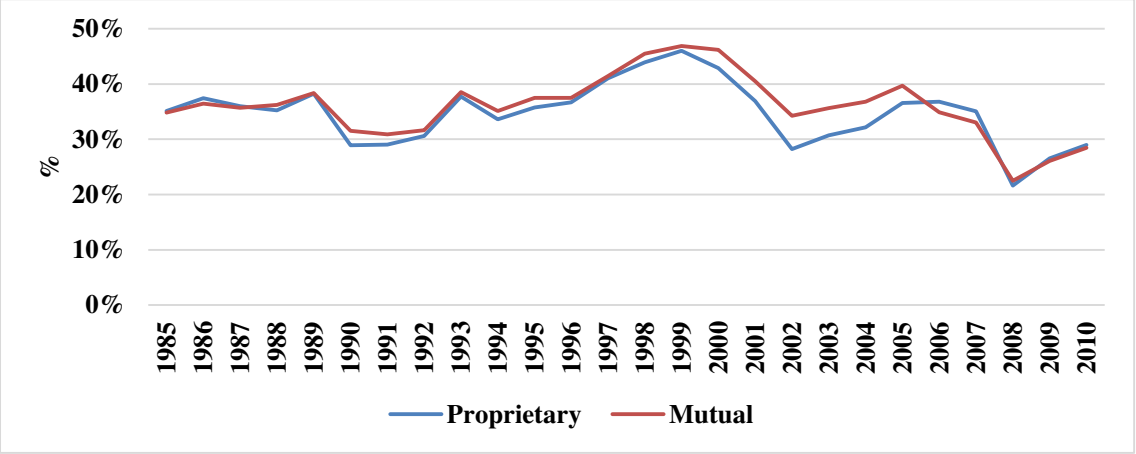
Cummins, Rubio-Misas and Zi (2004), Brockett et. al. (2005), Jeng and Lai[58] (2005) and Erhemjamts and Leverty[59] (2010) identified that the proprietary insurers were more cost efficient than the mutual insurers since the ownership structure of the mutual implies management under less pressures from policyholders who own the firm. This result differs from the result of some existing studies (Fukuyama, 1997; Hardwick, 1997; Greene and Segal, 2004; Hardwick, Adams and Zou, 2011) that compared the (efficiently based) performance and report that those mutual and proprietary insurers were equally efficient. In contrast to efficiency based argument, the valuation provides further evidence that for the mutual firms outperform the propriety firms in terms of value creation over both the entire 1990s and the period before 2005, see Figure 40. Clearly, the two opposite arguments for efficiency has its empirical supports although the chapter has added further evidence in favour to the mutual firms; (detailed analysis is provided in Tables 33, 34 and 35 in Appendix).

The discussion above shows that value creation is the same as other performance measurements that can be affected by corporate governance with respect to ownership. This view can be further highlighted by comparing value performance between life insurers owned by non-insurers (banks, other financial services and non-financial services) and those owned by insurance companies. It is evident that non-insurers created less value than insurer-owned insurers over the last decade; see Figure 41. This result is consistent with evidence presented by the studies of Swiss Re (2007) and Fiordelisi and Ricci (2011) that there is no advantage to banks entering to the life insurance business due to their cost efficiency. Indeed, as OECD (2011) pointed out, the failure of financial conglomerates containing major banking institutions and insurers has confirmed that the combination of different financial activities within a group creates contagion risks, such as reputation risks, concentration risks, operational risks and other

[58] Jeng and Lai (2005) compared between keiretsu firms, non-specialized independent firms and specialized independent firms.
[59] They found that demutualisation has a positive effect on efficiency.

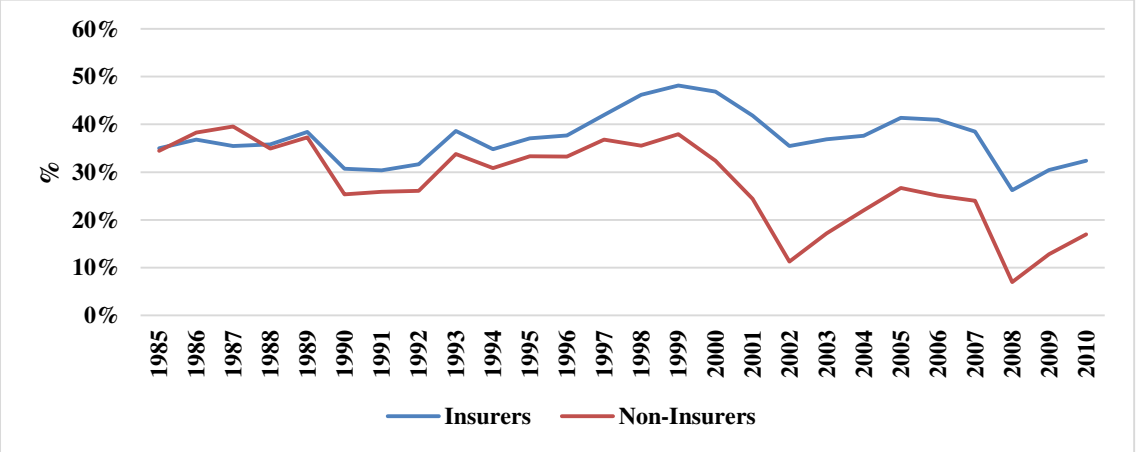
possible risks. This suggests that bank ownership of insurers can cause a negative impact on their performance[60] of value creation. Finally, the result as shown in Figure 42 suggests the UK based life insurers consistently outperformed the non-UK based life insurers.

Figure 40: Proprietary vs. Mutual — Value Creation



Source: the author — Value Creation as % of market value of assets (F40, L59); for Mutual and proprietary classification see Table 31 in Appendix.

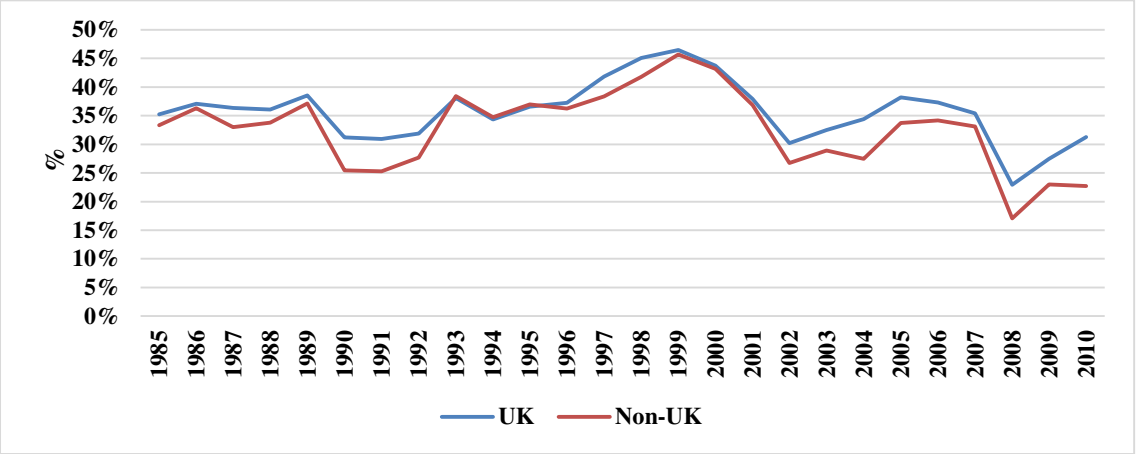
Figure 41: Insurers vs. Non-Insurers — Value Creation



Source: the author — Value Creation as % of market value of assets (F40, L59); Non-Insurers include banks, other finance services and non-finance services based parents (Table 31 in Appendix).

[60] It is argued that participating in capital market and holding bank shares expose insurers to banking sector risks and link insurer performance to the performance of the banking sector (Baluch, Mutenga and Parsons, 2011). Indeed, Baluch, Mutenga and Parsons (2011) found that banks and insurers had similar performance during the financial turmoil in 2008.

Figure 42: The UK vs. the Non-UK — Value Creation



Source: the author — Value Creation as % of market value of assets (F40, L59); for the UK and the non-UK (overseas) classification see Table 31 in Appendix.

3.6. The Implication of Value Creation

How can value creation be related to business performance and strategic behaviour of a firm? The strength of the relation between value creation and strategies implies the amount of information that can be embedded in or captured by value creation. For instance, the value of profits indicates financial performance because it is directly related to incomes that can be generated by a firm. In the last section the relationship between ownership structures and value creation is demonstrated, implying that ownership matters for value creation. To explore more business and performance implications to the valuation, the author investigates further here by examining how value creation is related to business elements that can be grouped according to three broad issues, namely, business strategies in choosing investment products, business performances in terms of both growth and finance and risk-taking attitudes. The result of value creation is also compared to capital gains and Tobin's Q as shown in Table 7; the result for value creation, capital gain and Tobin's Q is consistent.

The investigation is made through three stages: (1) Comparing the top 10 value creating firms with the bottom 10 firms for each element in relation to the three respective issues above. The significant difference between the two groups for an element suggests that the element tends

to be related to, or embedded in, value creation. (2) Comparing the value creating firms (full value creation) with the non-value creating firms (semi value creation and value destroying) on 5-year interval and full period for each element in relation to the three respective issues above. The significant difference between the two groups for an element suggests that the element tends to be related to, or embedded in, value creation. Thirdly, the initial finding from stage one and two on the implication of a business element to value creation will be further verified statistically by using the whole sample of observations to calculate Pearson correlation coefficient matrix (pairwise correlation) between value creation, capital gain and Tobin's Q and all predetermined variables to test the value creation impact on the relevant element of a related issue. The three-stage investigation will enable the author to check the robustness and consistency of the findings between the group comparison and the sample test of the relationship.

Table 7 Panel A presents the descriptive statistics for variables used in the chapter, whereas Panel B shows the tabulated results of the Pearson correlation coefficient matrix (pairwise correlation) between value creation, capital gain and Tobin's Q and all predetermined variables, t-test for mean differences between top 10 and bottom 10 as well as test for mean differences between value creating (full value creation) and non-value creating (semi value creation and value destroying). It is found that overall value creation is closely related to business strategies and performance as seen in Table 7.

Table 7: The Business Implications of Value Creation

Panel A: Descriptive Statistics of Variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
Value Creation	5181	0.2768	0.2192	-0.9948	0.9740
Capital Gain	5181	0.0141	0.2069	-0.9765	0.9735
Tobin's Q	5181	1.0518	0.2260	0.0005	1.9925
Overseas	5181	0.2822	0.4501	0	1
Linked	5181	0.4373	0.4116	0	1
Non-Linked	5181	0.5627	0.4116	0	1
HHI Liability	5181	0.7275	0.2508	0.2088	1
Assets	5181	13.3409	2.3251	3.1128	19.2317
Reserves	5181	13.2307	2.4891	1.3921	19.2308
Premiums	5181	11.2700	2.5902	0.1793	18.1441
Market Share	5181	0.0027	0.0079	0.0001	0.1632
Growth Assets	4858	0.1354	0.2767	-0.9999	0.9965
Growth Premiums	4858	0.1542	0.5361	-0.9998	1.9918
Expense	5181	0.0609	0.1360	0.0001	0.9892
Free Asset	5181	0.1020	0.1650	0.0001	0.9875
Liquidity	5181	0.0792	0.1575	0.0001	0.9986
Capitalization	5181	0.0499	0.0992	0.0001	0.9870
Reinsurance	5181	0.1239	0.2222	0.0001	0.9994
With-Profits	5181	0.1876	0.2871	0	1
Non-Profit	5181	0.2778	0.3332	0	1
Unitised With-Profits	2752	0.0764	0.1635	0	0.9817
Property Linked	5181	0.4775	0.4164	0	1
Index Linked	2752	0.0305	0.1012	0	1
Product Line	5181	0.5808	0.4935	0	1
Instability	5181	0.0001	0.0331	-0.3585	0.5750

Source: the author.

Panel B: the Pearson Correlation Coefficient Matrix and T-Test

Variables	Stage I		Stage II												Stage III		
	Top 10 vs. Bottom 10		Value Creating vs. Non-Value Creating												Pairwise Correlation		
	1985-2010		1985-1989		1990-1994		1995-1999		2000-2004		2005-2010		1985-2010				
	Diff	T-Value	Diff	T-Value	Diff	T-Value	Diff	T-Value	Diff	T-Value	Diff	T-Value	Diff	T-Value	Value Creation	Capital Gain	Tobin's Q
Value Creation	0.2836***	16.8115	0.0929***	9.922	0.1859***	18.4112	0.2868***	18.7248	0.2784***	19.4196	0.2488***	17.9366	0.2193***	39.4011			
Capital Gain	0.2155***	16.8441	0.1909***	26.7581	0.2726***	35.0654	0.3416***	29.242	0.3018***	27.9733	0.3269***	29.5586	0.2897***	68.3942			
Tobin's Q	0.2207***	17.3430	0.1997***	30.9736	0.2740***	29.1872	0.3694***	34.6362	0.3209***	29.3343	0.3416***	27.976	0.3055***	68.6315			
Issue I: Choice of Business Strategies: Diversification vs. Concentration of Investment and Product Compositions																	
Overseas	-0.2077***	-4.8397	-0.1231***	-4.4748	-0.0567***	-2.1314	-0.0443	-1.4804	-0.0745**	-2.4863	-0.1361***	-4.4294	-0.0837***	-6.6326	-0.023*	-0.0761***	-0.0793***
Linked	0.0088	0.2589	0.4236***	19.3703	0.2864***	11.8633	0.3253***	14.8106	0.1159***	4.5322	0.2838***	10.9637	0.2718***	25.327	0.0459***	0.2777***	0.2685***
Non-Linked	-0.0088	-0.2589	-0.4236***	-19.3703	-0.2864***	-11.8633	-0.3252***	-14.8106	-0.1159***	-4.5322	-0.2838***	-10.9637	-0.2718***	-25.327	-0.0459***	-0.2777***	-0.2685***
HHI Liability	-0.1214***	-5.3152	0.0887***	6.5702	0.0570***	4.2266	-0.003	-0.1788	-0.0236	-1.3822	0.0524***	2.898	0.0285***	4.0929	-0.1724***	0.046***	0.0718***
With-Profits	0.2876***	12.2983	-0.1057***	-5.5837	-0.0537***	-2.8165	0.0101	0.5426	0.0001	0.0038	-0.059***	-3.6164	-0.0439***	-5.4352	0.2564***	-0.0439***	-0.0468***
Non-Profit	-0.3796***	-15.0231	-0.3052***	-16.3261	-0.2220***	-13.2333	-0.3386***	-14.3646	-0.1159***	-5.146	-0.1407***	-6.2219	-0.2140***	-23.3977	-0.2636***	-0.2715***	-0.2643***
Unitised With-Profits	0.1313***	8.8017					0.0176**	1.7961	-0.0023	-0.2144	-0.036***	-2.9774	-0.0148**	-2.2748	0.0834***	-0.0444**	-0.0594***
Property Linked	0.0287	0.8352	0.4109***	18.2408	0.2758***	11.4412	0.3113***	13.0702	0.1094***	4.1727	0.2400***	9.0956	0.2547***	23.1089	0.0261*	0.2453***	0.2435***
Index Linked	-0.0216***	-3.0058					-0.006	-0.7827	0.0088	1.4496	-0.0043	-0.5873	0.0001	0.0184	-0.0694***	-0.0258	-0.0406**
Product Line	0.3192***	8.0486	0.1014***	3.4161	-0.0062	-0.2132	0.1582***	4.8268	0.0447	1.3864	-0.1026***	-3.0884	0.0348**	2.5213	0.1058***	0.0162	-0.0183
Issue II: Business and Financial Performance																	
Size: Value Creation is Positively Related to the Size of Business																	
Assets	3.2315***	21.0661	0.5593***	4.3306	0.9619***	8.1158	2.0526***	12.6925	1.1844***	7.4722	1.0171***	6.3252	1.0669***	16.6241	0.2746**	0.2217***	0.1773***
Reserves	3.0537***	19.8022	0.6094***	5.019	0.9839***	8.4523	2.0997***	11.3918	1.1803***	6.6827	0.9825***	5.6762	1.0564***	15.3805	0.2482***	0.2086***	0.1677***
Premiums	2.2958***	12.4987	0.4074*	3.1613	0.7593***	5.5534	1.594***	8.4687	0.5589***	3.1363	0.5333***	2.7359	0.6742***	9.3938	0.0534***	0.0934***	0.0369***
Market Share: Value Creation is Positively Related to the Market Share of the Firm																	
Market Share	0.0142***	9.4853	0.0001	0.0578	0.0005***	2.888	0.0017***	6.2329	0.0022***	4.4984	0.0033***	3.2725	0.0013***	6.3499	0.1119***	0.069***	0.0504***
Growth: Value Creation is Positively Related to Business Growth																	
Growth Assets	-0.02493	-0.1898	0.0430**	2.3826	0.0794***	4.7842	0.0356	1.6037	-0.027	-1.5423	0.0681***	3.8118	0.0534***	6.7022	0.0775***	0.1139***	0.0579***
Growth Premiums	-0.0025	-0.9415	0.0026	0.0684	0.0602*	1.9419	-0.0475	-1.1769	-0.0061	-0.1754	0.0777**	2.1455	0.0335***	2.1778	-0.0079	0.0272*	0.0022
Efficiency: Value Creation is Positively Related to Cost Efficiency																	
Expense	-0.0711***	-7.2838	-0.0246***	-3.7383	-0.0345***	-5.7454	-0.1067***	-7.6061	-0.0589***	-5.768	-0.0600***	-6.3061	-0.0512***	-13.0147	-0.3522***	-0.2002***	-0.1803***
Issue III: Risk-taking Attitudes in Use of Assets																	
Capitalisation, Liquidity and Free Assets: Value Creation is Negatively Related to Over-Capitalization, High Level of for Liquidity and Free Assets																	
Free Asset	0.0523***	5.6575	-0.0895***	-8.9141	-0.0367***	-4.5373	-0.0962***	-6.733	-0.0632***	-5.5766	-0.0569***	-5.2417	-0.0604***	-12.779	-0.1525***	-0.1696***	-0.1484***
Liquidity	-0.0836***	-7.7962	-0.0639***	-6.492	-0.0784***	-9.8067	-0.1327***	-8.8933	-0.0697***	-6.817	-0.0692***	-7.0604	-0.0779***	-17.1381	-0.3474***	-0.2405***	-0.2093***
Capitalization	-0.0257***	-5.6022	-0.0580***	-6.6132	-0.0319***	-6.9365	-0.0684***	-7.0121	-0.0264***	-4.7198	-0.0363***	-7.2324	-0.0408***	-13.9471	-0.2361***	-0.2007***	-0.1783***
Use of Reinsurance: Value Creation is Negatively Related to Demand for Hedging through Reinsurance																	
Reinsurance	-0.0663***	-3.7809	-0.0603***	-5.2365	-0.0539***	-5.2766	-0.0560***	-3.9049	-0.0281*	-1.7568	-0.0488***	-2.5115	-0.0519***	-8.2493	-0.18***	-0.1683***	-0.1452***
Risk: Value Creation is Inversely Related to Risk																	
Instability	-0.0036	-1.5864	-0.0088***	-5.0192	-0.0066***	-3.0951	-0.0150***	-10.0429	-0.0088***	-3.3628	-0.0156***	-6.4525	-0.0102***	-10.9152	-0.1644***	-0.2034***	-0.2017***

Source: the author.

Where:

H_0: Mean of the Top 10 - Mean of the Bottom 10 = 0. The t-value is calculated under the assumption that two samples have different variances.

H_0: Mean of the Value Creating - Mean of the Non-Value Creating = 0. The t-value is calculated under the assumption that two samples have different variances.

Number of observations is 5,181 for 323 firms over the period 1985-2010.

***, ** and * represent statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

Unitised With-Profits and Index Linked based data has become available since 1996.

Growth Assets and Growth Premiums: one observation is lost to calculate the growth rate.

Overseas: 1 for an insurer that has overseas operations and 0 otherwise for firm i time t. (it is based on F50, L18, C3).

Linked: the linked assets divided by total policyholders' assets for firm i at time t. (F13, L58+L59, LTIB) / (F13, L89, LTIB).

Non-Linked: the non-linked assets divided by total policyholders' assets for firm i at time t. (F13, L89- (L58+L59), LTIB)/ (F13, L89, LTIB).

HHI Liability: HHI score is expressed as the sum of the squared share of each business line (Non-Profit, With-Profits, Unitised With-Profits, Property Unit-Linked and Index Unit-Linked) in gross mathematical reserves. With-Profits (F50; L11, C4), Non-Profit (F50; L12, C4), Accumulative With-Profits (F50; L13, C4), Property Linked (F50; L14+L15, C4) and Index Linked (F50; L16+L17, C4).

Assets: the natural logarithms of total admissible assets for firm i time t (F13, L89, LTIB).

Reserves: the natural logarithms of total gross mathematical reserves for firm i time t (F50; L18, C4).

Premiums: the natural logarithms of total gross premiums for firm i time t (F41; L19; C4).

APE: the natural logarithms of the APE for firm i time t (F46; L24+L28*10%, C4).

Market Share: the value of policyholders' assets for firm i time t expressed as a share of total policyholders' assets for all firms at time t. (F13, L89, LTIB).

Growth Assets: the growth rate of policyholders' assets for firm i at time t (F13, L89, LTIB).

Growth Premium: the growth rate of gross premiums for firm i at time t (F41; L19).

Expense: the ratio of gross expense to admissible assets for firm i at time t (F43, L16, C4)/ (F13, L89, LTIB).

Free Asset: Amount of reported free assets divided by admissible assets for firm i at time t (F2, L42)/ (F13, L89, LTIB).

Liquidity: Liquid assets (the sum of the cash in hand, deposits not subject to time restriction on withdrawal, bank and approved credit and financial deposits <= 1 month, bank and approved credit and financial deposits > 1 month and deposits with ceding undertakings (see classification of admissible assets in Table 17 in Appendix) divided by admissible assets for firm i at time t (F13; L54+L55+L57+L81+L82; LTIB)/ (F13, L89, LTIB).

Capitalisation: Minimum capital requirement divided by admissible assets for firm i at time t (F2, L36)/ (F13, L89, LTIB).

Reinsurance: Premiums ceded to gross premiums written for firm i time t (F41; L20; C4)/(F41; L19; C4).

Non-Profit products: the proportion of non-profit product reserves to total reserves for firm i at time t (F50, L12, C4)/ (F50, L18, C4).

With-Profits Products: the proportion of with-profits product reserves to total reserves for firm i at time t (F50, L11, C4)/ (F50, L18, C4).

Unitised With-Profits Products: the proportion of unitised with-profits product reserves to total reserves for firm i at time t (F50, L13, C4)/ (F50, L18, C4).

Property Unit-Linked Products: the proportion of property unit-linked product reserves to total reserves for firm i at time t (F50, L14+L15, C4)/ (F50, L18, C4).

Index Unit-Linked Products: the proportion of index unit-linked product reserves to total reserves for firm i at time t (F50, L16+L17, C4)/ (F50, L18, C4).

Product Line: 0 for insurer writes over 90% of new premiums from a single line, namely, Non-Profit, With-Profits, Unitised With-Profits, Property Unit-Linked or Index Unit-Linked and 1 otherwise for firm i time t. With-Profits ((F47; L100-215, C4 + (L100-215, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix); Non-Profit (F47; L300-445, C4 + (L300-445, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix); Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) Table 29 in Appendix; Property Linked ((F47; L580-800, C4 + (L580-800, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix); and Index Linked ((F47; L900-915, C4 + (L900-915, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix).

Instability: a dummy is set 1 in 1985, 1987, 1990, 1991, 1994, 2000, 2001, 2002, 2007 and 2008 (during these

years change in real capital gain and sometimes change in value creation were negative) and 0 otherwise multiplied by the absolute values of weighted average capital gain and loss of linked and non-linked assets |((F40, L14)/(F13, L58+L59, LTIB))|*((F13, L58+L59, LTIB)/(F13, L89, LTIB)+ |((F40, L13)/(F13, L89-(L58+L59), LTIB))|*((F13, L89-(L58+L59), LTIB)/(F13, L89, LTIB).

Product investment strategies and value creation — For the first issue on business strategies of investing products, product composition is taken to measure the diversification of products. The result suggests value creation is closely related to unit-linked life assurance products. However, comparisons based on HHI index and product line suggests value creation is related to product composition rather than diversification strategy of insurers.

A similar view to the claim is reported by existing studies for the relationship of insurance diversification with investment returns[61], diversification premium (discount)[62], abnormal returns[63] or efficiency gain[64] (Boose, 1993; Adams, 1996b; Berger et. al., 2000; Meador, Ryan and Schellhorn, 2000; Villalonga 2004 a, b; Browne, 2001; Shiu, 2004; Fuentes, Grifell-Tatje and Perelman, 2005, Elango, Ma and Pope, 2008; Shiu, 2009). However, an opposite view on investment yield, diversification premium (discount) or efficiency gain and diversified strategies were agued by another school of studies (Berger and Ofek, 1995; Servaes, 1996; Desai and Jain, 1999; Berger et. al., 2000; Kedia and Campa, 2002; Levine and Laeven, 2007; Liebenberg and Sommer, 2008; Cummins et. al., 2010; Shim, 2011a; Berry-Stölzle, Hoyt and Wende, 2013). The different arguments may be due to different performance measures employed in these studies. The valuation developed by this research includes both realised and unrealised gains. This may explain why the results are different from some of existing studies[65] that focus only on investment yield.

[61] Liebenberg and Sommer (2008), Shim (2011a) and Berry-Stölzle, Hoyt and Wende (2013).
[62] Berger and Ofek (1995), Servaes (1996), Campa and Kedia (2002) and Levine and Laeven (2007).
[63] Desai and Jain (1999).
[64] Berger et. al. (2000) and Cummins, Weiss and Zi (2008).
[65] Boose (1993), Adams (1996b), Browne (2001), Shiu (2004), Elango, Ma and Pope (2008) and Shiu (2009).

Furthermore, the life insurers concentrated on non-linked life insurance products which underperform their counterparts that concentrated on linked life insurance products. This suggests non-linked life insurance products deliver lower value for policyholders than linked products. Indeed, the market share of with-profits products (non-linked products) fell from 41% (1985) to only 4% (2010) due to the lower value created for the policyholders when compared with the linked products, in which the customers realised the poor performance of such investments (O'Brien, 2009b).

Business performance and value creation — For the second issue on business growth and financial performance in relation to value creation, the impact of the value on size, market share, growth of assets and insurance premiums for business growth performance is tested. The impact is further tested for financial performance on cost efficiency measured by the operational costs per unit of asset managed by a firm. As expected, overall, the test results show that value creation is highly related to the performance of a firm, in which this empirical claim as the second one can be explained further below.

Firstly, the value impact on size identified by this chapter is because large insurance companies have advantages in gaining both economies of scale in employing resources and greater capacity for dealing with adverse market fluctuations than small insurance companies. For instance, Boose (1993), Adams (1996b) and Browne (2001) cite evidence from the US and the New Zealand life insurance industries to indicate a positive relationship between firm size and the yield on invested assets. Their evidence is consistent with the finding, although this claim may be called into question by recent studies reported by Adams and Buckle (2003) on the Bermuda insurance market along with Shiu (2004; 2009) on the UK general and life insurance market respectively in arguing that insurers' performance, measured by investment yield, is independent of the size of the firm.

Secondly, if life insurance market is efficient, then it will observe that the firms with higher value creation shall attract more demand and so increase their market shares. This expectation is supported by evidence shown in Table 7 from both the group comparison and the whole sample test: value creation is significantly and positively related to the market shares of assets. Further, this relationship is consistently shown by the positive impact of value creation on the growth of assets and the growth of premiums, shown in Table 7. This result seems to contradict Hardwick's and Adams's (2002) findings where they show that the growth of the UK life insurers over the late 1980s and the early 1990s was independent of financial performance of profitability measured using the ratio of the surplus to premiums. However, taking profitability as a measure of performance in the life insurance business can be problematic, or even considered as fraught, because the surplus is regarded as a part of firm's own choice in how to distribute cash flow funds generated from both operations and investment. Further, one recent paper demonstrates that the profitability of the life insurers is not relevant to the market value of life insurance firms (Almezweq and Liu, 2013).

Thirdly, on the one hand, the finding of value creation related to financial performance can be explained by the fact that high value creators attract more demand to generate more insurance policy sales and so increase premium incomes. However, on the other hand, a high value creator works harder in search of the best investment strategies to increase investment yield that can raise further cash to the firm.

Risk-taking attitudes and value creation — For the third issue on risk-taking attitude, when the relationship of value creation with financial strength is identified, it is expected that the high value creator will behave differently from the low value creator in managing risks. This expectation is evident in Table 7; both the group comparison and the sample tests show consistent and statistically significant results that value creation is inversely related to the asset

liquidity ratio, free asset ratio and capitalisation ratio. This finding suggests that a firm with lower value creation intends to hold more liquid assets in its investments as a precautionary measure to prevent a potential asset liquidity crisis. Furthermore, the value creators may be able to utilise their capital more efficiently, and, hence, reduce the capital requirements, as argued by Cummins and Nini (2002) and Cummins et. al. (2009) that insurers that over-utilise their capital for risk management are less efficient and had a lower rate of return on assets.

The inverse relationship between value creation and capitalisation requirement is consistent with another finding in Table 7 that value creation is related to linked assets positively; linked life insurance products are less risky with a lower requirement for the solvency margin compared to non-linked products (Swiss Re, 2003; Diacon et. al., 2004; Richards, 2004), because the linked products can help transfer investment risk to policyholders (Brennan and Schwartz, 1976; Knights and Willmott, 1993; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a,b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011 and Aviva Plc, 2008, 2009, 2010, 2011, 2012; 2013). Therefore, it is expected that life insurers can gain more capital efficiency for value creation improvement by investing more in linked assets that helps lower both capitalisation requirement and free asset ratios.

It is argued that the low value creating firms have a precautionary behaviour, which is further evident in Table 7; value creation is negatively related to the amount of reinsurance purchase. The evidence implies that a low value creator is more risk adverse in managing its low-value-creating investment through taking more reinsurance purchase as hedging to diversify the high risks of the low value creation business. This claim is consistent with an argument for use of reinsurance as hedging devices made by Berger, Cummins and Tennyson (1992), Adams (1996a), Adiel, (1996), Chen, Hamwi and Hudson (2001), Powell and Sommer (2007), Adams, Hardwick and Zou (2008) and Shiu (2011a). These studies identified the intention of insurers

with financial constraints, such as a higher leverage ratio or a higher insolvency[66] risk to purchase more reinsurance.

In short, on the basis of the evidence in Table 7 for the three issues in relation to value creation, it is evident that a firm with high value creation is likely to perform better in business growth and finance when compared with one that has low value creation. The latter has a precautionary behaviour in demand for liquid assets and reinsurance purchase for investment of policyholders' funds.

3.7. Conclusion

The chapter develops a valuation methodology to measure value creation from the perspective of policyholders. The valuation is based on comparing the market-perceived value of policyholders' assets with the basic economic value that retains the constant purchasing power of money over time. The market value in excess of the basic economic value is value creation since it indicates a change in the real wealth of saved funds. The advantage of the value creation approach is to combine information from both the market perception and the policyholders' expectation to measure value creation. The value creation consists of two basic elements: investment income (realised gain) and capital gains (unrealised gain). The development of this new valuation is motivated by a major change in the UK life insurance market during the period 1985-2010: (1) A significant increase in the popularity of life insurance products in which the payouts are linked directly to the value of the underlying assets; and (2) Life insurers transfer the investment risk to the policyholders through increasing sales of linked investment products. Recently, the life insurance business experienced a radical change in the value of the assets

[66] A. M. Best (1991) showed that more than 7% of insolvent US property liability insurers over the period 1969 to 1990 were direct result of failure of reinsurers, suggesting the reinsurance transactions may have significant impact on direct insurers. Indeed, Chen, Hamwi and Hudson (2001) showed that demand of reinsurance is negatively related to solvency status of direct insurers, suggesting that an insurer with high insolvency probability is more likely to purchase more reinsurance.

during the period of financial turmoil. This raises a question of whether policyholders have been appropriately informed of the investment risks for the linked products and whether they have a good understanding of the performance of their invested saving products.

By applying the value creation approach to assess the current performance of the UK life insurance industry, it is found that the whole industry loses its value relative to the basic expectation of policyholders during periods of financial turmoil. With a further analysis on the implication of the valuation to business, it is revealed that value creation is closely related to certain composition, business growth, the strength of finance and risk-taking attitudes of the firm. Furthermore, it is worth noticing an interesting phenomenon that value destroyers are more precautionary in using funds for investment, evident by the way in which the value losers demand more liquid assets in business and more reinsurance purchases as extensive hedging against the risk of low value creation that may bring a potential crisis. With these findings, the business implication of the value creation is obviously significant in addition to its theoretical foundation.

4. Chapter 4: An Investigation into the Diversification- Performance Relationship in the UK Life Insurance Industry

4.1. Introduction

The effect of product diversification on firm performance is well documented in the accounting and finance literature (Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996; Desai and Jain, 1999; Campa and Kedia, 2002; Villalonga, 2004a,b; Laeven and Levine, 2007; Santalo and Becerra, 2008). However, empirical evidence on the net effect of product diversification on firm performance is far from conclusive; suggesting the effect of diversification on performance is not homogeneous across industries (Santalo and Becerra, 2008). As for insurance based literature, empirical evidence concerning the net effect of product diversification on firm performance is inconclusive regarding various performance benchmarks such as efficiency score (see Berger et. al., 2000; Meador, Ryan and Schellhorn, 2000; Fuentes, Grifell-Tatje and Perelman, 2005; Cummins et. al., 2010 and Chen, Lai and Wang, 2012) and investment yield ratio (see Boose, 1993; Adams, 1996b; Browne, Carson and Hoyt, 2001; Adams and Buckle, 2003; Shiu, 2004; Elango, Ma and Pope, 2008; Liebenberg and Sommer, 2008; Shiu, 2009 and Berry-Stölzle, Hoyt and Wende, 2013).

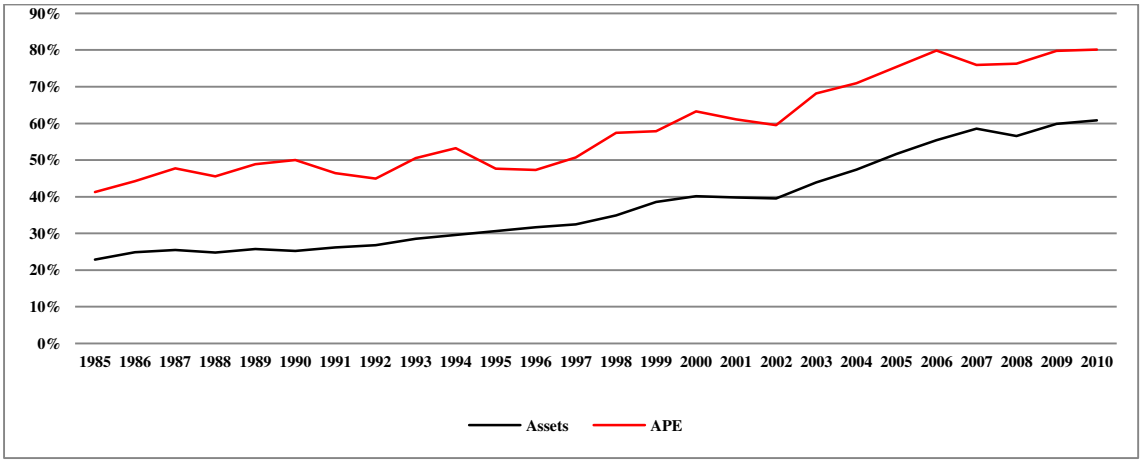
This chapter re-examines product diversification firm performance interrelationship with respect to investment performance using three measures of insurers' performance, namely, conventional investment yield and two value creation based measures, namely, value creation and real capital gain (see Chapter 3). The basic idea is to test whether product diversification impacts investment yield (realised gain), capital gain (unrealised gain) and value creation

(realised and unrealised gain) homogenously. The chapter firstly examines whether concentration on a particular product, namely, unit-linked products or non-linked products (see Figure 43), would impact life insurers concerning business and financial performance and risk taking attitudes to establish the link between product diversification and firm performance. The chapter goes further to test empirically the effect of product diversification on these measures and whether these measures are endogenously linked to product diversification, or whether the type of products decides a type of performance measure. If the endogenous property exists, then it is argued that different products need different measurements. The implication of this argument to research on product diversification and performance is clear: product diversification impacts performances differently, depending on the type of performance used in assessment and the dominance of a particular product in the diversification.

The finding from this chapter shows there are significant differences between linked and non-linked products. Linked products can lead the life insurers to be more cost efficient, less capital intensive, purchase less reinsurance and to deliver, on average, higher value for policyholders than non-linked products. Regarding diversification, the finding of the chapter shows that the effect of product diversification on performance varies across three different types of measurement: investment yield, capital gain and value creation. This evidence is in support of the endogenous argument; suggesting that researchers need to be careful in interpreting the performance results for different products and product diversification. It also shows that the result is sensitive to theoretical measure of diversifications: dummies, percentages and Herfindahl–Hirschman Index (HHI). Furthermore, evidence from this chapter shows that some products are very sensitive and vulnerable to market shocks, and therefore, it is not recommended for the firm to concentrate its entire investment in these products notwithstanding that it has empirically shown its success in creating returns.

The remainder of this chapter is organised as follows. Section 2 reviews existing studies on the issues. Section 3 explains the sample and the data. Section 4 examines the performance and business behaviours of linked-based insurers with reference to non-linked-based insurers. In section 5, further robustness tests are conducted on the effect of linked products on the performance of the firm while taking into account the endogenous argument of products with performance. The final section concludes the findings of the chapter.

Figure 43: The Share of Unit-Linked Products in the New Premiums (APE) and in Total Admissible Assets over the Period 1985-2010



Source: the author — this is based on full sample (see Table 31 in Appendix): Assets (F13; L58 + L59; LTIB) / (F13; L89; LTIB) and APE ((F47; L580-800, C4 + (L580-800, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29) + ((F47; L900-915, C4 + (L900-915, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29)/(F46; L24+L28*10%, C4).

4.2. Existing Studies on the Issue

There has been a long standing debate in literature on whether the value of diversified firms is valued at premiums/ discount relative to specialized firms. Lang and Stulz (1994), Berger and Ofek (1995), Servaes (1996), Desai and Jain (1999) and Laeven and Levine (2007) found that diversified firms are traded at a discount compared to specialized counterparts. In contrast, Campa and Kedia (2002) and Villalonga (2004a,b) cited evidence that diversified firms are traded at a premium compared to specialized counterparts. However, the empirical evidence on the net effect of diversification is far from conclusive. Indeed, Santalo and Becerra (2008) showed that the effect of diversification on performance is not homogeneous across industries.

As for the insurance industry, the diversification-performance relationships have been examined from three main angles, namely, firm value, efficiency and investment yield.

Regarding firm value and diversification[67], Hoyt and Trieschmann (1991) cited evidence that specialized insurers (focusing on either life or property liability) performed better than diversified counterparts. In contrast, Thombs and Hoyt (1994) cited evidence that diversified insurers performed better than specialized counterparts (focusing on either life or property liability).

With respect to efficiency, empirical evidence concerning the effect of diversification on insurer efficiency is far from conclusive. Cummins et. al. (2010) cited evidence that specialists are more efficient than joint producers. However, an opposite view on the efficiency-diversification relationship was argued by Meador, Ryan and Schellhorn (2000) and Fuentes, Grifell-Tatje and Perelman (2005). On the other hand, Berger et. al. (2000) and Chen, Lai and Wang (2012) found that neither strategy (specialization or joint production) is universally more efficient.

As for investment performance, there has been a substantial body of literature examining the diversification investment performance interrelationship in the insurance industry (Boose, 1993; Adams, 1996b; Browne, Carson and Hoyt, 2001; Adams and Buckle, 2003; Shiu, 2004; Elango, Ma and Pope, 2008; Liebenberg and Sommer, 2008; Shiu, 2009; Berry-Stölzle, Hoyt and Wende, 2013). The empirical evidence suggests that the relationship between performance and diversification strategies is inconclusive. Liebenberg and Sommer (2008) and Shim (2011a) provided empirical evidence that undiversified insurers consistently outperformed diversified insurers. In contrast, Boose (1993) reported evidence that diversified insurers

[67] Share price return is used as a measure of performance.

outperformed strategic focused counterparts. The argument that diversification strategies do not have any effect on financial performance is well documented in the insurance-based literature (Adams, 1996b; Browne, Carson and Hoyt, 2001, Shiu, 2004; 2009). However, Elango, Ma and Pope (2008) cited evidence that the effect of business line diversification on firm performance is nonlinear and depends on an insurer's degree of geographic diversification, while Berry-Stölzle, Hoyt and Wende (2013) showed that the effect of diversification on performance is not homogeneous across industries.

While all of these previous studies are helpful in understanding the efficiency and performance implications of insurer diversification, they do not shed light on net effect of product diversifications on the performance of life insurers and whether this effect is consistent across various performance benchmarks, such as investment income (realised gain), capital gain (unrealised gain) or a combined measure such as value creation (realised and unrealised gains). In the UK, conventional life assurance products, such as with-profits life assurance policies, have been criticised for complexity, lack of transparency from policyholders' perspective (Richards, 2004; Müller and Steffensen, 2007), and capital inefficiency with respect to life insurers (Swiss Re, 2003; Diacon et. al., 2004; Richards, 2004). A new form of life assurance products have been developed to address transparency and complexity of conventional products (Richards, 2004) as well as the capital intensity of conventional products (Richards, 2004). In 2010, 80% new premiums of UK life insurers are related to unit-linked products, whereas about 60% of assets held by UK life insurers are to back unit-linked liabilities. Unit-linked products enable life insurers to transfer investment risks to policyholders through linking the policyholders' benefits to the market value of invested assets (Brennan and Schwartz, 1976; Knights and Willmott, 1993; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a,b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011; Aviva Plc, 2008, 2009, 2010, 2011, 2012); suggesting the growth in the market value of policyholders' assets shall be incorporated to

measure life insurers performance. This raises the question on whether unit-linked life assurance products would impact realised gain and unrealised gain differently. This chapter focuses on three key measures of performance, namely, real capital gain, investment yield and value creation as these measures enable the author to test whether product diversification would impact these measures (realised and unrealised gains) differently. To introduce the key issues and potential impacts of product diversification on overall performance of life insurers, the chapter first examines the difference between linked based life insurers and non-linked based life insurers against series of performance indicators, and then the chapter goes further to empirically test the impact of product diversification on three measures of realised and unrealised gains.

4.3. Sample and Data

The data is obtained from the SynThesys life database (version 10.1, 15-August 2011 released). The sample is based on the initial sample in Chapter 2 and Table 31 in the Appendix; it consists of 368 firms (5,601 observations) over the period 1985-2010. Given that the calculation of value creation and real capital gain have been made for all firms over the period 1985-2010 (as it has been explained in details in Chapter 3), it was possible to include all sample (368 firm and 5,601 observations; see Table 31 in the Appendix); however, one observation needs to be excluded for growth based variables (only) and all negative 'value' of some variables are excluded such as net premiums, free assets, expenses, claims etc. Furthermore, all firms with less than 5 observations (25 firms) are excluded, and any firm with less than 5 million average value of assets (based on F13, L89, LTIB) over period are also excluded (20 firms). Therefore the final sample regarding the empirical analysis includes 5,181 observations for 323 firms. In this chapter, to ensure inter-temporal comparability of figures and tables the financial data were

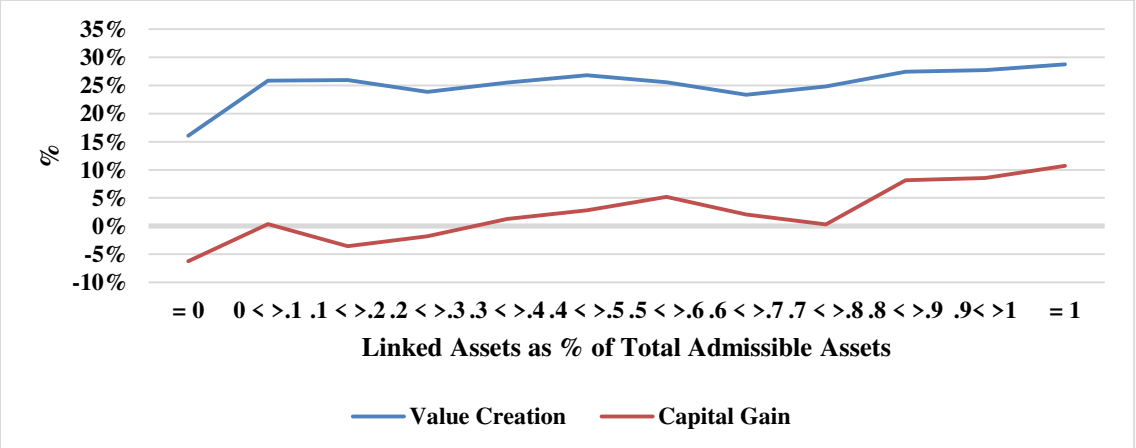
deflated by the UK GDP deflator index (HM Treasury, 2012). This means all real values are in 2010 prices.

4.4. What is the Linked Distinctive from the Non-Linked?

Two groups of life insurance firms are compared according to whether 70% of their assets are invested in linked products (these are 'linked firms'), and alternatively whether 70% of assets are invested in non-linked products (these are 'non-linked firms'). The differences between two groups, linked-based and non-linked-based insurers, are examined with respect to business and financial performance, hedging strategies and risk-taking attitudes.

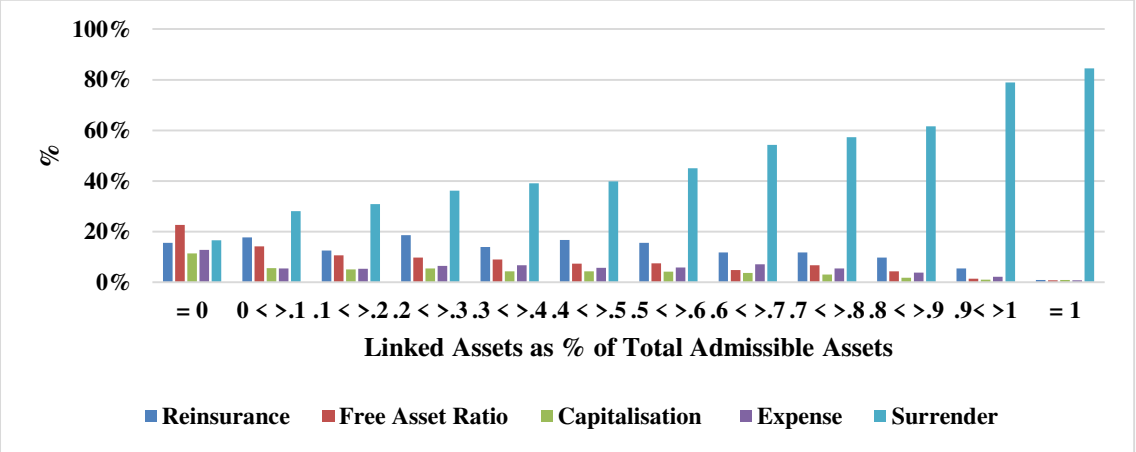
The strength of the relation of a product with performance, hedging and risk implies the importance of the strategic decision in choosing a product for business. For instance, the choice of a particular product may enable the firm to reduce risk, and, hence, its capital requirements. Figures 44, 45 and 46 show that linked and non-linked products have very different impacts on hedging strategy, capitalization, efficiency and capital gain of life insurance firms. It seems that the linked products improve cost efficiency, capital gain, and reduce considerably capital requirement and reinsurance costs. However, linked based firms seem to pay most of their claims as surrender and partial surrender claims.

Figure 44: Linked vs. Non-Linked Life Insurers — Value Creation



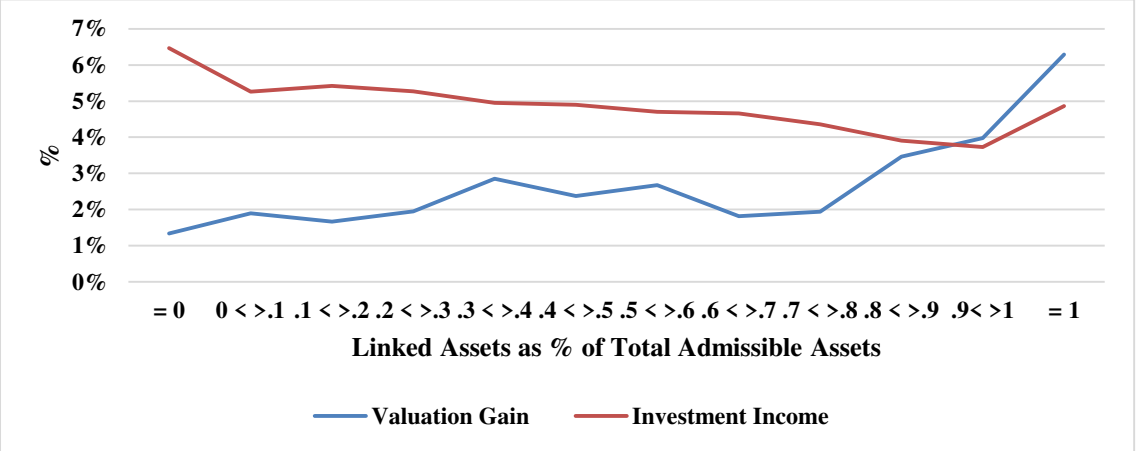
Source: the author — it is based on 5,181 observation for 322 firm sample, Value Creation (see Chapter 3) / (F13; L89; LTIB), Capital Gain (see Chapter 3) / (F13; L89; LTIB) and Linked Assets (F13; L58 + L59; LTIB) / (F13; L89; LTIB).

Figure 45: Linked vs. Non-Linked Life Insurers — Reinsurance, Capitalization, Efficiency and Free Assets



Source: the author — it is based on 5,181 observation for 323 firm sample, Surrender (F42, L13; C4) / (F42, L16; C4), Reinsurance (F41; L20; C4) / (F41; L19; C4), Capitalisation (F2, L36) / (F13, L89, LTIB), Free Asset Ratio (F2, L42) / (F13, L89, LTIB), Expense (F43, L16, C4) / (F13, L89, LTIB) and Linked Assets (F13; L58 + L59; LTIB) / (F13; L89; LTIB).

Figure 46: Linked vs. Non-Linked Life Insurers — Investment Yield and Valuation Gain



Source: the author — it is based on 5,181 observation for 322 firm sample, Investment Income (F40, L12) / (F13, L89, LTIB), Valuation Gain (F40, L13+L14) / (F13, L89, LTIB) and Linked Assets (F13; L58 + L59; LTIB) / (F13; L89; LTIB).

To explore further the business and performance implications of investment in linked products, this chapter investigates how the linked product is related to business elements with reference to the non-linked products. This question is addressed by grouping business elements or strategies according to two broad issues: first, business performances in terms of both growth,

finance and investment performance, and secondly, risk-taking attitudes, hedging strategies and business risk.

The investigation is made through two stages: (1) Comparing the linked based firms with the non-linked based firms on a 5-year interval and full period for each element in relation to the two respective issues above. The significant difference between the two groups for an element suggests that the element tends to be related to linked or non-linked investment strategies. (1) The initial finding from stage one on the implication of linked and non-linked investment strategies will be further verified statistically by using the whole sample of observations to calculate Pearson correlation coefficient matrix (pairwise correlation) between linked assets and all predetermined variables to test the impact of the linked products on an element of a related issue. The two-stage investigation enables the author to check the robustness and consistency of the findings from group comparison to sample tests.

Table 8 Panel A presents the descriptive statistics for variables used in the chapter, whereas Panel B shows the tabulated results of the Pearson correlation coefficient matrix (pairwise correlation) between linked assets and all predetermined variables, t-test for mean differences between linked firms and non-linked firms. It is found that overall linked assets is closely related to business performance and capital and cost efficiency but inversely related to business risk and investment income (realised gain) as shown in Table 8.

Table 8: The Business Implications of Linked Assets

Panel A: Descriptive Statistics of Variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
Linked	5181	0.4373	0.4116	0	1
Non-linked	5181	0.5627	0.4116	0	1
Value Creation	5181	0.2428	0.1890	-0.9948	0.9700
Capital Gain	5181	0.0169	0.1739	-0.9765	0.9614
Tobin's Q	5181	1.0518	0.2260	0.0005	1.9925
Assets	5181	13.3409	2.3251	3.1128	19.2317
Reserves	5181	13.2307	2.4891	1.3921	19.2308
Premiums	5181	11.2700	2.5902	0.1793	18.1441
Growth Assets	4858	0.1354	0.2767	-0.9999	0.9965
Growth Premiums	4858	0.1542	0.5361	-0.9998	1.9918
Expense	5181	0.0609	0.1360	0.0001	0.9892
Free Asset	5181	0.1020	0.1650	0.0001	0.9875
Liquidity	5181	0.0792	0.1575	0.0001	0.9986
Capitalization	5181	0.0499	0.0992	0.0001	0.9870
Derivatives	5181	0.2235	0.4166	0	1
Reinsurance	5181	0.1239	0.2222	0.0001	0.9994
Volatility	5181	0.0678	0.0658	0.0001	1
Valuation Gain	5181	0.0258	0.0943	-0.8567	1
Investment Income	5181	0.0497	0.0435	0	1
Surrender	5181	0.4545	0.3330	0	1

Source: the author.

Panel B: the Pearson Correlation Coefficient Matrix and T-Test

	Stage I												Stage II
	Linked vs. Non-Linked												Pairwise
	1985-1989		1990-1994		1995-1999		2000-2004		2005-2010		1985-2010		Correlation
Variables	Diff.	T-Value	Diff.	T-Value	Diff.	T-Value	Diff.	T-Value	Diff.	T-Value	Diff.	T-Value	Linked
Issue I: Business and Financial Performance													
Size: Linked Investment Strategy Positively Related to the Size of the Business													
Assets	-0.0965	-0.7311	0.0548	0.4076	1.2312***	8.4483	1.5438***	9.9026	2.088***	13.8976	0.8386***	12.5291	0.2001***
Reserves	0.0717	0.5711	0.1953	1.4746	1.7019***	10.2089	1.7499***	10.3409	2.2047***	13.7945	1.0617***	14.9642	0.2315***
Premiums	0.0173	0.1285	0.0042	0.0278	1.1304***	6.5303	1.437***	7.6835	2.1981***	11.2839	0.8539***	11.1841	0.1819***
Growth: linked Investment Strategy is Positively Related to Business Growth													
Growth Assets	0.0774***	4.0308	0.0672***	3.8442	0.0905***	4.9966	0.0199	0.978	0.0647***	3.1664	0.0703***	8.1022	0.1239***
Growth Premiums	0.0136	0.3515	0.0352	1.1563	0.0246	0.6363	0.0427	1.0509	0.0719*	1.7046	0.0408**	2.4199	0.0394***
Efficiency: Linked Investment Strategy is Positively Related to Cost Efficiency													
Expense	-0.0278***	-4.4698	-0.0278***	-4.1785	-0.0861***	-9.5002	-0.0782***	-9.109	-0.0811***	-9.2462	-0.0586***	-16.0897	-0.2157***
Investment Performance: Linked Investment Strategy is Positively Related to Value Creation but Negatively Related to Investment Income													
Valuation Gain	0.0523***	9.9157	0.0027	0.4122	0.0526***	11.0675	-0.0338***	-4.722	0.0231***	2.666	0.0222***	7.2809	0.113***
Investment Income	-0.0269***	-13.3222	-0.0242***	-9.8058	-0.0214***	-6.3422	-0.014***	-6.6873	-0.0092***	-3.2162	-0.0183***	-15.097	-0.2017***
Value Creation	0.0761***	8.9244	0.0508***	4.4842	0.1274***	11.6635	0.0052	0.3849	0.0347**	2.1857	0.0593***	10.6872	0.1669***
Capital Gain	0.1161***	16.1597	0.1025***	10.2442	0.1752***	17.2794	0.0469***	3.4555	0.1056***	7.4247	0.1082***	21.3637	0.2973***
Tobin's Q	0.1397***	15.6418	0.111***	9.9324	0.2027***	13.1952	0.0777***	4.546	0.1239***	7.3769	0.128***	19.8362	0.2685***
Issue II: Risk-taking Attitude and Hedging Strategy													
Capitalization, Liquidity and Free Assets: Linked Investment Strategy is Negatively Related to Over-Capitalisation													
Free Asset	-0.1612***	-18.3825	-0.1317***	-15.8857	-0.1724***	-17.6505	-0.1043***	-10.7291	-0.1418***	-14.6346	-0.1429***	-34.3263	-0.4326***
Liquidity	-0.0859***	-9.3993	-0.09***	-9.4429	-0.1109***	-11.6956	-0.1***	-11.9838	-0.1198***	-13.4261	-0.1006***	-24.6208	-0.3163***
Capitalization	-0.0664***	-8.3381	-0.0564***	-10.0866	-0.0748***	-13.6892	-0.0548***	-8.8423	-0.0728***	-16.2028	-0.0649***	-24.3319	-0.3208***
Using of Derivatives and Reinsurance: Linked Investment Strategy is Negatively Related to Reinsurance and Derivatives													
Derivatives	-0.108***	-7.3568	-0.1588***	-7.8831	-0.1551***	-5.5245	-0.1954***	-6.5231	-0.2019***	-6.3036	-0.1751***	-15.3144	-0.1742***
Reinsurance	-0.0799***	-7.46	-0.0776***	-7.4632	-0.0697***	-5.8349	-0.1217***	-8.0636	-0.1204***	-6.1637	-0.0959***	-15.7365	-0.2054***
Business Risk: Linked Investment Strategy is Related to Risk													
Surrender	0.4605***	28.2715	0.4399***	27.632	0.5111***	33.1787	0.5392***	33.9342	0.5106***	28.4547	0.4907***	65.939	0.7128***
Volatility	0.0672***	17.3951	0.0719***	18.8497	0.0439***	12.1189	0.0635***	13.633	0.0641***	11.767	0.062***	32.5241	0.445***

Source: the author.

Where:

The linked / non-linked firms are defined as those where linked / non-linked assets are at least 70% of their admissible assets (based on F13, L89, LTIB), which is well above the ratio employed by O'Brien (2009b) to define with-profits insurers as those where with-profits liabilities are at least 40% of their long-term liabilities. The linked insurer group includes life insurers where linked assets are at least 70% of their admissible assets (based on F13, L89, LTIB). Non-Linked insurers group includes life insurers where non-linked assets are at least 70% of their admissible assets (based on F13, L89, LTIB). The groups only include firms for the period at which the linked/non-linked assets are at least 70% of their admissible assets as most life insurers transformed from non-linked to linked insurers over the period 1985-2010, such as Zurich Assurance Ltd. This is very important since the main aims of the chapter are to observe behaviour of the firms and examine the implication of the investment strategy on performance. The two groups represent more than 85% and 90% of the sample observations and assets, respectively. The non-linked group dominated the linked group with respect to its share of admissible assets over the period 1985-2002; however, the share of the linked group in the sample of admissible assets exceeded the non-linked group over the period 2003-2010. As for the number of observations, the number of observations of the non-linked group exceeded the linked group; however, the variation between the two groups fell considerably over the period 1985-2010.

H_0: Mean of the Linked - Mean of the Non-Linked = 0. The t-value is calculated under the assumption that two samples have different variances.

Number of observations is 5,181 for 323 firms over the period 1985-2010.

***, ** and * represent statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

Growth Assets and Growth Premiums: one observation is lost to calculate the growth rate.

Overseas: 1 for an insurer that has overseas operations and 0 otherwise for firm i time t (it is based on F50, L18, C3).

Linked: the linked assets divided by total policyholders' assets for firm i at time t. (F13, L58+L59, LTIB) / (F13, L89, LTIB).

Non-Linked: the non-linked assets divided by total policyholders' assets for firm i at time t. (F13, L89- (L58+L59), LTIB) / (F13, L89, LTIB).

Assets: the natural logarithms of total admissible assets for firm i time t (F13, L89, LTIB).

Reserves: the natural logarithms of total gross mathematical reserves for firm i time t (F50; L18, C4).

Premiums: the natural logarithms of total gross premiums for firm i time t (F41; L19; C4).

Growth Assets: the growth rate of policyholders' assets for firm i at time t (F13, L89, LTIB).

Growth Premium: the growth rate of gross premiums for firm i at time t (F41; L19).

Expense: the ratio of gross expense to admissible assets for firm i at time t (F43, L16, C4) / (F13, L89, LTIB).

Free Asset: Amount of reported free assets divided by admissible assets for firm i at time t (F2, L42) / (F13, L89, LTIB).

Liquidity: Liquid assets (the sum of the cash in hand, deposits not subject to time restriction on withdrawal, bank and approved credit and financial deposits <= 1 month, bank and approved credit and financial deposits > 1 month and deposits with ceding undertakings (see classification of admissible assets in Table 17 in Appendix) divided by admissible assets for firm i at time t (F13; L54 + L55 + L57 + L81 + L82; LTIB) / (F13, L89, LTIB).

Capitalisation: Minimum capital requirement divided by admissible assets for firm i at time t (F2, L36) / (F13, L89, LTIB).

Derivative: 1 for use of derivative in business and 0 otherwise for firm i time t (it is based on (F17; L51, C1; LTIB), (F17; L51, C2; LTIB) and (F13; L44; LTIB; prior to 1994)).

Reinsurance: Premiums ceded to gross premiums written for firm i time t (F41; L20; C4) / (F41; L19; C4).

Volatility: the absolute values of weighted average valuation gain and loss of linked and non-linked assets for firm i, time t |((F40, L14) / (F13, L58+L59, LTIB))|*((F13, L58+L59, LTIB) / (F13, L89, LTIB)+ |((F40, L13) / (F13, L89-(L58+L59), LTIB))|*((F13, L89-(L58+L59), LTIB) / (F13, L89, LTIB).

Valuation Gain: Valuation gain and loss deflated by the value of admissible assets for firm i, time t (F40, L13+L14) / (F13, L89, LTIB).

Investment Income: Investment income deflated by the value of admissible assets for firm i, time t (F40, L12) / (F13, L89, LTIB).

Surrender: the value of gross surrender and partial surrender claims to total gross claims for firm i, time t (F42, L13; C4) / (F42, L16; C4).

Value Creation: It is based on Chapter 3 calculation deflated by total admissible assets (F13, L89, LTIB).

Capital Gain: It is based on Chapter 3 calculation deflated by total admissible assets (F13, L89, LTIB).

Tobin's Q: It is based on Chapter 3 calculation.

For the first issue on business growth and financial performance in relation to the linked

investment strategy, the strategy impact on size, growth of assets and insurance premiums is tested. The impact of the linked investment strategy on performance is further tested, and the performance is indicated respectively by the cost efficiency measured by the operational costs per unit of assets, investment returns and value creation. As expected, overall, the test results show that the unit-linked investment strategy is positively related to most types of performance, but negatively related to the performance of investment yield. This finding implies that the linked products are designed in favour of a particular type of performance.

The strategy impact on size is clearly shown regardless how the size of business is measured. It is found that the business size of a firm is positively related to the linked investment strategy. This indicates that linked-based life insurance firms focus on fast growing product lines, and, hence, they have advantages in gaining economic scale. Indeed, both the group comparison and the whole sample test with respect to size support the evidence that life insurers with focusing on provision of linked products can gain fast growth. This is consistent with the view that the holders of with-profits policies lost confidence in the economic viability of savings through with-profits products (the expected maturity returns on with-profits policies were insufficient to cover outstanding mortgages for instance). This can be mainly related to the considerable fall in interest rates that forced with-profits life insurers to reduce bonus rates (Grosen and Jorgensen, 2000; O'Brien, 2009b; Carter and Falush, 2009). The result is also consistent with the view that firms may diversify to other product lines in order to seek more growth opportunities (Berry-Stölzle et. al., 2012).

Similarly, the linked investment strategy is positively related to financial performance measured by valuation gain, capital gain, Tobin's Q and value creation; however, it is inversely related to investment income. This result shows that linked assets are mainly held for capital growth, and, hence, the evaluation of investment performance using investment yield (realised

gain) will give misleading results. Indeed, Shiu (2009) cited evidence from the UK life insurance industry which showed that investment yield is negatively related to the proportion of assets invested in linked funds. Similarly, Adams (1996b) reported evidence from the New Zealand life insurance industry that investment yield is negatively related to non-financial assets. As for capital gain and value creation, the amount of value creation increases with linked assets. This is consistent with the view that with-profits life assurance products failed to deliver value expected by policyholders (O'Brien, 2009b; Carter and Falush, 2009). Finally, with reference to efficiency gain, the result shows that there is a substantive efficiency gain as the proportion of assets invested in linked funds increases. Indeed, the type of product that insurers concentrate on may play a major role with respect to efficiency gain. This result suggests that the linked product strategic-focused life insurers are more cost efficient than non-linked focused counterparts and diversified insurers. Therefore, the type of products on which life insurers are focused determines efficiency at which a firm operates. This result is consistent with the efficiency insurance-based literature, showing that neither strategy (specialization or joint production) is universally more efficient (Berger et. al., 2000; Chen, Lai and Wang, 2012).

For the second issue of the discussion on capitalization, hedging strategies and business risk, when the relationship of the linked investment strategy with financial strength is identified, it is expected that the linked-based life insurers will behave differently from the non-linked counterparts in managing risks. This expectation is supported by evidence shown in Table 8: both the group comparison and sample tests show consistently and statistically significant results that a linked investment strategy is inversely related to the liquidity ratio, free asset ratio and capitalisation ratio. This finding suggests that linked life insurers can reduce the risk, and, hence, their capital requirements. This suggests that there are significant variations in the UK life insurer business line risks (linked and non-linked), which is consistent with Cummins's and Phillips's (2005) findings showing that that US insurer risk and cost of capital varies

significantly among insurer business lines.

The result shows that linked life insurers are able to reduce their capital requirements as the proportion of linked assets increases. The result can be interpreted that linked life assurance products are less risky and require lower solvency margins (Swiss Re, 2003; Diacon et. al., 2004; Richards, 2004), and, hence, life insurers manage to reduce their capital requirements relative to the volume of business written. The counterarguments are that life insurers transfer investment risk to policyholders through writing unit-linked products. Furthermore, the payouts to the policyholders of the unit-linked life assurance are linked to market value of the underlying assets (market price of the policyholder's share (units) in unitised linked funds) (Brennan and Schwartz, 1976; Knights and Willmott, 1993; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a,b; Carter and Falush, 2009; Cipra, 2010; OECD; 2011; Aviva Plc, 2008, 2009, 2010, 2011, 2012; 2013). Therefore, life insurers have managed to transfer part of their investment risk to policyholders, and, hence, to reduce their risks, and, hence, capital requirements. This result is consist with existing studies examining the relationship between capital-to-asset ratio and product and assets risks; some empirical evidence shows that there is a positive relationship between product risks and the capital-to-asset ratio (Cummins and Sommer, 1996; Baranoff and Sager; 2002; 2003).

Furthermore, the risk argument is further evident by the estimated result in Table 8 that a linked investment strategy is negatively related to the amount of reinsurance purchase and the use of financial derivatives. Since linked-based life insurers transfer investment risk to policyholders, they reduce the investment risk and hedging costs, such as reinsurance purchase and the use of derivatives. This claim is consistent with an argument for the use of reinsurance and derivatives as hedging tools, made by Berger, Cummins and Tennyson (1992), Adams (1996a), Adiel, (1996), Chen, Hamwi and Hudson (2001), Powell and Sommer (2007), Adams, Hardwick and

Zou (2008) and Shiu (2011a) that identified the intention of insurers with a higher leverage ratio or higher insolvency risk to purchase more reinsurance. Shiu (2011a) further finds a positive interrelationship of the leverage with reinsurance purchase and the use of derivatives.[68]

As for business risk, the unit-linked investment strategy has negative implications for life insurers. Clearly, the persistency risk and performance volatility are positivity related to the proportion of assets invested in linked funds. As for the persistency, the proportion of surrender and partial surrenders claims in total claims paid increases as the proportion of assets invested in linked funds increases. This is consistent with the view that there is a significant level of variation in persistency rates between linked and non-linked life assurance policies (the Securities and Investment Board, 1991; Diacon and O'Brien, 2002). This can be interpreted as meaning that unit-linked life assurance policies are designed to be more flexible and transparent than their with-profits counterparts, and usually have lower withdrawal penalties (Diacon and O'Brien, 2002). However, although life insurance companies have long-term liabilities that imply that their exposure to liquidity risk is generally much lower than in the case of other financial institution, such as banks (Schich, 2009; Geneva Association, 2010; Baluch, Mutenga and Parsons, 2011; Vaughan, 2012), the perception on the part of policyholders of the growing financial stress at life insurance companies may affect policyholder behaviour[69]. In particular, it cannot be ruled out that policyholders concerned about the company's financial health exit more frequently from their contracts even if they have to accept termination fees and investment losses (Harrington, 2009; Schich, 2009; Lehmann and Hofmann, 2010; Weiss, 2010). Indeed, in 2008, 2009 and 2010, the amount of gross claims exceeded gross premiums

[68] He finds that insurers with higher leverage tend to purchase more reinsurance, and insurers with higher reinsurance dependence tend to have a higher level of debt. Similarly, he finds that insurers that use derivatives have higher leverage than those that do not.

[69] The effect of the deterioration in the financial position of an insurer may not only have effects of existing policyholders but also prospective policyholders. It may lead to reduction in the new business due to policyholders gravitate to higher quality insurers (Epermanis and Harrington, 2006); they empirically showed that insurers experienced significant premium declines following rating downgrade.

for the life insurance industry; this confirms the findings of Russel, Fier, Carson and Dumm (2013) that macroeconomic variables are vital determinants for policyholder surrenders.

As for asset stability, it is argued that, as linked-based life insurers transfer investment risk to policyholders, the holders of unit-linked life assurance policies will inversely be affected by asset volatility. However, the main sources of revenues for linked based insurers are asset management fees, which depends on the market value of linked assets, and, hence, the fluctuation in the value of linked assets represents as business risk for linked based insurer (Swiss Re, 2003).

In short, on the basis of the discussion above, it is claimed that a linked investment strategy has a wide range of business and performance implications. A firm with more investment in linked funds performs better in business growth and value creation when compared with one that has a low proportion of assets invested in non-linked funds. The latter seems more capital intensive and less cost efficient; in addition, it purchases more reinsurance and it is more likely to use derivatives. However, the linked investment strategy has negative implication to investment yield (realised gain), and it is positively related to the persistency risk and the volatility in the value of assets.

4.5. The Effect of the Linked Products on Performances

The analysis in the previous section shows a particular product concentration/ diversification has different implications on capital gain (unrealised gain), investment yield (realised gain) and combined measure such as value creation (realised and unrealised gains). Furthermore, this effect seems to vary according to economic conditions such during the sub-period 2000-2004 the linked did outperform non-linked assets in terms of valuation gain and difference regarding value creation becomes insignificant as shown in Table 8. To further export how a particular product diversification/ concentration influence various investment performance indicators and

whether this relationship is consistent under various economic conditions, the chapter employs multivariate and dynamic panel data analyses to further explore the relationship.

4.5.1. Development of Hypotheses

4.5.1.1. Unit-Linked Products

Historically, the UK life insurers offered with-profits life assurance products that entitled policyholders and life insurers to share surpluses and risks. However, the UK life insurers have gradually shifted from with-profits products to unit-linked products since the 1980s. In 2010, 80% (£15 billion) of new premiums[70] were written in linked form, while the investments in linked assets exceeded 60% (£839 billion) of admissible assets (see Figure 43). It is argued that unit-linked products are the effective solution to the complexity and lack of transparency of conventional products for policyholders (Richards, 2004; Müller and Steffensen, 2007). Unit-linked products are also able to address the problem of expensive guarantee costs and overcapitalisation to life insurers (Diacon et. al., 2004; Richards, 2004). However, unit-linked products enable life insurers to transfer investment risks to policyholders through linking the policyholders' benefits to the market value of invested assets (Brennan and Schwartz, 1976; Knights and Willmott, 1993; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a,b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011; Aviva Plc, 2008, 2009, 2010, 2011, 2012). The same is true for life insurers; linked products enable them to generate their incomes by taking negotiable management fees as a percentage of the value of the policyholders' assets (Swiss Re, 2003; Richards, 2004; Swiss Re, 2012a). As a result, the rapid growth of linked products in the business suggests that the market value of the policyholders' assets has become the main basis for determining both policyholders' payouts and the shareholders' incomes (fees). In contrast, a conventional measure for insurer performance such as investment yield

[70] Measured using the APE.

(based on realised gain only) may have become less important when compared with the growth of the market value of invested assets (unrealised gain) (see Figure 46). The analysis in the previous section, as shown in Table 8, suggests that the impacts on linked assets on value creation (realised and unrealised gains), investment yield (realised gain) and capital gain (unrealised gain) in not homogenous; see also Figure 44.

4.5.1.2. Product Diversification

The effect of diversification (measured using the HHI) on financial performance (measured using investment yield) is inconclusive (Adams, 1996b; Browne, Carson and Hoyt, 2001; Adams and Buckle, 2003; Shiu, 2004; Elango, Ma and Pope, 2008; Shiu, 2009; Berry-Stölzle, Hoyt and Wende, 2013). The main issue is that the HHI measures product concentration rather than diversification (Berry-Stölzle et. al., 2012). However, it does not capture the effect of particular product line concentration. Indeed, two firms that concentrated on different product lines will be assigned similar scores using the HHI. In contrast to using the HHI as a measure of diversification, Liebenberg and Sommer (2008) employ a dummy set equal to 0 for single line insurers and 1 otherwise following literature that examines diversification discount/premiums (Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996; Desai and Jain, 1999; Campa and Kedia, 2002; Villalonga, 2004a,b; Laeven and Levine, 2007; Santalo and Becerra, 2008).

To address this issue, three measures of diversification are employed to capture the effect of product line diversification/ concentration on performance. Firstly, the HHI of liabilities[71] concentration of five product lines (Non-Profit, With-Profits, Accumulative With-Profits, Property Linked and Index linked) is calculated. Secondly, diversification is measured as a

[71] The data for admissible assets regarding some product lines are only available on the aggregate level; therefore, the HHI is calculated based on gross reserves.

dummy set equal to 0 for single line insurers and 1 for multiline insurers following Berger and Ofek (1995) and Liebenberg and Sommer (2008). Furthermore, the issue of a particular line concentration is addressed by dividing the product lines into linked assets (property linked and index linked assets) and non-linked assets (with-profits, non-profit and accumulative with-profits); then, concentration is measured as the percentage of linked assets to total admissible assets.

4.5.1.3. Firm Size

It has been suggested that in the life insurance market, a high return on invested assets could be due to scale and scope economies in the investment function emanating from larger firm size. It is commonly believed that larger size enables companies to diversify their investment portfolios and thereby reduce business risk. Large life insurance companies are also expected to employ specialist fund managers who are adept at maximising return on invested assets. Moreover, large insurance firms normally have greater capacity for dealing with adverse market fluctuations than small insurance companies. Indeed, Boose (1993), Adams (1996b) and Browne, Carson and Hoyt (2001) cite evidence from the US and New Zealand life insurance industry indicating a positive statistical relationship between firm size and the yield on invested assets.

In contrast, small life insurance companies can be expected to hold a less diversified portfolio of assets and, as a consequence, are less likely to generate high yield on their investment as a result of economies of scale and of scope. Moreover, small companies are unlikely to afford the management expertise needed to maximise investment returns in highly competitive international investment markets. However, recent empirical evidence by Adams and Buckle (2003) on the Bermuda insurance market and Shiu (2004; 2009) on the UK general and life

insurance market (respectively) suggests that insurers' performance, measured as investment yield, is independent from firm size.

One interpretation of this result lies in the fact that financial performance might have been measured as investment income (realised gain) that ignores capital gain (unrealised gain). The new measure of financial performance, value creation, addresses this issue as it combines realised and unrealised gains. Therefore, a positive association is expected between size and value creation but a negative association between investment income (realised gain) and size.

4.5.1.4. Ownership

Two main forms of organisation dominate the British life insurance markets– mutual life insurance firms, which are owned by policyholders, and proprietary life insurance firms, which are owned by shareholders. Mayers and Smith (1981; 1982; 1986; 1988; 1990; 1992; 1994), Adams (1995; 1996a; 1996b), Adams and Hossain (1998) and Adams, Hardwick and Zou (2008) contend that managerial decision-making in the insurance industry partly depends on whether a firm is a proprietary or mutual insurance firm.

In mutual insurance firms, there are two main contracting groups, namely, managers and policyholders. In contrast, in propriety insurance firms, there are three main contracting groups—managers, shareholders and policyholders. The investment decisions are expected to vary between proprietary and mutual insurance firms as a direct result of their different ownership structures, contracting interests and internal governance.

In mutual insurers, the main contracting problem that policyholders have is to ensure that funds are sufficient to meet contractual benefits for policyholders when they fall due (Adams and Hossain, 1998). Therefore, managers of mutual life insurers may follow a precautionary investment and financing strategy. On the other hand, proprietary insurers' shareholders have

incentives to dilute policyholders' funds, and they are more likely to undertake risky investment strategies that promise to give them profitable yield in the short-term (Mayers and Smith, 1982; Adams, 1995). Indeed, Adams (1996b) cites evidence from the New Zeeland life insurance industry indicating a negative statistical relationship between mutuality and yield on invested assets. Thus, mutual life insurance firms are expected to be systematically more conservative and follow precautionary investment policies for policyholders' funds than for proprietary life insurance firms. Therefore, a positive association is expected between mutuality and investment yield; however, it is not clear whether mutuality status has any impact on value creation.

It is not clear whether other forms of ownership, such as banking ownership of insurers or whether the UK-based or overseas-based parents will influence the performance of the insurers.

4.5.1.5. Reinsurance and Derivatives

Several researchers (see Adams, 1996b and Adams and Buckle, 2003) provide evidence that the capital structure of insurance firms has effects on investment yield. They found that leveraged insurers outperform their counterparts (non-leveraged) regarding investment yield. Similarly, Shiu (2005) cites evidence that the capital structure (leverage) is associated with insurers' solvency.

Moreover, the finance literature on the insurance business provides evidence that the capital structure of insurance firms is influenced by the financial transaction of reinsurance and use of derivatives. Indeed, Adams (1996a), Adiel (1996), Powell and Sommer (2007), Adams, Hardwick and Zou (2008) and Shiu (2011) find that insurers with a higher leverage ratio tend to purchase more reinsurance. Shiu (2011) confirms the interrelationship between the leverage and reinsurance purchase and provides evidence that there is positive interrelationship between

leverage and derivative[72] usage. On the other hand, insurance based-literature provides evidence that the use of derivatives serves as a substitute to reinsurance purchase. Hardwick and Adams (1999) and Shiu (2011) provided evidence that the use of derivatives is negatively related to reinsurance purchase.

This implies that reinsurance transaction and use of derivatives are determinates of the capital structure of insurers, and, hence, are expected to influence the financial performance of insurers. Indeed, Shiu (2004; 2009) cited evidence that investment yield of the UK general and life insurers are negatively related to reinsurance transactions. Therefore, a significant association is expected between the financial performance and use of derivatives and reinsurance dependence.

4.5.1.6. Economic Conditions

Changes in market conditions may have a significant impact on insurers' abilities to deliver the promised benefits to policyholders, for instance the significant fall in interest rates, and, hence, investment income in the UK in the 1990s forced with-profits insurers to reduce bonus rates (Grosen and Jorgensen, 2000; O'Brien, 2009; Carter and Falush 2009). Moreover, this decline in interest rates has negatively affected the financial positions[73] of many with-profits life insurers leading many firms to close to new business, and the market has seen substantial consolidation, with several changes of ownership (FSA, 2004; 2005; O'Brien and Diacon, 2005; Carter and Falush, 2009; O'Brien, 2009).

[72] He finds that insurers with higher leverage tend to purchase more reinsurance, and insurers with higher reinsurance dependence tend to have a higher level of debt. Similarly, he finds that insurers that use derivatives have higher leverage than those that do not.

[73] The insurer's ability to reinvest surplus and create value for policyholders and shareholders is an indication of the insurers' financial health. Indeed, the financial performance of an insurer has become an indication of financial solidity. BarNiv and Hershbarger (1990), Kim et. al. (1995), Kramer (1996), Lee and Urrutia (1996), Chen and Wong (2004) and Leadbetter and Dibra (2008) found that investment performance is negatively correlated to insolvency. Adams, Burton and Hardwick (2003) reported that the probability an insurer will be rated by credit rating agencies is positively related to investment yield.

Browne and Hoyt (1995), Browne, Carson and Hoyt (1999, 2001), Shiu (2004; 2005; 2009) and Brewer et. al. (2007) showed that economic and market variables are vital determinants of solvency and financial performance of insurers. Browne, Carson and Hoyt (2001) cited evidence that the financial performance for US life insurers was negatively related to unanticipated inflation. Similarly, the financial performance of the UK non-life insurers was negatively related to unanticipated inflation (Shiu, 2004). Similarly, the financial turmoil in 2008 was found to have negative impacts of the UK insurer solvency and financial performance (FSA, 2009; EU, 2009b; O'Brien, 2010; Parsons and Mutenga, 2010; Baluch, Mutenga and Parsons, 2011).

4.5.2. Research Design

To examine the effect of product diversification, following Berger and Ofek (1995), the OLS estimator of pooled time series and cross sectional data is estimated with control for time dummies. However, pooled OLS may lead to an inconsistent result if the main explanatory variable is endogenous (Wooldridge, 2008). To address this issue, the Hausman Test (Hausman, 1978) is employed to test whether the 'Linked Assets' variable is endogenous; the estimated result shows that linked assets variable is exogenous (failed to reject the null hypothesis at the 10% level). This suggests that the OLS pooled estimator result is consistent. The model to be estimated is written as follows:

$$FP_t = \alpha + \beta_1 LA_{it-1} + \beta_2 PM_{it-1} + \beta_3 PL_{it-1} + \beta_4 OV_{it-1} + \beta_5 SZ_{it-1} + \beta_6 PA_{it-1} + \beta_7 LF_{it-1} + \beta_8 ID_{it-1} + \beta_9 RE_{it-1} + \beta_{10} DE_{it-1} + \beta_{11} IS_{it-1} + \beta_{12} VO_{it-1} + u_t \quad (6)$$

Where:

Financial Performance (FP): Capital Gain; Value Creation or Investment Yield; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.

Endogenous Variables: Linked Assets (LA); for detailed explanations of the term see Table 9.

Exogenous Variables: Product Mix (PM); Product Line (PL); Overseas (OV); Size (SZ); Parents (PA); Legal Form (LF); Industry (ID); Reinsurance (RE); Derivative (DE); Instability (IS) and Volatility (VO); for detailed explanations of the terms see Table 9.

The main issue with the OLS pooled estimator is that it does not control to unobserved firm specific effects (Wooldridge, 2008; 2010). To address this issue, the result of pooled estimator is compared to an estimator that controls unobserved firm specific effects. To determine the most appropriate estimator to be used, the Hausman Specification Test (Hausman, 1978) is conducted to examine whether the Fixed Effects or Random Effects estimator is the appropriate estimator. The null hypothesis that the unobservable firm-specific effects are random (uncorrelated with the explanatory variables) is rejected (see Table 11). The Fixed Effects estimator controls for time and firm specific effects that are not controlled by other independent variables included in the model. Furthermore, it also makes it possible to examine the interactive impact of diversification and change in the economic condition on firm performance. The model is specified in lagged form[74] to control for potential endogeneity. The model to be estimated is written as follows:

$$FP_t = \alpha_i + \beta_1 LA_{it-1} + \beta_2 PM_{it-1} + \beta_3 PL_{it-1} + \beta_4 OV_{it-1} + \beta_5 SZ_{it-1} + \beta_6 PA_{it-1} + \beta_7 LF_{it-1} + \beta_8 ID_{it-1} + \beta_9 RE_{it-1} + \beta_{10} DE_{it-1} + \beta_{11} IS_{it-1} + \beta_{12} VO_{it-1} + u_{it} \quad (7)$$

Where:

Financial Performance (FP): Capital Gain; Value Creation or Investment Yield; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.

Endogenous Variables: Linked Assets (LA); for detailed explanations of the term see Table 9.

Exogenous Variables: Product Mix (PM); Product Line (PL); Overseas (OV); Size (SZ); Parents (PA); Legal Form (LF); Industry (ID); Reinsurance (RE); Derivative (DE); Instability (IS) and Volatility (VO); for detailed explanations of the terms see Table 9.

Some of the control variables, namely, Overseas, Parents, Legal Form, Industry and Derivative are time-invariant and rarely changing variables; suggesting that the fixed effects estimator

[74] The model is specified in lagged form can be justified as follows. (1) The long-term nature of the life insurance business. (2) Diversification is a strategic decision, and, hence, it may take reasonable time to affect performance. (3) Using a lag structure makes it possible to control potential endogeneity.

may lead to imprecise estimates[75] (Wooldridge, 2010; Green, 2011). To deal with this issue, the model is also estimated using the Fixed Effects Vector Decomposition (FEVD) approach of Plümper and Troeger (2007). This approach is used to address the problems of estimating time-invariant and rarely changing variables in panel data analysis with unit effects.

Furthermore, the 2SLS estimator is also employed to estimate the effect of linked assets on performance; assuming the linked assets variable is endogenous. The instrumental variables for linked assets: Capitalisation, Surrender and Liquidity are closely linked to linked assets as shown in Figure 47 and Table 8, and their credibility is assessed by performing a range of diagnostic tests, namely, (a) Kleibergen-Paap rk LM statistic, which is a test of whether the equation is identified, i.e. the excluded instruments are all relevant. (b) Kleibergen-Paap rk Wald F statistic, which is a generalization of the first stage F-statistic; the null hypothesis is that the instruments are weak. (c) The Hansen–Sargan test or Hansen J test, which is a test of over-identifying restrictions, the null hypothesis is that the instruments are valid instruments, i.e., uncorrelated with the error term, and that the instruments are correctly excluded from the estimated equation. The model to be estimated is written as follows:

$$FP_{it} = \alpha_i + \beta_1 LA_{it} + \beta_2 PM_{it-1} + \beta_3 PL_{it-1} + \beta_4 OV_{it-1} + \beta_5 SZ_{it-1} + \beta_6 PA_{it-1} + \beta_7 LF_{it-1} + \beta_8 ID_{it-1} + \beta_9 RE_{it-1} + \beta_{10} DE_{it-1} + \beta_{11} IS_{it-1} + \beta_{12} VO_{it-1} + u_{it} \quad (8.1)$$

$$LA_{it} = \lambda_1 + \lambda_2 CA_{it-1} + \lambda_3 SC_{it-1} + \lambda_4 LI_{it-1} + v_{it} \quad (8.2)$$

Where:

Financial Performance (FP): Capital Gain; Value Creation or Investment Yield; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.

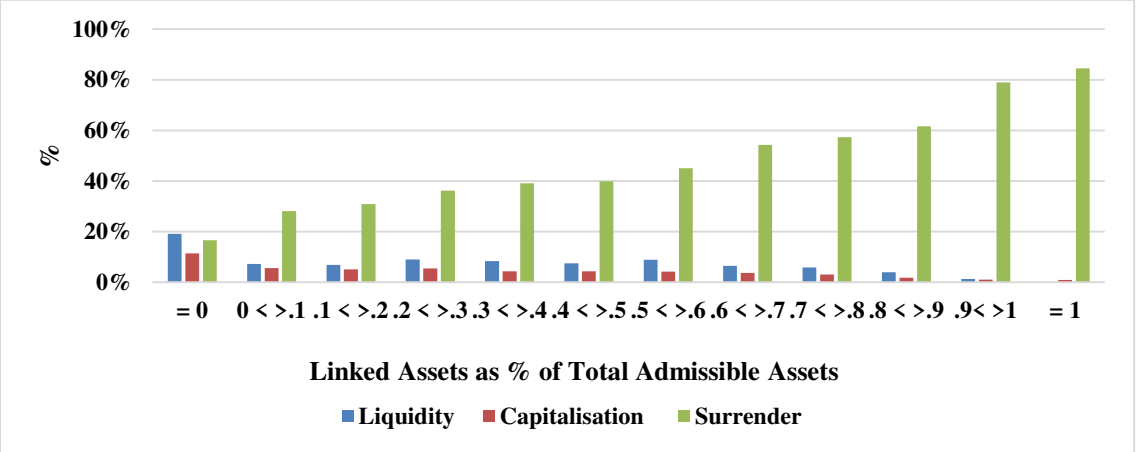
Endogenous Variables: Linked Assets (LA); for detailed explanations of the term see Table 9.

Exogenous Variables: Product Mix (PM); Product Line (PL); Overseas (OV); Size (SZ); Parents (PA); Legal Form (LF); Industry (ID); Reinsurance (RE); Derivative (DE); Instability (IS) and Volatility (VO); for detailed explanations of the terms see Table 9.

[75] This is because the time-invariant variables are swept away in the time-demeaning process that eliminates the time-invariant unobserved firm specific effects.

Instruments: Capitalisation (CA); Surrender Claims (SC) and Liquidity (LI); for detailed explanations of the terms see Table 9.

Figure 47: Instrumental Variables



Source the author — it is based on 5,181 observation for 323 firm sample, Surrender (F42, L13; C4) / (F42, L16; C4), Capitalisation (F2, L36) / (F13, L89, LTIB), Liquidity (F13; L54, L55, L57, L81 and L82; LTIB) / (F13, L89, LTIB) and Linked Assets (F13; L58 + L59; LTIB) / (F13; L89; LTIB).

Capital gain and value creation are measured in accumulative terms, see Chapter 3. Therefore, the OLS estimator is biased and inconsistent in a short panel (small T and large N) (Nickell, 1981); however, the dynamic panel bias becomes insignificant for a large T, and, hence, OLS estimators may give consistent result (Roodman, 2009). This chapter employs relatively large T, 26 years over the period 1985-2010, and, hence, the OLS estimator is expected to give a consistent result. However, there are additional methodological issues; the diagnosis tests, namely, the augmented Durbin-Wu-Hausman test[76] (DWH) and the Autocorrelation test[77] show that the financial performance based variable is endogenous and there is serial correlation in the residuals. Thus, to address these problems and to check whether the bias has significant effects on the result of the OLS estimator, the difference and system Generalized Method of Moments (GMM) estimators suggested by Arellano and Bond (1991), Arellano and Bover

[76] The augmented regression DWH test is performed as suggested by Davidson and MacKinnon (1993) through including the residuals of each endogenous right-hand side variable, as a function of all exogenous variables, in a regression of the original model.

[77] Wooldridge (2002 pp. 282–283; 2010 pp. 319-320) derives a simple test for autocorrelation in panel-data models; Drukker (2003) provides simulation results showing that the test has good size and power properties in reasonably sized samples. Furthermore, the Arellano-Bond test for autocorrelation is also performed using 'ABAR Stata model' (Roodman, 2004).

(1995), Blundell and Bond (1998) and Holtz-Eakin, Newey and Rosen (1988) are employed. The result is based on the two-step estimator implemented by Roodman (2003) in Stata (called xtabond2) including Windmeijer's (2005) finite sample correction. The model to be estimated is written as follows:

$$FP_{it} = \alpha_i + \beta_1 FP_{it-1} + \beta_2 LA_{it} + \beta_3 PM_{it-1} + \beta_4 PL_{it-1} + \beta_5 OV_{it-1} + \beta_6 SZ_{it-1} + \beta_7 PA_{it-1} + \beta_8 LF_{it-1} + \beta_9 ID_{it-1} + \beta_{10} RE_{it-1} + \beta_{11} DE_{it-1} + \beta_{12} IS_{it-1} + \beta_{13} VO_{it-1} + u_{it} \quad (9.1)$$

$$LA_{it} = \lambda_1 + \lambda_2 CA_{it-1} + \lambda_3 SC_{it-1} + \lambda_4 LI_{it-1} + v_{it} \quad (9.2)$$

Where:

Financial Performance (FP): Capital Gain; Value Creation or Investment Yield; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.

Lagged Financial Performance (FP_{t-1}): Capital Gain lagged one period; Value Creation lagged one period or Investment Yield lagged one period; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.

Endogenous Variables: Linked Assets (LA); for detailed explanations of the term see Table 9.

Exogenous Variables: Product Mix (PM); Product Line (PL); Overseas (OV); Size (SZ); Parents (PA); Legal Form (LF); Industry (ID); Reinsurance (RE); Derivative (DE); Instability (IS) and Volatility (VO); for detailed explanations of the terms see Table 9.

Instruments: Capitalisation (CA); Surrender Claims (SC) and Liquidity (LI); for detailed explanations of the terms see Table 9.

Economic condition effects on performance are tested using interaction terms of Instability (See Table 9). To further show the robustness of the estimations, the sample (see 4.3 data and sample) is split, first, yearly, and then, market-condition-based time periods, namely, 1986-1989, 1990-1991, 1992-1999, 2000-2003, 2004-2007 and 2008-2010. These two approaches for analysis will help in checking the sensitivity of the findings in terms of full sample period, yearly estimations and market conditions based periods. It is expected that effect of market conditions to be captured by the interaction term, namely, 'Instability', whereas sub-periods and yearly estimations based results are expected to provide evidence that relationship varies according to market conditions.

For the yearly estimations, all predetermined performance variables are estimated against the linked assets with control for firm size and legal form. The model to be estimated is written as follows:

$$FP_t = \alpha + \beta_1 LA_{it-1} + \beta_5 SZ_{it-1} + \beta_7 LF_{it-1} + u \quad (10)$$

Where:
Financial Performance (FP): Capital Gain; Value Creation or Investment Yield; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.
Endogenous Variables: Linked Assets (LA); for detailed explanations of the term see Table 9.
Exogenous Variables: Size (SZ) and Legal Form (LF); for detailed explanations of the terms see Table 9.

For the sub-periods estimations, the test is made on the basis of the system GMM estimator for the within-time-period observations. The model to be estimated is written as follows:

$$FP_{it} = \alpha_i + \beta_1 FP_{it-1} + \beta_2 LA_{it} + \beta_3 SZ_{it-1} + \beta_4 LF_{it-1} + u_{it} \quad (11.1)$$

$$LA_{it} = \lambda_1 + \lambda_2 CA_{it-1} + \lambda_3 SC_{it-1} + \lambda_4 LI_{it-1} + v_{it} \quad (11.2)$$

Where:
Financial Performance (FP): Capital Gain; Value Creation or Investment Yield; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.
Lagged Financial Performance (FP_{t-1}): Capital Gain lagged one period; Value Creation lagged one period or Investment Yield lagged one period; noting a separate regression run for each Dependent Variable, namely, Capital Gain; Value Creation or Investment Yield; for detailed explanations of the terms see Table 9.
Endogenous Variables: Linked Assets (LA); for detailed explanations of the term see Table 9.
Exogenous Variables: Size (SZ) and Legal Form (LF) for detailed explanations of the terms see Table 9.
Instruments: Capitalisation (CA); Surrender Claims (SC) and Liquidity (LI); for detailed explanations of the terms see Table 9.

Table 9: Description of Variables and Instruments

Variables	Abbreviation	Description
Dependent Variables		
Capital Gain	**FP**	Capital gain (based on Chapter 3) deflated by the value of assets for firm i time t (F13, L89, LTIB).
Value Creation	**FP**	Value creation (based on Chapter 3) deflated by the value of assets for firm i time t (F13, L89, LTIB).
Investment Yield	**FP**	Investment income deflated by the value of admissible assets for firm i, time t (F40, L12) / (F13, L89, LTIB).
Endogenous Variables		
Linked Assets	**LA**	The linked assets divided by total policyholders' assets for firm i at time t. (F13, L58+L59, LTIB) / (F13, L89, LTIB).
Lagged Dependent Variable	**FP_{t-1}**	The lagged dependent variable.
Exogenous Variables		
Product Mix	**PM**	The HHI score is expressed as the sum of the squared share of each business line (non-profit, with-profits, unitised with-profits, property unit-linked and index unit-linked) in gross mathematical reserves With-Profits (F50; L11, C4), Non-Profit (F50; L12, C4), Accumulative With-Profits (F50; L13, C4), Property Linked (F50; L14+L15, C4) and Index Linked (F50; L16+L17, C4).
Product Line	**PL**	0 for insurer writes over 90% of new premiums from a single line, namely, Non-Profit, With-Profits, Unitised With-Profits, Property Unit-Linked or Index Unit-Linked and 1 otherwise for firm i time t. With-Profits ((F47; L100-215, C4 + (L100-215, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29); Non-Profit (F47; L300-445, C4 + (L 300-445, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29); Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29; Property Linked ((F47; L580-800, C4 + (L580-800, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29); and Index Linked ((F47; L900-915, C4 + (L900-915, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29).
Overseas	**OV**	1 for an insurer that has overseas operations and 0 otherwise for firm i time t. (it is based on F50, L18, C3).
Size	**SZ**	The natural logarithms of total admissible assets for firm i time t (F13, L89, LTIB).
Parents	**PA**	1 for British-based parents 0 for international-based parents for firm i time t (see Table 31 in the Appendix).
Legal Form	**LF**	1 for proprietary insurers; 0 for mutual insurers for firm i time t (see Table 31 in the Appendix).
Industry	**ID**	0 for insurer parents, 1 for bank parents, 2 for other financial institution parents and 3 for non-financial parents for firm i time t (see Table 31 in the Appendix)
Reinsurance	**RE**	Premiums ceded to gross premiums written for firm i time t (F41; L20; C4) / (F41; L19; C4).
Derivative	**DE**	1 for use of derivative in business and 0 otherwise for firm i time t (it is based on (F17; L51, C1; LTIB), (F17; L51, C2; LTIB) and (F13; L44; LTIB; prior to 1994).
Instability [(1)]	**IS**	A dummy is set 1 in 1985, 1987, 1990, 1991, 1994, 2000, 2001, 2002, 2007 and 2008 (during these years change in real capital gain and sometimes change in value creation were negative) and 0 otherwise multiplied by the absolute values of weighted average capital gain and loss of linked and non-linked assets |((F40, L14) / (F13, L58+L59, LTIB))|*((F13, L58+L59, LTIB) / (F13, L89, LTIB)+ |((F40, L13) / (F13, L89-(L58+L59), LTIB))|*((F13, L89-(L58+L59), LTIB) / (F13, L89, LTIB).
Volatility	**VO**	The absolute values of weighted average valuation gain and loss of linked and non-linked assets for firm i, time t |((F40, L14) / (F13, L58+L59, LTIB))|*((F13, L58+L59, LTIB) / (F13, L89, LTIB)+ |((F40, L13) / (F13, L89-(L58+L59), LTIB))|*((F13, L89 - (L58+L59), LTIB) / (F13, L89, LTIB).
Instruments		
Capitalisation	**CA**	Minimum capital requirement divided by admissible assets for firm i at time t (F2, L36) / (F13, L89, LTIB).
Surrender Claims	**SC**	The value of gross surrender and partial surrender claims to total gross claims for firm i, time t (F42, L13; C4) / (F42, L16; C4).
Liquidity:	**LI**	Liquid assets (the sum of the cash in hand, deposits not subject to time restriction on withdrawal, bank and approved credit and financial deposits <= 1 month, bank and approved credit and financial deposits > 1 month and deposits with ceding undertakings (see classification of admissible assets in Table 17 in Appendix) divided by admissible assets for firm i at time t (F13; L54+L55+L57+L81+L82; LTIB) / (F13, L89, LTIB).

Source: the author.

Where:

[(1)]Using a multiplicative interaction term as an explanatory variable is more likely to create multicollinearity among the constituent parts (Gordon, 1968; Aiken and West, 1991). In order to mitigate the multicollinearity issues between the interaction term (Instability) and its component parts, namely, Financial Turmoil and Stability, the mean centre of component variables are employed and then the interaction term is calculated as the product of mean centred component variables (Cronbach, 1987; Jaccard, Turrisi and Wan, 1990; Aiken and West, 1991; Jaccard and Turrisi, 2003).

4.5.3. Results

4.5.3.1. The Univariate Analysis

Panel A in Table 10 presents the descriptive statistics for variables used in the chapter, whereas Panel B shows the pairwise correlation for all explanatory and dependent variables. In Panel A, it is not surprising that the industry average of capital gain (unrealised gain) is 0.0176 as the UK life insurance market suffered from the collapse in the financial market in 2001-2002 and 2008. Investment yield (realised gain) as a measure of performance is more stable than value creation (realised and unrealised gains) and capital gains (unrealised gain) as they are less sensitive to the fluctuation in the market value of the asset under management; the standard deviation of investment yield (realised gain) is 2% compared to 16% and 17% for capital gain (unrealised gain) and value creation (realised and unrealised gains), respectively.

Table 10: Descriptive Statistics of Variables

Panel A

Variable	Obs.	Mean	Std. Dev.	Min	Max	VIF
Dependent Variables						
Capital Gain	5181	0.0176	0.1582	-0.4996	0.4996	
Value Creation	5181	0.2443	0.1699	-0.4995	0.6961	
Investment Yield	5181	0.048	0.0231	0.0001	0.1497	
Endogenous Variables						
Linked Assets	5181	0.4373	0.4116	0	1	1.88
Exogenous Variables						
Product Mix	5181	0.7275	0.2508	0.2088	1	1.9
Product Line	5181	0.5808	0.4935	0	1	1.31
Overseas	5181	0.2822	0.4501	0	1	1.25
Size	5181	13.3409	2.3251	3.1128	19.2317	1.73
Parents	5181	0.7196	0.4493	0	1	1.13
Legal Form	5181	0.5852	0.4927	0	1	1.3
Industry	5181	0.2696	0.618	0	3	1.07
Reinsurance	5181	0.1239	0.2222	0.0001	0.9994	1.16
Derivative	5181	0.2235	0.4166	0	1	1.63
Instability	5181	0.0002	0.0331	-0.3585	0.575	1.03
Volatility	5181	0.0678	0.0658	0.0001	0.9998	1.28
Instrumental Variables						
Surrender Claims	5181	0.4545	0.333	0.0001	1	1.1
Capitalisation	5181	0.0499	0.0992	0.0001	0.987	1.27
Liquidity	5181	0.0792	0.1575	0.0001	0.9986	1.31

Source: the author.

Panel B

	Capital Gain	Value Creation	Investment Yield	Linked Assets	Product Mix	Product Line	Overseas	Size	Parents	Legal Form	Industry	Reinsurance	Derivative	Instability	Volatility
Capital Gain	1														
Value Creation		1													
Investment Yield			1												
Linked Assets	0.3185***	0.1946***	-0.3126***	1											
Product Mix	0.0739***	-0.1155***	-0.0541***	0.4422***	1										
Product Line	0.0098	0.0897***	0.0079	-0.0688***	-0.4331***	1									
Overseas	-0.0796***	-0.0474***	0.0131	-0.1837***	-0.2424***	0.1903***	1								
Size	0.2365***	0.2966***	-0.2551***	0.2001***	-0.28***	0.2924***	0.2822***	1							
Parents	0.0395***	0.1227***	0.0140	-0.0548***	-0.1017***	0.0182	-0.1165***	0.0075	1						
Legal Form	-0.0027	-0.1113***	-0.0255*	0.2054***	0.1176***	-0.0595***	0.1335***	0.1312***	-0.2849***	1					
Industry	-0.0168	-0.0872***	-0.0456***	0.0759***	0.0678***	-0.0578***	-0.0272	0.0119	0.045***	0.2051***	1				
Reinsurance	-0.1538***	-0.1934***	0.0743***	-0.2054***	-0.1234***	0.0555***	0.2079***	-0.0412***	-0.1306***	0.2053***	0.0179	1			
Derivative	0.0086	0.1002***	-0.1109***	-0.1742***	-0.4614***	0.237***	0.271***	0.4957***	0.042***	0.0577***	0.0493***	0.1244***	1		
Instability	-0.2276***	-0.1736***	0.0148	-0.0008	-0.0116	-0.0036	-0.0041	-0.0026	-0.0089	0.0123	0.008	-0.0032	0.0148	1	
Volatility	0.2042***	0.1185***	-0.1376***	0.445***	0.1949***	-0.0315**	-0.107***	0.0812***	-0.0443***	0.0576***	0.0399***	-0.0921***	-0.0803***	0.1371***	1

Source: the author.

Panel C

	Linked Assets	Liquidity	Capitalisation	Surrender Claims
Linked Assets	1			
Liquidity	-0.3163***	1		
Capitalisation	-0.3208***	0.4494***	1	
Surrender Claims	0.7128***	-0.2887***	-0.2219***	1

Source: the author.
Where:
***, **, and * represent statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
Mean VIF 1.39.
Number of Observations: 5,181 over the period 1985-2010 for 323 firms.
Mean VIF (instruments) 1.23.
Some variables, namely, Capital Gain, Value creation, Investment yield, Reinsurance, Capitalisation, Surrender Claims and Liquidity are winsorized at 98%-99% levels to avoid extreme outliers.

Table 10 (Panel B) shows the tabulated results of the Pearson correlation coefficient matrix (pairwise correlation). Consistent with expectations, the value creation is positively related to size, the proportion of assets invested in linked funds and negatively related to economic conditions. In contrast, investment yield is negatively related to the proportion of assets invested in linked funds. Overall, the absolute values for the correlation coefficients between pairs of explanatory variables are generally modest. None of them exceeds 50%. Furthermore, the variance inflation factor (VIF) values are also calculated for each explanatory variable. The calculated VIF values are less than 10 (mean VIF 1.39), suggesting that problems associated with multicollinearity are unlikely in the analysis (Gujarati, 2004; Wooldridge, 2008) (Table 10 Panel A). Furthermore, the multicollinearity issues concerning the interaction terms (Gordon, 1968; Aiken and West, 1991) have been mitigated by applying the centring transformation procedures (Cronbach, 1987; Jaccard, Turrisi and Wan, 1990; Aiken and West, 1991; Jaccard and Turrisi, 2003).

Table 10 (Panel C) shows the tabulated results of the Pearson correlation coefficient matrix (pairwise correlation) between the instrumented variable (linked assets variable) and the instrumental variables. The result indicates that there is a strong correlation between the instrumented variable and instrumental variables. Moreover, the absolute values for the correlation coefficients between each pair of instrumental variables are generally modest; none of these exceeds 50%. Furthermore, the Variance Inflation Factor (VIF) values are also calculated for each instrumental variable. The calculated VIF values are less than 10 (mean VIF 1.23), suggesting that problems associated with multicollinearity are unlikely in the analysis (Gujarati, 2004; Wooldridge, 2008); Table 10 (Panel A).

4.5.3.2. The Multivariate Analysis

The estimated results are reported in Table 11. The coefficients and the associated standard errors are reported for all explanatory variables and time dummies. The estimated results are consistent with the hypotheses previously discussed and the result of the analytical analysis. The result of pooled OLS, Fixed Effects, FEVD, 2SLS and GMM is mainly consistent. It shows that the effect of product diversification on financial performance is not homogeneous across different financial performance and diversification measurers. Furthermore, the result shows that linked based life insurers outperform non-linked based counterparts with respect to value creation (realised and unrealised gains) and capital gain (unrealised gain) as a measure of performance. This provides evidence that there is linked assets diversification (concentration) premium with respect to value creation and capital gain. Indeed, the estimated linked asset concentration premium is about 6.5% and 8% for capital gain (unrealised gain) and value creation (realised and unrealised gains), respectively; (see Tables 11 Panels A and C); this result is mainly consistent for pooled OLS, Fixed Effects, FEVD, 2SLS and GMM estimators.

However, the linked based insurers suffer from the diversification (concentration) discount with respect to investment yield (realised gain). The result (see Table 11 Panel B) shows that there is about -2% investment yield (realised gain) discount for linked based insurers compared to their non-linked counterparts. However, value creation (realised and unrealised gains) is superior to investment yield (realised gain) as a measure of performance as it incorporates investment yield (realised gain) and capital gain (unrealised gain). This suggests that the linked assets outperform non-linked assets. This result is consistent with insurance-based literature that shows that investment yield is negatively related to linked assets (Shiu, 2009). The plot of the investment yield (realised gain) against linked products further shows a general trend of a negative relationship between the two variables, see Figure 48. One explanation to this

phenomenon is that the linked products provide policyholders with investment returns on the basis of the market value of the linked assets (capital gain or unrealised gain), rather than cash generated from investment (realised gain), in which this investment-awarding incentive leads the firm to seek opportunities in investing policyholders' funds in assets with good potential to raise value (such as growth in the market value of invested assets) rather than to generate cash (such as dividends or interests). With this value-driven mechanism, it is expected that the value of assets will grow faster than the amount of the cash incomes (realised gain) generated by the investment. This will inevitably slow down the growth of the investment yield (realised gain) with more investment in linked assets over the long run. It is understood that the firm will also be better off since its fee incomes are linked to the market value of invested assets. The result is consistent with the market trend in the UK life insurance business. Indeed, many non-linked based life insurers (with-profits insurers) were forced to reduce bonus rates following the significant decline the interest rates in 1990s and 2000s, with many firms being closed to new business, and the market has seen substantial consolidation, with several changes of ownership (O'Brien and Diacon, 2005; Carter and Falush, 2009; O'Brien, 2009b). Furthermore, there has been an unparalleled decline in the proportion of life insurance business written in with-profits[78] form (only 4% of new premiums[79] in 2010). In contrast, the unit-linked business has become the dominant business in the UK life insurance market; about 80% of new premiums were written in linked form in 2010.

As for other measures of diversification, the result is far from conclusive. It demonstrates that some measures of diversification, such as the HHI (see the result for Product Mix variable in Table 11), may not be able to capture the effect of a particular product concentration on performance. Given the outfermentation nature of life assurance products, HHI may sign the

[78] It includes conventional with-profits (1% of new premiums in 2010) and accumulating with-profits (3% of new premiums in 2010).
[79] Measured using the APE.

same rank (score) for life insurers concentrated / diversified across outfermentation products. This result is consistent with previous evidence on the diversification-performance insurance based-literature (Adams, 1996b; Browne, Carson and Hoyt, 2001; Adams and Buckle, 2003; Shiu, 2004; Elango, Ma and Pope, 2008; Liebenberg and Sommer, 2008; Shiu, 2009; Berry-Stölzle, Hoyt and Wende, 2013). Finally, measuring diversification using a dummy, the result seems to support the view there is diversification discount that is consistent with diversification discount literature (see Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996; Desai and Jain, 1999 and Laeven and Levine, 2007).

Value creation (realised and unrealised gains) and capital gain (unrealised gain) as a measure of financial performance compared to investment yield (realised gain) is very sensitive to the change in economic conditions, such the periods of financial turmoil. The result shows that value creation and capital gain are positively related to fluctuation (growth) in the market value of admissible assets (Assets volatility variable); however, they are negatively related to changes in the market value of assets during the period of financial turmoil. This suggests that the return on policyholders' assets is positively related to growth in the market value of assets but negatively to adverse movement in the markets. In contrast, investment yield is negatively related to fluctuation in the value of assets under management; however, the adverse movements in the market value of assets under management do not have negative impact on investment yield. The result generally supports the view that the economic and market variables are determinants of financial performance and solvency of life and general insurers (Browne and Hoyt, 1995; Browne, Carson and Hoyt, 1999; 2001; Shiu, 2004; 2005; 2009). This result is further evidenced in Panels E and D, it shows that the ability of linked products to positively influence the performance of life insurers is subject to market conditions; suggesting these products are more vulnerable to adverse movements in financial markets.

As for other control variables: (1) Firm size variable — the estimate of the coefficient of the variable is mainly positive, as expected, and mostly statistically significant. Thus, there is strong evidence to support the hypothesis that larger life insurance firms outperform small size counterparts with respect to value creation, capital gain and investment yield. This is because larger firms can allocate policyholders funds' to less risky assets, and/or benefit from diversification. It is also likely that larger firms will be able to employ specialized personnel and so be able to ensure that they have responsibility for the control of investment strategies. This result is consistent with Boose's (1993), Adams's (1996b) and Browne's, Carson's and Hoyt's (2001) findings concerning the positive statistical relationship between firm size and investment yield. However, the result is in direct contradiction of Adams's and Buckle's (2003) and Shiu's (2004; 2009) findings.

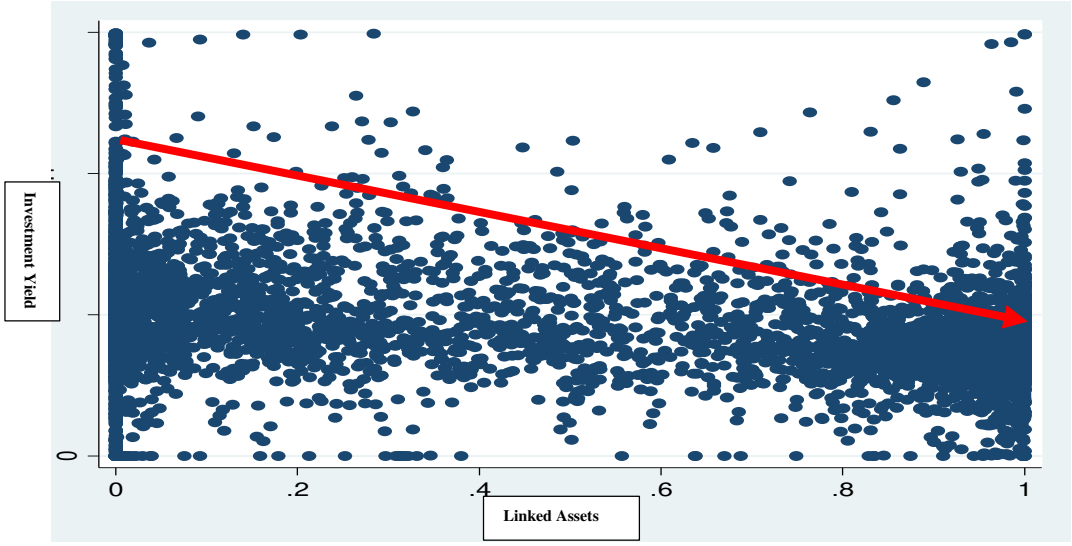
(2) Reinsurance and derivatives — insurance based literature (Adams, 1996a; Adiel, 1996; Powell and Sommer, 2007; Adams, Hardwick and Zou, 2008; Shiu, 2011) leveraged insurers purchase reinsurance to reduce their liabilities, and, hence, write a higher volume of business to a given amount of capital. Moreover, insurance based literature (Hardwick and Adams, 1999; Shiu, 2011) strongly supports the hypothesis that insurers use derivatives as a substitute to reinsurance purchase. However, in the UK life insurance industry, more than 80% of reinsurance transactions are intergroup[80] reinsurance, which implies that parent groups retain the risk. Indeed, the estimated coefficients of the use of derivatives and reinsurance purchase

[80] In the UK, the FSA proposed to change the reporting of reinsurance, which was not split between intra-group and external reinsurers. They proposed by CP202 to split the reinsurance between the external and intra-group to '*facilitate analysis of the more complex groups of insurance firms. In cases where there is significant intra-group reinsurance, the split of premiums, expenses, new business and in-force business is needed to allow us to calculate group ratios. It will also make it easier for us and external users to identify potential risks from intra-group reinsurance'* (FSA, 2003). The author calculates, (see Table 31 in Appendix), the reinsurance transaction regarding the reinsurance new premiums, gross premiums, liabilities and expense for total reinsurance, external reinsurance and intergroup (separable data has become available only since 2005) for life insurers (excluding pure reinsurers) using data derived from regulatory return. The result indicates that there was a substantial increase in the amount of reinsurance transaction over the period 1985-2010. However, more than 80% of the reinsurance transaction is inter-group reinsurance during the period for which separable data is available.

are negative. Thus, there is evidence to support the hypothesis that financial performance of life insurers is negatively related to reinsurance purchase and use of derivatives.

(3) Overseas diversification — the coefficients are mostly negative and sometimes significant suggesting that insurers that focus on the domestic market outperform insurers that expend their operations overseas.

Figure 48: The Plot of the Investment Yield against the Linked Assets as Proportion of the Total Assets



Source the author — Linked Assets: the linked assets divided by total policyholders' assets for firm i at time t. (F13, L58+L59, LTIB) / (F13, L89, LTIB) and Investment Yield: the investment income deflated by the value of admissible assets for firm i, time t (F40, L12) / (F13, L89, LTIB).

Table 11: The Effect of the Linked Products on the Performances - Multivariate Analysis

Panel A

	Capital Gain													
	OLS		Fixed Effects		FEVD		2SLS (Fixed Effects)		2SLS (FEVD)		System GMM		Difference GMM	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Lagged Dependent Variable											0.8613***	0.0227	0.607***	0.0419
Linked Assets	0.0825***	0.0078	0.1069***	0.0271	0.1052***	0.0225	0.0954***	0.0354	0.1836***	0.0242	0.0339***	0.0067	0.0696***	0.0216
Product Mix	-0.0082	0.0113	0.0173	0.0272	0.0176	0.0306	0.0228	0.0151	0.0176	0.0315	-0.016**	0.0078	-0.0082	0.0153
Product Line	0.0043	0.0047	-0.008	0.0074	-0.0082	0.0068	-0.0085**	0.0041	-0.0086	0.007	0.0047**	0.0023	-0.0013	0.0034
Overseas	-0.0178***	0.0048	-0.011	0.0135	-0.0136	0.0137	-0.0112	0.0072	-0.0016	0.0141	-0.0001	0.0031	-0.0068	0.0072
Size	0.0139***	0.0011	0.0088*	0.0052	0.0088*	0.005	0.0101***	0.0029	0.0082	0.0058	0.0002	0.0008	-0.00023	0.0023
Parents	0.0132***	0.005	-0.0069	0.0178	0.0152	0.0122	-0.0077	0.0091	0.0153	0.0124	0.0026	0.0032	0.005	0.0095
Legal Form	-0.016***	0.0044	-0.0137	0.0184	-0.0217*	0.0116	-0.0142*	0.0083	-0.0359***	0.0118	-0.0062**	0.0028	-0.0113	0.0095
Industry	-0.0109***	0.0039	-0.0028	0.0132	-0.0126	0.0089	-0.0031	0.0066	-0.0151*	0.0091	0.0001	0.0023	-0.00061	0.0071
Reinsurance	-0.0369***	0.0109	0.0003	0.0148	0.0001	0.0155	-0.0033	0.0104	0.0027	0.0159	-0.0015	0.0052	0.0021	0.0084
Derivative	-0.0224***	0.0059	-0.0039	0.0083	-0.0045	0.0215	-0.0044	0.0047	0.0067	0.0226	-0.0027	0.003	-0.0028	0.0041
Instability	-0.8368***	0.1026	-0.584***	0.0528	-0.5813***	0.0502	-0.5877***	0.0503	-0.581***	0.0505	0.0529	0.0528	-0.1152**	0.0499
Volatility	0.4236***	0.0695	0.0716*	0.0422	0.0696**	0.034	0.0807**	0.0382	0.0664*	0.0363	0.073**	0.0328	0.0429	0.027
Year 1986	0.0725***	0.0149					0.0451***	0.0143			0.02***	0.0065	0.0232**	0.0107
Year 1987	0.04***	0.0151	-0.0267***	0.0055	-0.0266***	0.009	0.0182	0.0141	-0.0263***	0.009	-0.0429***	0.007	-0.0296**	0.0114
Year 1988	0.0355**	0.0153	-0.0379***	0.005	-0.0378***	0.0095	0.0089	0.0133	-0.0354***	0.0096	-0.0281***	0.0066	-0.0226**	0.01
Year 1989	0.0838***	0.0153	0.0155**	0.0067	0.0156	0.0098	0.0617***	0.0132	0.0171*	0.01	0.0132*	0.0072	0.0241**	0.0107
Year 1990	-0.0725***	0.0158	-0.1264***	0.009	-0.1249***	0.0103	-0.0795***	0.0136	-0.1219***	0.0106	-0.1492***	0.0087	-0.1302***	0.0119
Year 1991	-0.0598***	0.0158	-0.1154***	0.0082	-0.1148***	0.0106	-0.0699***	0.0129	-0.1139***	0.0109	-0.0463***	0.0055	-0.0569***	0.0094
Year 1992	-0.0275*	0.016	-0.0942***	0.0086	-0.0942***	0.0108	-0.0485***	0.0129	-0.0938***	0.0109	-0.0028	0.0057	-0.0218**	0.0088
Year 1993	0.0668***	0.0162	-0.0012	0.0099	-0.0012	0.0112	0.0438***	0.0126	-0.002	0.0114	0.059***	0.007	0.0494***	0.0092
Year 1994	-0.0308*	0.0162	-0.076***	0.0108	-0.076***	0.0116	-0.0304**	0.0124	-0.0756***	0.0118	-0.0806***	0.0067	-0.0689***	0.0098
Year 1995	0.0467***	0.0166	-0.0219*	0.0116	-0.0225*	0.0118	0.0244*	0.0125	-0.022*	0.0118	0.0187***	0.0063	0.0156*	0.0089
Year 1996	0.0545***	0.0161	-0.0067	0.0115	-0.0069	0.0119	0.0395***	0.0122	-0.006	0.0119	-0.0111	0.007	-0.00081	0.0094
Year 1997	0.131***	0.0162	0.053***	0.0124	0.0527***	0.0124	0.0998***	0.012	0.0539***	0.0124	0.0312***	0.0066	0.0471***	0.0097
Year 1998	0.1345***	0.0158	0.0765***	0.0129	0.0763***	0.0128	0.1227***	0.0118	0.0775***	0.0129	0.0276***	0.0064	0.0534***	0.0105
Year 1999	0.1619***	0.0163	0.1028***	0.0146	0.1016***	0.013	0.1484***	0.0122	0.1028***	0.0131	0.0177***	0.0068	0.0555***	0.0116
Year 2000	0.1293***	0.0166	0.0767***	0.0162	0.0754***	0.0134	0.1238***	0.0119	0.0787***	0.0135	-0.0269***	0.0076	0.0175	0.012
Year 2001	0.0703***	0.0169	0.0149	0.0159	0.0146	0.0139	0.0619***	0.0116	0.0172	0.0141	-0.0644***	0.0085	-0.0276**	0.0108
Year 2002	-0.0186	0.0181	-0.0675***	0.0178	-0.0678***	0.0142	-0.0194	0.0135	-0.0636***	0.0144	-0.1085***	0.0091	-0.0825***	0.0113
Year 2003	0.0348**	0.0169	-0.0094	0.0161	-0.0097	0.0144	0.0365***	0.0115	-0.0083	0.0146	0.0134***	0.0048	0.0212***	0.006
Year 2004	0.0528***	0.0168	0.0004	0.0164	0.0001	0.0142	0.0474***	0.0115	0.0026	0.0145	-0.0016	0.0051	0.0132*	0.0068
Year 2005	0.1123***	0.0171	0.0535***	0.017	0.0531***	0.0148	0.0997***	0.0112	0.0555***	0.0151	0.0315***	0.0058	0.0513***	0.0078
Year 2006	0.0789***	0.0174	0.0353**	0.0178	0.035**	0.0152	0.0815***	0.0111	0.0382**	0.0157	-0.0184***	0.0049	0.0123	0.0078
Year 2007	0.0829***	0.0184	0.0252	0.0202	0.0246*	0.015	0.0713***	0.0123	0.0269*	0.0153	-0.0285***	0.007	0.0008	0.0081
Year 2008	-0.0753***	0.0201	-0.1308***	0.0218	-0.1311***	0.015	-0.0828***	0.0145	-0.1269***	0.0152	-0.1485***	0.0114	-0.1303***	0.0109
Year 2009	-0.0161	0.0194	-0.052**	0.0213	-0.0523***	0.0153	-0.0063	0.0137	-0.0501***	0.0156	0.0051	0.0061	0.003	0.0054
Year 2010			-0.0462**	0.0212	-0.0465***	0.0151			-0.0447***	0.0151				
Constant	-0.2563***	0.0235	-0.1273*	0.0691	-0.1338**	0.0555			-0.151**	0.0649	0.0129	0.0168		
R-Squared	0.3357		0.3017		0.7184				0.7227					
Number of Firms	323		323		323		323		323		323		323	
Number of Observations	4850		4850		4850		4850		4850		4850		4527	
F-Test	61.43***		61.74***		45.33***		75.39***		46.58***		373.45***		180.89***	
Wald –Test														
Hausman Specification Test			14.33**											
Kleibergen-Paap Rk LM Statistic (Underidentification)							157.694***							
Kleibergen-Paap Rk Wald F Statistic (Weak Identification)							81.723							
Hansen J Statistic (Overidentification) (P>χ2)							0.1949				0.41		0.194	
Endogeneity (Hausman Test) (Linked Assets)							1.707							
Endogeneity (Hausman Test) (Lagged Dependent Variable)											0.34			
Arellano-Bond Test for AR(1)											-10.70***		-10.12***	
Arellano-Bond Test for AR(2)											1.3		1.59	

Source: the author.

Panel B

	Investment Yield													
	OLS		Fixed Effects		FEVD		2SLS (Fixed Effects)		2SLS (FEVD)		System GMM		Difference GMM	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Lagged Dependent Variable											0.5018***	0.0515	0.4261***	0.0465
Linked Assets	-0.0161***	0.001	-0.0268***	0.0044	-0.0269***	0.003	-0.0281***	0.0078	-0.0301***	0.0031	-0.0072***	0.002	-0.021***	0.0065
Product Mix	-0.0009	0.0017	-0.0099**	0.0049	-0.0098**	0.004	-0.0105***	0.0032	-0.0093**	0.0041	-0.0008	0.002	-0.0059*	0.0035
Product Line	-0.0038***	0.0007	-0.0024**	0.001	-0.0024**	0.0009	-0.0022***	0.0007	-0.0022**	0.0009	-0.0027***	0.0006	-0.0022***	0.0008
Overseas	-0.0006	0.0006	0.0014	0.0015	-0.0047***	0.0017	0.0016	0.0012	-0.0049***	0.0018	-0.0001	0.0007	0.0009	0.0012
Size	-0.0005***	0.0002	0.0018***	0.0007	0.0018***	0.0007	0.0016***	0.0005	0.002***	0.0007	0.0003	0.0002	0.0027***	0.0006
Parents	0.0003	0.0007	-0.0069***	0.0022	-0.0006	0.0015	-0.0065***	0.0011	-0.0005	0.0015	-0.0007	0.0009	-0.0045***	0.0016
Legal Form	0.0043***	0.0007	-0.001	0.0024	0.0059***	0.0015	-0.0012	0.0015	0.0062***	0.0015	0.0014	0.0008	-0.0008	0.0019
Industry	0.0006	0.0005	0.0013	0.0012	0.0013	0.0011	0.0013	0.0009	0.0015	0.0011	0.0006	0.0006	0.0006	0.0011
Reinsurance	0.0027*	0.0016	0.0011	0.003	0.0011	0.0021	0.0015	0.0021	0.0001	0.0021	-0.0006	0.0017	-0.0019	0.0023
Derivative	0.0002	0.0008	-0.0003	0.0012	-0.0094***	0.0028	-0.0001	0.0008	-0.0098***	0.0029	-0.0004	0.0008	-0.0004	0.0009
Instability	0.0171	0.0109	0.0113*	0.0068	0.0105	0.0078	0.0117	0.0074	0.0104	0.0077	0.0006	0.0115	0.0022	0.0092
Volatility	-0.035***	0.0071	-0.0134**	0.0053	-0.0128**	0.0051	-0.0136**	0.0056	-0.0102*	0.0053	-0.0294***	0.0085	-0.019**	0.0075
Year 1986	0.0278***	0.0023					0.0284***	0.0022			0.0114***	0.0023	0.0164***	0.0026
Year 1987	0.0258***	0.0022	-0.0025**	0.0012	-.0025*	0.0015	0.0259***	0.0021	-0.0026*	0.0014	0.0122***	0.0021	0.0165***	0.0023
Year 1988	0.0264***	0.0021	-0.0013	0.0014	-0.0013	0.0015	0.0266***	0.0021	-0.002	0.0015	0.0136***	0.0021	0.0183***	0.0022
Year 1989	0.0281***	0.0022	-0.0001	0.0016	-0.0001	0.0015	0.0281***	0.0021	-0.0005	0.0015	0.0146***	0.0021	0.0188***	0.0023
Year 1990	0.0404***	0.0021	0.0116***	0.0015	0.0113***	0.0016	0.0394***	0.0021	0.0103***	0.0016	0.0265***	0.0022	0.0303***	0.0023
Year 1991	0.0361***	0.0021	0.0071***	0.0014	0.0071***	0.0016	0.0353***	0.0021	0.0065***	0.0016	0.0168***	0.0024	0.0216***	0.0024
Year 1992	0.0261***	0.002	-0.0019	0.0017	-0.0019	0.0016	0.0263***	0.002	-0.0022	0.0016	0.009***	0.0024	0.0141***	0.0024
Year 1993	0.0164***	0.002	-0.0119***	0.0016	-0.0119***	0.0017	0.0165***	0.002	-0.0119***	0.0017	0.0035	0.0021	0.0075***	0.0022
Year 1994	0.02***	0.002	-0.0102***	0.0017	-0.0102***	0.0017	0.0179***	0.0019	-0.0106***	0.0017	0.0113***	0.0017	0.0134***	0.0019
Year 1995	0.0209***	0.0021	-0.0077***	0.002	-0.0075***	0.0018	0.0204***	0.0019	-0.0077***	0.0017	0.0127***	0.002	0.0152***	0.002
Year 1996	0.0195***	0.0022	-0.0093***	0.0022	-0.0093***	0.0018	0.0187***	0.0021	-0.0097***	0.0017	0.011***	0.002	0.0129***	0.0021
Year 1997	0.0113***	0.002	-0.0156***	0.0021	-0.0156***	0.0018	0.0124***	0.0018	-0.0158***	0.0018	0.0048***	0.0016	0.0069***	0.0017
Year 1998	0.011***	0.002	-0.0173***	0.0022	-0.0173***	0.0019	0.0107***	0.0018	-0.0177***	0.0018	0.0062***	0.0019	0.0072***	0.0018
Year 1999	0.0042**	0.0019	-0.0235***	0.0023	-0.0234***	0.0019	0.0048***	0.0018	-0.0237***	0.0019	0.0011	0.0016	0.0021	0.0015
Year 2000	0.0063***	0.0021	-0.0224***	0.0023	-0.0223***	0.0019	0.0055***	0.0018	-0.0232***	0.0019	0.0051***	0.0017	0.0054***	0.0017
Year 2001	0.0048**	0.0021	-0.0235***	0.0024	-0.0235***	0.002	0.0044**	0.0018	-0.0241***	0.002	0.0025	0.0018	0.0033*	0.0017
Year 2002	0.0064***	0.0019	-0.0225***	0.0025	-0.0224***	0.002	0.0051***	0.0017	-0.0235***	0.002	0.0047***	0.0014	0.0049***	0.0013
Year 2003	0.0052***	0.0019	-0.024***	0.0025	-0.024***	0.0021	0.0041**	0.0017	-0.0245***	0.0021	0.0033**	0.0015	0.0032**	0.0014
Year 2004	0.0053***	0.002	-0.0233***	0.0026	-0.0233***	0.002	0.0046***	0.0017	-0.024***	0.002	0.0037**	0.0015	0.0039***	0.0015
Year 2005	0.0037*	0.0021	-0.0244***	0.0028	-0.0244***	0.0021	0.0038**	0.0018	-0.0248***	0.0021	0.0025	0.0017	0.0025*	0.0015
Year 2006	0.0048**	0.0021	-0.0243***	0.0031	-0.0243***	0.0022	0.0037**	0.0019	-0.0251***	0.0022	0.0036**	0.0016	0.003**	0.0015
Year 2007	0.0039*	0.0022	-0.0243***	0.003	-0.0244***	0.0022	0.0039**	0.0019	-0.0249***	0.0022	0.0032*	0.0017	0.0031*	0.0016
Year 2008	0.0107***	0.0023	-0.0172***	0.0031	-0.0172***	0.0022	0.0105***	0.002	-0.0181***	0.0022	0.0087***	0.0016	0.0091***	0.0015
Year 2009	0.0043*	0.0024	-0.0257***	0.0031	-0.0257***	0.0022	0.0025	0.002	-0.0263***	0.0022	-0.0006	0.0018	-0.0009	0.0017
Year 2010			-0.0282***	0.0031	-0.0282***	0.0022			-0.0285***	0.0022				
Constant	0.0469***	0.0034	0.0623***	0.0103	0.0571***	0.0073			0.0536***	0.0084	0.0186***	0.0052		
R-Squared	0.3545		0.2551		0.5873				6077					
Number of Firms	323		323		323		323		323		323		323	
Number of Observation	4850		4850		4850		4850		4850		4850		4527	
F-test	65.03***		25.22***		28.27***		48.70***		29.38***		64.83***		42.68***	
Wald –Test														
Hausman Specification Test			105.73***											
Kleibergen-Paap Rk LM Statistic (Underidentification)							157.694***							
Kleibergen-Paap Rk Wald F Statistic (Weak Identification)							81.723							
Hansen J Statistic (Overidentification) (P>χ2)							0.3217				0.517		0.358	
Endogeneity (Hausman Test) (Linked Assets)							2.048							
Endogeneity (Hausman Test) (Lagged Dependent Variable)											9.267**			
Arellano-Bond Test for AR(1)											-6.07***		-5.99***	
Arellano-Bond Test for AR(2)											1.53		1.49	

Source: the author.

Panel C

	Value Creation													
	OLS		Fixed Effects		FEVD		2SLS (Fixed Effects)		2SLS (FEVD)		System GMM		Difference GMM	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Lagged Dependent Variable											0.8356***	0.0251	0.6219***	0.0464
Linked Assets	0.0656***	0.0088	0.094***	0.0271	0.0942***	0.0259	0.072*	0.0421	0.0441*	0.0244	0.0172**	0.0071	0.0522**	0.0256
Product Mix	-0.1127***	0.0132	0.0214	0.0265	0.0216	0.0351	0.0285*	0.0169	0.0173	0.0354	-0.0128	0.0085	0.0102	0.0151
Product Line	-0.0088*	0.0053	0.0002	0.0075	-0.0002	0.0077	-0.0002	0.0043	-0.0006	0.0077	0.0061**	0.0026	0.0036	0.0038
Overseas	-0.0283***	0.0052	-0.0065	0.0144	-0.025	0.0159	-0.0062	0.008	-0.0362**	0.0159	-0.0046	0.0034	-0.0065	0.0078
Size	0.0189***	0.0014	0.0274***	0.0055	0.0269***	0.0058	0.0288***	0.0033	0.0266***	0.0065	0.0021**	0.001	0.0048*	0.0028
Parents	0.0279***	0.0053	-0.0085	0.0193	0.0316**	0.0142	-0.0088	0.0097	0.0307**	0.0141	0.0055	0.0037	0.0045	0.0105
Legal Form	-0.0315***	0.0049	-0.0227	0.018	-0.0484***	0.0135	-0.024***	0.0088	-0.0372***	0.0135	-0.0076**	0.0033	-0.0144	0.0095
Industry	-0.0214***	0.0037	-0.0043	0.01	-0.0235**	0.0104	-0.0048	0.0065	-0.0232**	0.0103	-0.0036	0.0025	-0.00046	0.0061
Reinsurance	-0.0666***	0.0131	-0.0437***	0.0165	-0.0438**	0.0175	-0.0484***	0.0124	-0.0372**	0.0176	-0.0072	0.0058	-0.0115	0.0085
Derivative	-0.0052	0.0065	0.0116	0.0079	0.0069	0.0248	0.0113**	0.0048	-0.0008	0.0255	-0.0013	0.0032	0.003	0.0041
Instability	-0.6797***	0.1154	-0.4873***	0.058	-0.4844***	0.0539	-0.492***	0.0569	-0.4814***	0.0537	-0.0053	0.0513	-0.1145**	0.0478
Volatility	0.2751***	0.076	0.0264	0.0457	0.0238	0.0372	0.0404	0.0437	0.01	0.0393	0.04	0.036	0.0113	0.0315
Year 1986	0.1383***	0.0175					0.1291***	0.0155			0.0272***	0.0068	0.0459***	0.0128
Year 1987	0.115***	0.0173	-0.0219***	0.0052	-0.0217**	0.0094	0.107***	0.0144	-0.0213**	0.0093	-0.0117*	0.0063	0.0132	0.0122
Year 1988	0.1063***	0.0173	-0.0365***	0.0051	-0.0363***	0.0101	0.0941***	0.0139	-0.0338***	0.01	-0.0038	0.006	0.0141	0.0112
Year 1989	0.1425***	0.0169	-0.0024	0.0081	-0.0022	0.0105	0.1277***	0.0137	-0.0004	0.0105	0.0273***	0.0078	0.0469***	0.0123
Year 1990	0.0315*	0.0173	-0.1016***	0.0101	-0.0996***	0.0111	0.0288**	0.0137	-0.0958***	0.0113	-0.0838***	0.008	-0.0574***	0.012
Year 1991	0.0415**	0.0173	-0.0905***	0.0098	-0.0899***	0.0114	0.0386***	0.0132	-0.0878***	0.0116	-0.0164***	0.0051	-0.0065	0.0102
Year 1992	0.0532***	0.0173	-0.0856***	0.0102	-0.0853***	0.0117	0.044***	0.0133	-0.0847***	0.0117	0.0082	0.0055	0.0128	0.01
Year 1993	0.1099***	0.0177	-0.0313***	0.0117	-0.0311**	0.0122	0.0977***	0.013	-0.0319***	0.0122	0.0459***	0.0071	0.0556***	0.01
Year 1994	0.0432**	0.0178	-0.0847***	0.0133	-0.0842***	0.0127	0.0446***	0.0128	-0.084***	0.0127	-0.0412***	0.0062	-0.021**	0.0103
Year 1995	0.0954***	0.0178	-0.0492***	0.0135	-0.0491***	0.0129	0.0811***	0.0129	-0.0497***	0.0128	0.0223***	0.0072	0.0333***	0.0099
Year 1996	0.0972***	0.0173	-0.0392***	0.0132	-0.0389***	0.013	0.0909***	0.0124	-0.0387***	0.0128	0.0044	0.0073	0.0234**	0.0107
Year 1997	0.1464***	0.0176	0.0002	0.0131	0.0005	0.0137	0.1311***	0.012	-0.0001	0.0135	0.0389***	0.0066	0.059***	0.0101
Year 1998	0.1449***	0.017	0.0111	0.0135	0.0116	0.0142	0.1411***	0.0117	0.0114	0.014	0.0332***	0.0062	0.0602***	0.0105
Year 1999	0.1563***	0.0178	0.0221	0.015	0.022	0.0145	0.1518***	0.012	0.0215	0.0142	0.0217***	0.0066	0.0555***	0.0112
Year 2000	0.1287***	0.0182	-0.0008	0.017	0.0001	0.0149	0.1301***	0.0119	0.0016	0.0147	-0.0059	0.0079	0.0295**	0.0116
Year 2001	0.089***	0.0187	-0.0456***	0.0163	-0.045***	0.0155	0.0854***	0.0115	-0.0446***	0.0154	-0.0327***	0.008	-0.0028	0.0104
Year 2002	0.0306	0.0191	-0.1014***	0.0177	-0.1008***	0.0158	0.0303**	0.0126	-0.0981***	0.0157	-0.0616***	0.0071	-0.0385***	0.0094
Year 2003	0.0724***	0.0186	-0.0545***	0.0169	-0.0539***	0.016	0.0752***	0.0114	-0.0537***	0.016	0.0229***	0.0059	0.037***	0.0071
Year 2004	0.0775***	0.0185	-0.0566***	0.0173	-0.056***	0.0158	0.0743***	0.0114	-0.0553***	0.0158	0.0063	0.0051	0.0244***	0.0072
Year 2005	0.1168***	0.0188	-0.0211	0.0178	-0.0206	0.0164	0.1092***	0.0114	-0.0205	0.0165	0.0307***	0.006	0.0515***	0.0088
Year 2006	0.082***	0.0182	-0.0424**	0.0188	-0.0417**	0.0169	0.0878***	0.011	-0.0405**	0.0171	-0.0068	0.0047	0.019**	0.0076
Year 2007	0.079***	0.0196	-0.057**	0.0223	-0.0564***	0.0166	0.0734***	0.0126	-0.0563***	0.0166	-0.016**	0.0074	0.0072	0.0075
Year 2008	-0.0393*	0.0208	-0.1746***	0.023	-0.1739***	0.0166	-0.0425***	0.0144	-0.1723***	0.0165	-0.1012***	0.0101	-0.0881***	0.0097
Year 2009	0.0032	0.0211	-0.1167***	0.0231	-0.1161***	0.0169	0.013	0.0139	-0.1159***	0.0169	0.0047	0.0048	0.008*	0.0047
Year 2010			-0.1306***	0.0221	-0.1299***	0.0167			-0.1315***	0.0164				
Constant	-0.0329	0.0273	-0.1054	0.0759	-0.1017	0.0639			-0.0652	0.0728	0.0112	0.0158		
R-Squared	0.2657		0.2003		0.7362				0.7437					
Number of Firms	323		323		323		323		323		323		323	
Number of Observation	4850		4850		4850		4850		4850		4850		4527	
F-Test	39.95***		38.55***		24.17***		42.17***		22.37***		246.19***		137.59***	
Wald –Test														
Hausman Specification Test			41.89***											
Kleibergen-Paap Rk LM Statistic (Underidentification)							157.694***							
Kleibergen-Paap Rk Wald F Statistic (Weak Identification)							81.723							
Hansen J Statistic (Overidentification) (P>χ2)							0.6892				0.41		0.309	
Endogeneity (Hausman Test) (Linked Assets)							4.513**							
Endogeneity (Hausman Test) (Lagged Dependent Variable)											0.5247			
Arellano-Bond Test for AR(1)											-8.80***		-8.22***	
Arellano-Bond Test for AR(2)											0.545		1.11	

Source: the author.

Panel D

Period	Market	Capital Gain			Investment Yield			Value Creation		
		Linked Assets	Firm Size	Legal Form	Linked Assets	Firm Size	Legal Form	Linked Assets	Firm Size	Legal Form
Year 1986	**Bull**	0.1435***	0.0041**	0.0017	-0.0289***	-0.0037***	0.0054*	0.0875***	0.0021	-0.003
Year 1987	**Bull**	0.1142***	0.0054	-0.0014	-0.031***	-0.003***	0.0098***	0.0633***	0.0066	-0.0034
Year 1988	**Bull**	0.1204***	0.0112***	-0.0223	-0.0224***	-0.0033***	0.0051**	0.0568***	0.0104**	-0.0201
Year 1989	**Bull**	0.2069***	0.0132***	-0.0317**	-0.0235***	-0.0049***	0.0071**	0.1396***	0.0079*	-0.0337
Year 1990	**Bear**	0.0384**	0.0105**	-0.0321*	-0.0199***	-0.0044***	0.0072***	-0.008	0.0118**	-0.0541***
Year 1991	**Bull**	0.0744***	0.0178***	-0.0346**	-0.0268***	-0.0044***	0.007***	0.0359	0.0182***	-0.0658***
Year 1992	**Bull**	0.1229***	0.0137***	-0.0404**	-0.0262***	-0.0019***	0.0077***	0.0756***	0.0166***	-0.0817***
Year 1993	**Bull**	0.2005***	0.0205***	-0.0399**	-0.0311***	-0.0024***	0.0096***	0.1536***	0.0231***	-0.0804***
Year 1994	**Bear**	0.1543***	0.023***	-0.0452**	-0.0251***	-0.0012	0.0026	0.0931***	0.0322***	-0.1014***
Year 1995	**Bull**	0.1828***	0.0253***	-0.0416**	-0.0179***	-0.0023***	-0.0043	0.1165***	0.0299***	-0.0886***
Year 1996	**Bull**	0.1755***	0.0201***	-0.0273	-0.0136***	-0.0005	-0.0066**	0.1137***	0.027***	-0.0761***
Year 1997	**Bull**	0.1843***	0.0189***	-0.0404**	-0.0137***	0.0001	-0.0026	0.155***	0.0245***	-0.0752***
Year 1998	**Bull**	0.161***	0.0225***	-0.0597***	-0.0162***	-0.0012*	0.0003	0.1335***	0.0291***	-0.0882***
Year 1999	**Bull**	0.2348***	0.0225***	-0.0528**	-0.0192***	-0.0005	0.005**	0.182***	0.0319***	-0.0766***
Year 2000	**Bear**	0.1711***	0.0207***	-0.0454*	-0.0171***	0.0001	0.0012	0.122***	0.0311***	-0.0702**
Year 2001	**Bear**	0.0369	0.0178***	-0.0229	-0.0119***	0.0004	-0.0017	-0.0326	0.035***	-0.0494*
Year 2002	**Bear**	-0.1131***	0.0121**	0.0101	-0.011***	0.001**	-0.0012	-0.1445***	0.0349***	-0.0353
Year 2003	**Bear**	0.0101	0.0032	0.0096	-0.0166***	0.0011***	0.0004	-0.0653*	0.025***	-0.0477*
Year 2004	**Bull**	0.0667**	0.0047	0.0002	-0.0159***	0.001**	0.0003	-0.0236	0.0265***	-0.0471*
Year 2005	**Bull**	0.1316***	0.0056	-0.0138	-0.0122***	0.0008	0.0031	0.0449	0.025***	-0.0486*
Year 2006	**Bull**	0.1884***	0.0003	-0.0237	-0.0084*	0.0009	0.0004	0.0988***	0.0195***	-0.0604**
Year 2007	**Bull**	0.164***	-0.0013	-0.0391	-0.0124***	0.0009	0.0015	0.0516	0.0197***	-0.0839***
Year 2008	**Bear**	-0.0051	-0.0034	0.0176	-0.0092**	0.0016**	0.0001	-0.0561	0.0175**	-0.0552
Year 2009	**Bull**	0.1138***	-0.006	0.0271	-0.0114**	0.0017**	0.0033	0.0249	0.0168*	-0.0583
Year 2010	**Bull**	0.188***	-0.0022	-0.0306	-0.0133***	0.0021***	-0.0047	0.0915**	0.0241***	-0.1266***

Source: the author.

Panel E

Period	Market	Capital Gain				Investment Yield				Value Creation			
		Lagged Dependent Variable	Linked Assets	Firm Size	Legal Form	Lagged Dependent Variable	Linked Assets	Firm Size	Legal Form	Lagged Dependent Variable	Linked Assets	Firm Size	Legal Form
1986-1989	**Bull**	0.9184***	0.0359***	0.0004	-0.0041	0.4961***	-0.0069*	-0.0016**	0.0073***	0.7249***	0.0311***	0.0018	-0.0038
1990-1991	**Bear**	0.6905**	-0.0253	0.0044	-0.0141	0.8657***	-0.0072	-0.0002	0.0005	1.241***	-0.0737***	0.0007	-0.0008
1992-1999	**Bull**	0.8539***	0.0532***	0.0041**	-0.0039	0.3045***	-0.0137***	-0.0006**	0.0018*	0.8995***	0.0428***	0.0039***	-0.0093**
2000-2003	**Bear**	0.6336***	-0.0134	0.0026	0.008	0.6299***	-0.0093***	0.0015***	-0.0015	0.7613***	-0.0456***	0.0078***	-0.0159*
2004-2007	**Bull**	0.8572***	0.0542***	-0.0001	-0.0094*	0.4485***	-0.0101***	0.0009	0.002	0.9697***	0.0245*	-0.0025	-0.0067
2008-2010	**Bear**	0.5465***	0.0402*	-0.0042	0.0172	0.1549	-0.0115**	0.0017**	0.0004	0.7421***	0.0111	0.0018	-0.0193*

Source: the author.
Where:
***, **, and * represent statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
For 2SLS, the instrumental variables for Linked Assets are: Surrender Claims, Capitalisation and Liquidity; see Figure 47.
The following diagnostic tests are presented: F-test (H_0: all coefficients jointly equal to zero), Wald –Test (H_0: all coefficients jointly equal to zero), Hausman specification test (Hausman, 1978) (H_0: firm specific effect is random), Kleibergen-Paap rk LM statistic[81] (H_0: the equation that excludes that instruments is underidentified), Kleibergen-Paap rk Wald F statistic[82] (H_0: instruments are weakly correlated with the endogenous regressors), Sargan-Hansen statistic or Hansen J statistic (H_0: the instruments are uncorrelated with the error term) and Durbin-Wu-Hausman statistic (H_0: linked assets variable, and lagged dependent variable concerning GMM, is endogenous).
GMM estimators: the result is generated using the Xtabond2 command in Satata (Roodman, 2003, 2009), with small sample adjustment for standard errors (Windmeijer, 2005), forward orthogonal deviations and

[81] This is an LM test of whether the equation is identified (that excludes the instruments). It is the test of the rank of a matrix. Under the null hypothesis that the equation is underidentified, the matrix of reduced form coefficients on the L1 excluded instruments has rank=K1-1 where K1=number of endogenous regressors. Under the null, the statistic is distributed as chi-squared with degrees of freedom = (L1-K1+1) (Baum, Schaffer and Stillman, 2010).
[82] The excluded instruments are correlated with the endogenous regressors, but only weakly (Stock and Yogo, 2005). Stock and Yogo (2005) computed critical values for the Cragg-Donald F statistic for several different estimators. However, in this chapter, the i.i.d. assumption is dropped and the robust option is utilised, and, hence, the Cragg-Donald-based weak instruments test is not valid (Baum, Schaffer and Stillman, 2010), instead ivreg2 reports a correspondingly-robust Kleibergen-Paap Wald rk F statistic. Furthermore, Baum, Schaffer and Stillman (2010) stated that the critical values reported by ivreg2 for the Kleibergen-Paap statistic are the Stock-Yogo critical values for the Cragg-Donald i.i.d. case. However, an exact rejection rule for weak identification is not yet established; Baum, Schaffer and Stillman (2007) suggested using the old 'rule of thumb' rule that the F-statistic for weak identification should be at least 10; otherwise, weak identification can be considered a problem.

assuming exogeneity for all independent variables and instrumental variable for linked assets (lagged one period) including time dummies with the exception for lagged dependent variable.

Endogeneity (Hausman Test): Durbin-Wu-Hausman statistic (H_0: linked assets variable, and lagged dependent variable concerning GMM, is endogenous).

Standards errors: heteroskedasticity robust standard errors are reported with respect to Fixed Effects estimator, whereas Windmeijer's (2005) finite sample corrected standard errors are reported regarding the GMM estimators, namely, System and Difference.

The results above have the following implications:

Is investment yield (based on realised gain) is an appropriate measure of performance for linked assets in particular and life insurers in general? The result highlights the weakness of investment yield as a measure of performance of life insurers. It shows that it is unable to reflect the changes in economic conditions and its consequence on the performance of life insurers. Given that life insurers transfer the investment risk for policyholders through selling unit-linked life assurance products (Brennan and Schwartz, 1976; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a;b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011), the importance of the changes in the market value of assets under-management (unrealised gain) has increased. Indeed, 23% of the value of linked assets was written down in 2008, which suggests that many holders of unit-linked life assurance policies may have suffered from poor equity market performance. Despite this unparalleled loss in the value of assets under-management, life insurers reported about 5% (on average) return on admissible assets (based on realised gain).

Empirically, the result shows the interaction term (instability) is negative and significant at the 1% level with coefficient of -0.584 when capital gain is used as the dependent variable and -0.4873 for value creation. In contrast, the sing of the interaction term becomes positive and statistically significant (the coefficient is 0.0113) for investment yield. The result clearly indicates that investment yield should be combined with other measures of performance that reflect the changes in the market value of assets under-management (capital gain) or a

combined measure that takes into account investment yield and capital gain such as value creation.

This result is consistent with the OECD's analysis and recommendations with respect to the implication of the 2008 financial turmoil on the life insurance industry. The OECD stated that '*the growth of unit-linked business, and attendant risks to policyholders, many of whom may have suffered from poor equity market performance, raises the question as to whether consumers have been appropriately informed of the risks of investing in these types of products and properly understand the options available to them within the product structures'*. The OECD recommended that *'governments should work to identify and address any financial education or literacy issues raised by the financial crisis, for instance, in relation to unit-linked insurance products and other types of investment products offered by insurers. Such efforts should be incorporated into the country's broader financial education strategy*' (OECD, 2011).

Is the effect of product diversification on financial performance consistent across different measurers of diversification? The effect of diversification is not homogeneous across performance and diversification measures, namely, the HHI (Product Mix), dummy measured as 1 multiline insurers and 0 otherwise (Product Line) and proportion of assets invested in a particular line (Linked Assets). Similarly, the result is not homogenous across performance benchmarks based on realised and unrealised gains, namely, investment yield, capital gain and value creation. It may not be appropriate to use only one measure for performance and diversification to examine diversification-performance interrelationships.

Is linked assets concentration a sustainable investment strategy that can consistently deliver value for policyholders? The result clearly indicates the value creation and capital gain are positively related to linked assets. Furthermore, the value creation and capital is positively

related to and growth in the market value of assets, which suggests that a higher growth in market value of the assets the higher the value creation and vise versa. However, the result also shows that assets with higher market value growth are more vulnerable to adverse movement in the market value of the assets. Given that life insurers transfer investment risk to policyholders (Brennan and Schwartz, 1976; Hardy, 2003; Swiss Re, 2003; Richards, 2004; O'Brien, 2006a;b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011), policyholders may suffer from a poor equity market performance, such as the financial turmoil in 2000, 2002 and 2008.

4.6. Conclusion

The main objective of life insurers is to provide financial security to policyholders by providing benefits upon death, retirement or maturity of the life insurance policies. Traditionally, life insurers achieve that by offering with-profits products (non-linked) with fixed and guaranteed benefits. However, the unparalleled decline in interest rates in the 1990s and 2000s and its consequence on the cost of grantees and even the financial position of life insurers, as well as, the bonus rates has led to an increase in the popularity of life assurance products by which benefits are linked to market value of equities and indices. These policies can be considered to be investment policies rather than protection policies as insurers transfer most of the investment risk to policyholders. These developments in the UK life insurance market require, from the academics and practitioners prospective to renovate the traditional measures of performance based on realised gain to incorporate unrealised gain. Indeed, the investment side, in particular changes in the market value of invested assets (unrealised gain), has not been regarded as important as other issues such as solvency, risk such as mortality and morbidity risks.

The chapter examines the effect of product diversification on investment performance of the UK life insurers over the period 1985-2010; aiming to test whether

concentration/diversification on certain product line (s) would impact realised and unrealised gain differently. This chapter firstly tests the effect of the concentration on a particular product line on financial performance and risk and hedging strategy to establish the basis for the empirical analysis. It is revealed that linked investment strategy has a wide range of business and performance implications. A firm with a high level of assets invested in linked funds performs better in business growth and value creation when compared with one that has a low proportion of assets invested in non-linked funds. The latter seems more capital intensive and less cost efficiency; in addition, it purchases more reinsurance and it is more likely to use derivatives. However, linked investment strategy has negative implications on investment yield (based on realised gain), and it is positively related to persistency risk and assets volatility.

The chapter goes further to test empirically the effect of product diversification on realised and unrealised gains using three measures, namely, investment yield (realised gain), capital gain (unrealised gain) and value creation (realised and unrealised gains). The result shows that the effect of product diversification on the financial performance is not homogeneous across realised and unrealised gains, and it also depends on how diversification is measured.

This chapter shows that unit-linked products outperform non-linked products; however, unit-linked products are more vulnerable to adverse movement in the market value of the assets, and, hence, the policyholders, who bear the investment risk of linked products, may suffer from adverse movement in the equity market.

5. Chapter 5: The Robustness of Output Proxies in Life Insurance Efficiency Studies: Empirical Evidence from the UK

5.1. Introduction

Frontier efficiency has become state of the art in measuring firm performance ever since the significant contributions of Aigner, Lovell and Schmidt (1977)[83] and Charnes, Cooper and Rhodes (1978)[84]. Frontier efficiency measures have been derived from microeconomic theory to develop meaningful and reliable measures for performance that controls differences in inputs and outputs of the firm. This gives frontier efficiency the theoretical advantage relative to more traditional measures of performance, such as ratio analysis. Not surprisingly, Eling and Luhnen (2010a) identified more than 100 efficiency articles[85] written or published in the 1990-2010

[83] Internet search on December 16, 2012 on www.scholar.google.com yielded 5416 citations for Aigner's, Lovell's and Schmidt's (1977) paper.

[84] Internet search on December 16, 2012 on www.scholar.google.com yielded 13578 citations for Charnes's, Cooper's and Rhodes's (1978) paper.

[85] Eling and Luhnen (2010a) indentified 10 different application areas for insurance-based efficiency studies, namely, distribution systems (see Berger, Cummins and Weiss , 1997; Brockett et. al., 1998; Carr et. al., 1999; Ward, 2002; Klumpes, 2004; Gamarra, 2007; Fiordelisi and Ricci, 2011 and Klumpes and Schuermann, 2011), financial and risk management and capital utilization (see Cummins and Nini, 2002; Brockett et. al., 2004a; Cummins et. al., 2009 and Huang and Paradi, 2011), general level of efficiency and evolution over time (see Weiss, 1991b; Cummins and Weiss, 1993; Fecher et. al., 1993; Gardner and Grace, 1993; Cummins, Turchetti and Weiss, 1996; Hardwick, 1997; Bernstein, 1999; Cummins, 1999; Mansor and Radam, 2000; Noulas et. al., 2001; Chaffai and Ouertani, 2002; Worthington and Hurley, 2002; Leverty, Lin and Zhou, 2004; Barros, Barroso and Borges, 2005; Tone and Sahoo, 2005; Barros and Obijiaku, 2007; Hao and Chou, 2005; Qiu and Chen, 2006; Hao, 2007; Huang, 2007; Yao, Han and Feng, 2007; Bikker and Leuvensteijn, 2008; Luhnen, 2009; Kader, Adams and Hardwick, 2010; Shahroudi, Taleghani and Mohammadi, 2011; Ansah-Adu, Andoh and Abor, 2012; Bikker, 2012; Gaganis and Hasan and Pasiouras, 2013), inter-country comparisons (see Weiss, 1991a; Delhausse, Fecher, and Pestieau, 1995; Donni and Fecher, 1997; Rai, 1996; Diacon, 2001; Diacon, Starkey and O'Brien, 2002; Eling and Luhnen, 2010b; Zanghieri, 2008; Vencappa, Fenn and Diacon, 2013; Biener and Eling, 2012; Khalid, Said and Saeed, 2012 and Huang and Eling, 2013), market structure (Choi and Weiss, 2005; Choi and Weiss, 2008; Fenn et. al., 2008 and Berry-Stölzle, Weiss and Wende, 2011), mergers (see Kim and Grace, 1995; Cummins, Tennyson and Weiss, 1999; Cummins and Xie, 2008; Davutyan and Klumpes, 2008; Shim, 2011b and Xiea et. al, 2011), methodology issues and comparison of different techniques or assumptions (see Weiss, 1986; Cummins and Zi, 1998; Fuentes, Grifell-Tatjé and Perelman, 2001; Fukuyama and Weber, 2001; Brockett et. al., 2004b; Yang, 2006; Wu et. al., 2007; Hwang and Kao, 2008a;b; Leverty and Grace, 2010; Shi and Zhang, 2011 and Sabet and Fadavi, 2013), organisational form and corporate governance issues (see Fukuyama, 1997; Cummins, Weiss and Zi, 1999; Cummins, Rubio-Misas and Zi, 2004; Greene and Segal, 2004; Brockett et. al., 2005; Jeng and Lai,

period on life and non-life insurance industries alone compared to 21 studies identified by Cummins's and Weiss's (2000) survey and 8 studies in Berger's and Humphrey's (1997) survey. Similarly, Cummins and Weiss (2013) also identified 74 studies over the period 1983 to 2011, including 37 papers published in 'upper tier journals' over the period 2000 - 2011.

Measuring firm efficiency, however, is challenging, especially for insurance firms in which many outputs are intangible (premiums, claims, etc.) and many prices are implicit, making observed revenue flows imprecise guides for selecting the principal outputs to include in the analysis (Leverty and Grace, 2010). Nevertheless, the validity of frontier efficiency as a measure of insurer performance depends on the validity of the proxy utilised to measure output. Indeed, frontier efficiency hypothesis tests are considered to be a joint hypothesis such tests for financial market efficiency; a failure to utilise a valid proxy for output could be misleading and may give unreliable results for the tested hypotheses (Leverty and Grace, 2010).

There has been a huge debate in insurance-based literature as to whether premiums or claims should be used as an output proxy. The premiums are considered to be price times quantity rather than a count of output units (Yuengert, 1993), and price difference between small and large insurers may lead to misleading inferences regarding average costs (Yuengert, 1993, p. 489). In contrast, the sum of incurred claims plus additions to reverses is utilised to measure output in literature (see Yuengert, 1993; Berger et. al., 2000; Cummins and Weiss, 2000; Cummins and Weiss, 2013). However, high claims imply a firm is efficient rather than

2005; Diboky and Ubl, 2007; Jeng, Lai and McNamara, 2007; Wende, Berry-Stolzle and Lai, 2008; Erhemjamts and Leverty, 2010; Xie, 2010; Hardwick, Adams and Zou, 2011; Chen, Lai and Wang, 2011; Huang et. al., 2011; Ismail, Alhabshi and Bacha, 2011; Bhloul, Hachicha and Bouri, 2013 and Kader et. al., 2013), regulation change (see Rees et. al., 1999; Mahlberg and Url, 2000; Ryan and Schellhorn, 2000; Boonyasai, Grace and Skipper, 2002; Mahlberg and Url, 2003; Ennsfellner, Lewis and Anderson, 2004; Cummins and Rubio-Misas, 2006; Hussels and Ward, 2006; Turchetti and Daraio, 2004; Gamarra, 2008; Yuan and Phillips, 2008; Badunenko, Grechanyuk and Talavera, 2009 and Singh and Kumar, 2011) and scale and scope economies (Fecher, Perelman and Pestieau, 1991; Grace and Timme, 1992; Yuengert, 1993; Toivanen, 1997; Berger et. al., 2000; Meador, Ryan and Schellhorn, 2000; Hirao and Inoue, 2004; Fuentes, Grifell-Tatjé and Perelman, 2005; Hwang and Gao, 2005; Cummins et. al, 2010 and Choo, 2012).

inefficient (Diacon, Starkey and O'Brien, 2002; Brockett et. al.; 2004a, 2005; Leverty and Grace, 2010). Furthermore, Leverty and Grace (2010) raised a theoretical concern regarding using claims as a proxy for insurer output, as this measure is not validated empirically. Given that life insurance products involve accumulation of funds over a relatively long period of time; changes in these accumulative funds or even the accumulative funds have not been utilised to proxy output in the existing studies to be best of the author's knowledge. Indeed, Cummins and Weiss, (2013) argued that '*to capture this element of intermediation, average invested assets for life insurers is usually included as an output variable. An approach that has not been utilized in the existing literature would be to separate incurred benefits from additions to reserves, giving rise to a total of ten insurance outputs if by line disaggregation is used. It would be interesting to test whether this might raise the average estimated efficiency scores'* (Cummins and Weiss, 2013; p.820).

The fundamental objective of the chapter is to test the validity of three different proxies of output, namely, revenue, claims and funds to identify what is an appropriate proxy of the life insurer output. To address this, the chapter highlights the theoretical advantages and limitations for each of these proxies. The chapter goes further to examine analytically whether each proxy can be derived using actual available data on the UK life insurers. The stochastic frontier approach is utilised to estimate cost efficiency based on each output proxy. Finally, the validity of different proxies is verified using 'consistency conditions' regarding efficiency score proposed by Bauer et. al. (1998). The chapter goes further to examine whether efficiency based ranking of best practice firms is consistent with the value creation based ranking (see Chapter 3). The result shows that using premiums plus investment income (realised gain) plus valuation gain and loss (unrealised gain), change in policyholders' funds and claims plus addition to reserves are not possible practically as these proxies violate non-negativity constraint of outputs, including over 50% of sample firms have negative values for some of these variables

during the period of financial turmoil. As for cost efficiency, it is found that average cost efficiency based on revenue is higher and less volatile compared to average cost efficiency based on funds or claims. However, three output proxies give consistently similar ranking for competitive firms, and cost efficiency based on different proxies are closely related to conventional measurers of firm performance and value creation. Indeed, the ranking of best practice firms is correlated with the value creation based ranking, indicating more efficient firms also deliver higher value to policyholders compared to their basic expectations.

The remainder of this chapter is organised as follows. Section 2 reviews relevant literature and discusses the theory concerning output proxies. Section 3 present data and sample as well as explains the estimated variables. Section 4 constructs an empirical framework employed in the analysis. Section 5 presents the empirical result and discusses the implication of the findings. The final section summarises and concludes the findings of the chapter.

5.2. Literature Review

5.2.1. Introduction

There has been an extensive and unresolved debate in literature concerning the appropriate measure of insurers' outputs (Eling and Luhnen, 2010a; Leverty and Grace, 2010; Cummins and Weiss, 2000; 2013). Researchers have applied two main[86] approaches to measure outputs in efficiency insurance-based studies, namely, the intermediation approach and the value-added approach. The value-added approach views an insurer as a profit maximizing firm (Cummins and Weiss, 2000; Eling and Luhnen, 2010a; Leverty and Grace, 2010), whereas the

[86] There have been few innovations with regard to output measurement. Hwang and Kao (2008; a, b) introduced new relational two-stage production process, in which the outputs of the first production stage (called premium acquisition) are the inputs for the second production stage (called profit generation). Moreover, few studies applied physical outputs such as number of product units produced as output (Weiss, 1986; Toivanen, 1997; Bernstein, 1999; Brockett et. al., 2004b); however, using number of units (policies) is criticised on the ground that this simple output proxy does not take into account differences between life assurance products, such as the policy size (O'Brien, 1991).

intermediation approach considers the single objective of maximizing profits as inadequate for evaluating life insurer performance and instead it identifies multiple objectives centred on solvency of the insurer (Brockett et. al., 2004b; Eling and Luhnen, 2010a; Leverty and Grace, 2010).

The value-added approach (also called the production approach) — in this approach, the main objective of an insurer is considered to be profit maximisation; insurers use production factors (capital and labour) to provide financial services that are valued by individuals and businesses (Cummins and Weiss, 2000; Eling and Luhnen, 2010a; Leverty and Grace, 2010). Insurers are assumed to provide three main services, namely, risk-pooling and risk-bearing, real financial services and financial intermediation (Cummins and Weiss, 2000; Leverty and Grace, 2010; Eling and Luhnen, 2010a). The first service, risk-pooling and risk-bearing, is considered to be the main function of insurers. They provide a system for businesses and individuals to transfer their risks for predetermined prices (premiums) and then reallocate the majority of collected premiums to those who insure their risks and encounter losses (pay out claims). Insurers add value by reducing these risks through diversification; however, they incur expenses, such as underwriting, actuarial, etc., in the servicing risk-pooling and risk-bearing function. Furthermore, insurers also add value by holding collected funds (policyholders' funds) to provide economic security against financial turmoil and insolvency of insurers. With respect to the second service, real financial services, insurers can add value through providing some services such as financial planning. Regarding the third service, financial intermediation, the time lag between receiving premiums from policyholders and paying claims to those incurred losses enables insurers to add value by investing policyholders' funds to generate returns that can be reallocated to policyholders in terms of bonuses, discounted premiums, etc.

The intermediation approach (also called the flow approach) — in contrast to the value-added approach, the intermediation approach considers the single objective of profit maximisation as

inadequate (Leverty and Grace, 2010). In the intermediation approach, the main objective of an insurer is considered to be to solvency; insurers utilize the production factors to balance three goals, namely, maximizing solvency, financial return and claims-paying ability against each other to serve the interests of regulators and policyholders (Brockett et. al., 2004b; Eling and Luhnen, 2010a; Leverty and Grace, 2010). An insurer in the intermediation approach is considered to be a financial intermediary that borrows funds from policyholders, transforms collected funds into investments and pays out principles plus any returns less management fees to policyholders (Berger and Humphrey, 1997; Cummins and Weiss, 2000; Leverty and Grace, 2010; Eling and Luhnen, 2010a).

5.2.2. Output Proxies

From the perspective of a life insurer interest, insurers will make gain from trading if a revenue achieved from a life insurance contract is higher than related expenses to that contract $\mathrm{E(C)} \geq 0$. Therefore, the value added by insurer from this trading can be written as follows:

$$\mathrm{V} = \mathrm{R} - \mathrm{E} \qquad (12)$$

Where:
V: the value added by the insurer.
R: the life insurer revenue ; $\mathrm{R} \geq 0$.
E: the life insurer expense; $\mathrm{E} \geq 0$.

Given the time lag between the date when the policyholder pays the premiums P and the date of payouts (claims) C payments, the insurer invests the P, and, hence, an investment income (realised and unrealised gain; assuming realised and unrealised gain $\mathrm{r} \geq 0$) is generated from investing P from the date the premiums P is paid to the date of the payment of C. Given that regulators require insurers to hold a certain level of capital K at time 0 to be able to write insurance policies, both K and P are invested at time 0 at rate $\mathrm{r} \geq 0$ (realised and unrealised gain); assuming there is no tax for simplicity. With the assumption that C is paid at time 1, P can be rewritten as follows (see Cummins, 1990 and Cummins and Weiss, 2013):

$$P = \frac{(C + aM)}{(1 + r)} \tag{13}$$

Where:
M: the asset under-management $M = P + K$, $\mathrm{M} \geq 0$.
α: the management charges (fees) as a proportion of M.
C: the claims; $\mathrm{C} \geq 0$.
P: the insurance premiums.
r: the return on invested assets; $\mathrm{r} > 0$.
K: the capital committed to the policy.

The life insurer revenue can also be rewritten as follows:

$$\mathrm{R} = \mathrm{P} + \mathrm{rM} = \mathrm{P} + \mathrm{r}(\mathrm{P} + \mathrm{K}) = (1 + \mathrm{r})\mathrm{P} + \mathrm{rK} \tag{14}$$

Where:
K: the capital committed to the policy.
R: the revenue; $\mathrm{R} \geq 0$.
P: the insurance premiums $\mathrm{P} \geq 0$.
r: the return on invested assets; $\mathrm{r} > 0$.
M: the asset under-management $M = P + K$, $\mathrm{M} \geq 0$.

With the assumption that C is paid at time 1, life insurer expense can be rewritten as follows

$$\mathrm{E} = \mathrm{C} + \beta\mathrm{K} + \mathrm{e}\,\mathrm{M} \tag{15}$$

Where:
E: the life insurer expense; $\mathrm{E} \geq 0$.
M: the asset under-management $M = P + K$, $\mathrm{M} \geq 0$. .
e: the management expenses as a proportion of M.
β: the risk premium received by shareholders for bearing insurance risk.
C: the claims; $\mathrm{C} \geq 0$.
P: the insurance premiums.
r: the return on invested assets; $\mathrm{r} > 0$.
K: the capital committed to the policy.

Therefore 12 can be rewritten as follows:

$$\mathrm{V} = \mathrm{R} - \mathrm{E} = (1 + \mathrm{r})\left[\frac{(C + aM)}{(1 + r)}\right] + \mathrm{rK} - \mathrm{C} - \beta\mathrm{K} - \mathrm{e}\,\mathrm{M}$$

$$= (\mathrm{r} - \beta)\mathrm{K} + (\mathrm{a} - \mathrm{e})\,\mathrm{M} \tag{16}$$

Where:
E: the life insurer expense; $\mathrm{E} \geq 0$.
M: the asset under-management $M = P + K$, $\mathrm{M} \geq 0$.
e: the management expenses as a proportion of M.
β: the risk premium received by shareholders for bearing insurance risk.
C: the claims; $\mathrm{C} \geq 0$.
P: the insurance premiums.
r: the return on invested assets; $\mathrm{r} > 0$.

K: the capital committed to the policy.

This suggests the value added is net management fees (profits based management fees) plus risk premiums on shareholders' capital for bearing the insurance risk.

In literature, there is an intense debate as to whether premiums or claims are an appropriate proxy for output. More than half[87] of the existing studies (see Eling and Luhnen, 2010a) followed Cummins and Weiss (2000) and specified output as claims compared to 1 in 3 studies utilised premiums as output. Although more studies utilised claims as a proxy for output compared to premiums, Eling and Luhnen (2010a) stated that there is no recognisable trend over time as to whether either of the two main proxies is gaining more of a following among researchers.

5.2.2.1. Claims as an Output

Cummins and Weiss (2013; p.818) argued that the quantity of insurer output should be proxied by the present value of claims[8889]; however, the theoretical illustration (see Equation 16) does not support this proxy concerning life insurance contracts. In terms of accounting variables to proxy output, following Yuengert (1993), Berger et. al. (2000) and Cummins and Weiss (2000, 2013) the sum of incurred claims and additions to reserves is suggested to be used to measure insurance output, suggesting the incurred claims during a particular period are an appropriate proxy for the risk-pooling and risk-bearing function as they measure the amount of funds distributed to policyholders for insured events. Given the fact that insurers may not be willing to maximise the value of insurance claims, this output proxy violates the principle output

[87] 95 studies were included in Eling's and Luhnen's (2010a) survey, from which 80 studies applied the value-added approach. Out of the 80 articles that applied the value-added approach, 46 specified claims as output compared to 32 studies used premiums as output.

[88] Cummins and Weiss (2013; p.818) derived the value added for a protection based insurance contact as the insurer's expenses plus the owners' profit for bearing insurance risk following Pratt-Arrow concept of the insurance premium (Arrow, 1971); for more details see Cummins and Weiss (2013; pp.817-819).

[89] They suggest output to be measured as $Q = \frac{C}{1+r}$ where C: the claims; $C \geq 0$; Q: the output; $C > 0$ and r: the return on invested assets; $r > 0$.

characteristics[90] (see Diacon, 2001; Diacon, Starkey and O'Brien, 2002). Furthermore, the time lag between the date when the premiums are received and date of the payment of the claims means the estimated claims need to be adjusted on a yearly basis (see Diacon, 2001). Furthermore, it was stated that claims distort efficiency because when claims unexpectedly and dramatically increase due to unforeseen catastrophic events or other adverse fluctuations with no change in inputs, the effect on the firm would appear to be efficiency enhancing (Diacon, Starkey and O'Brien, 2002; Brockett et. al., 2004a; 2005; Leverty and Grace, 2010). Moreover, Leverty and Grace (2010) raised a theoretical concern regarding using claims as an output measure, as this measure is not validated empirically.

5.2.2.2. Revenue as an Output

As it has been defined in Equation 14, insurance revenue is argued to be a proxy for life insurers output. It is questionable whether premiums meet the definition of revenues under the IFRSs, and under developments insurance contracts project by the IASB for most life insurance contract as these contracts are considered to be investment contracts such as unit-linked contracts and the accounting treatment for such contracts is proposed to be as deposit received from policyholders rather than revenues (IASB, 2010a;b; IASB, 2013a; b; c; d; e) as risks of these contracts are transferred to policyholders (see Brennan and Schwartz, 1976; Knights and Willmott, 1993; Hardy, 2003; Swiss Re, 2003, Richards, 2004; O'Brien, 2006a,b; Carter and Falush, 2009; Cipra, 2010; OECD, 2011; Aviva Plc, 2008, 2009, 2010, 2011, 2012; 2013).

[90] The production function of a life insurer uses N inputs (labour and capital etc.) to produce a single output is given as $Q = f(X)$, where Q represents output and X = (X^1, X^2,..., X^n) is an n X vector of inputs. There are several properties for this function among these are: (1) Non-negativity: the value of $f(x)$ is a finite, non-negative and real number. (2) Weak essentiality: the production of positive output is impossible without the use of at least one input. (3) Non-decreasing in x: (or monotonicity) additional units of an input will not decrease output. (4) Concave in x: any linear combination of the vectors x_0 and x1 will produce an output that is no less than the same linear combination of $F(x_0)$ and $F(x_1)$ (Cooper, Seiford and Tone, 2000; 2006).

Furthermore, premiums are not output as premiums measure price times output quantity, not output (see Yuengert, 1993, p. 489), and systematic differences in price across large and small firms may lead to misleading inferences about average costs if premiums are used as an output proxy (see Yuengert, 1993, p. 489). Indeed, it is argued that premiums are a valid measure of insurer output if insurance products are homogeneous and competitive pressures compel existing players to charge the same price (Allen, 1974; Blair, Jackson and Vogel, 1975). However, the existence of market imperfection could led to misleading result (Doherty, 1981), whereas the homogeneity assumption of life assurance products is questionable since life insurers offer products range from pure protections (health insurance) to investment policies (unit-linked). Moreover, it was argued that using premiums as a proxy for output could be misleading as it is simply a transfer of wealth between policyholders (O'Brien, 1991). As for adding investment income to premiums, it was suggested that the return on invested premiums should be added to premiums to measure output as investment income is the only source to cover underwriting losses (Diewert, 1995; Sherwood, 1999) and the prices paid by individuals and businesses for insurance claims would equal premiums plus investment income (Sherwood, 1999). Vencappa, Fenn and Diacon (2013) stated that premiums can be used as a proxy for expected payouts for policyholders (claims); however, premiums do not include the expect returns on invested premiums as well as changes in the value of invested premiums over relatively long period of time. This is an important variable given the long-term nature of life insurance products and the facts that many of these products can be considered to be purely investment products. Furthermore, systematic differences in price across large and small firms may lead to misleading inferences about average costs if premiums are used as an output proxy (Yuengert, 1993; Vencappa, Fenn and Diacon, 2013).

5.2.2.3. Funds as an Output

As it has been defined in Equation 16, the value added is argued to be used as a proxy for output. The main problem of using V as an output proxy is that r can be negative (see Table 12), in particular, during the periods of financial turmoil such as 2008 (see Table 12). This suggests that proxy violates the non-negativity property of output and the production function[91] (Coelli et. al., 2005). It argued that accumulated funds[92] M can be used to proxy output of life insurers.

Cummins and Weiss (2013) argued that as life insurance products involve accumulation of assets, additions to reserves are expected to be highly correlated to the intermediation function based output. Furthermore, they argued that to capture the element of the intermediation function that is related to services provided in connection with funds contributed by policyholders in previous years, such as asset management etc. they suggest average invested assets for life insurers to be usually included as an output variable. They stated this approach that has not been utilized in the existing literature would be to separate incurred benefits from additions to reserves, giving rise to a total of ten insurance outputs if by line disaggregation is used. It would be interesting to test whether this might raise the average estimated efficiency scores (Cummins and Weiss, 2013, p. 820). Fenn et. al. (2008) and Vencappa, Fenn and Diacon (2013) argued that the products provided by insurers to their policyholders, namely, present value of the future claims payments are considered to be an output for these products.

[91] The production function of a life insurer uses N inputs (labour and capital etc.) to produce a single output is given as $Q = f(X)$, where Q represents output and X = (X^1, X^2,..., X^n) is an n X vector of inputs. There are several are several properties for this function among these are: (1) Non-negativity: the value of $f(x)$ is a finite, non-negative and real number. (2) Weak essentiality: the production of positive output is impossible without the use of at least one input. (3) Non-decreasing in x: (or monotonicity) additional units of an input will not decrease output. (4) Concave in x: any linear combination of the vectors x0 and x1 will produce an output that is no less than the same linear combination of F(x0) and F(x1) (Coelli et. al., 2005).

[92] The author tried to use the change in accumulated funds $\Delta M_t = \mathrm{M_t} - M_{t-1}$; however, this proxy violates the non-negativity property of output for downsizing firms and during the periods of financial turmoil such as 2008 due to significant decline in the value assets under-management (see Table 12).

Surprisingly, the authors declared this variable is unmeasurable despite the fact that the estimated value of future claims or the value of assets held to back up these claims can be used to proxy this variable. Although the present value of future claims is an estimate and it is subject to random fluctuations and estimation errors (Vencappa, Fenn and Diacon, 2013); the value of assets are produced using accounting rules and mainly using fair value valuation of backed assets (Ernst and Young, 2011, p.7).

Regarding wealth maximising with respect to policyholders, maximising returns on policyholders' assets can be achieved by maximising the value of M. This will maximise their future benefits (claims) and reduce the probability that the life insurer becomes insolvent. Indeed, shareholders' funds M are not held to protect policyholders in adverse circumstances (O'Brien, 1991) but also to enable life insurers to benefit from economies of scale, generate higher return, manage risk effectively and minimise solvency risk. For instance, there is substantial body of insurance-based literature supports the view that larger insurers are less likely to become insolvent and more likely to be rated by rating agencies (BarNiv and Hershbarger, 1990; Cummins, Harrington and Klein, 1995; Pottier, 1997; Bouzouita and Young, 1998; Chen and Wong, 2004). Similarly, insurance-based literature tends to support the view that there is positive relationship between size and performance, such as investment yield (Boose, 1993; Adams, 1996b; Browne, Carson and Hoyt, 2001), efficiency (Fecher, Perelman and Pestieau, 1991; Yuengert, 1993; Hardwick, 1997; Hirao and Inoue, 2004; Vencappa, Fenn and Diacon, 2013), etc. Furthermore, in the UK, most life assurance policies are written in the linked form (80% of new premiums in 2010). For these linked life assurance products, the value of policyholders' benefits is linked to the value of policyholders' assets suggesting that maximising the value of policyholders' assets would maximise their benefits.

With regard to maximising shareholders' wealth, a life insurer charges a percentage a of the market value of asset under management M_t as management fees. Indeed, the main source of revenue from unit-linked business (60% of the value of policyholders' assets in 2010) are streams from management fees charged as a percentage a of the market value of underlying assets (Swiss Re, 2003). However, the regulatory authority[93] and competitive pressure may prevent the life insurer from increasing a more than a certain level, usually 1% (see Swiss Re, 2003). Therefore, the life insurer can only maximise its revenues by maximising the market value of underlying assets M_t.

5.2.2.4. Financial Ratios as an Output

Some existing studies, such as Jeng and Lai (2005), Jeng, Lai and McNamara (2007) and Leverty and Grace (2010) employed financial ratios such as liquidity ratio, solvency ratio and return on assets to proxy insurer output based on the intermediation approach. However, Cummins and Weiss (2013) argued that these ratios do not measure output as they cannot measure output volume (Cummins and Weiss, 2013, p.846).

5.2.3. Existing Evidence

Vencappa, Fenn and Diacon (2013) utilised three measures of output, namely, premiums, claims and claims plus additions to reserves, using sample of European insurers (life and non-life) from 14 major European countries over the period 1995-2008 to estimate productivity growth. They found that result is sensitive to utilised output proxy.

Leverty and Grace (2010) used claims plus addition to reserves to proxy value added based output, and ratios such as the liquidity ratio, solvency ratio, and return on assets to proxy the

[93] In the UK, Sandler (2002) proposed assets management fees could be converged in the long-term towards a 1% charge; whereas, a similar charging structure may force its way into continental Europe (Swiss Re, 2003).

intermediation function. They found that the two proxies were not mutually consistent and thus potentially yielded different answers to tested hypotheses using data on US general insurers. It was also found that the claims based efficiency was more closely related to traditional measures of firm performance (ratio analysis). Furthermore, highly ranked firms based on claims as an output proxy were found to be generally significantly less likely to fail, whereas, highly ranked firms based on financial ratios as an output proxy were found to be more likely to fail.

Jeng, Lai and McNamara (2007) found mixed results depending on which efficiency output proxies, claims or financial ratios, they used to estimate efficiency of 11 US life insurers over the period to 1980–1995 pre and post demutualisation. For instance, the result using the claims as a proxy for output indicates that there is an improvement in efficiency post demutualisation. In contrast, evidence using financial ratios as proxy for output shows that efficiency of the demutualized life insurers relative to mutual control insurers deteriorates before demutualization and improves after conversion.

Jeng and Lai (2005) used number of policies as an output measure to proxy value added based output and ratios such as the liquidity ratio, solvency ratio and return on assets to proxy the intermediation function. They found contradictory evidence depending on which efficiency approach being used to estimate the efficiency of Japanese life insurers. The authors concluded that '*when different efficiency approaches provide different conclusions, researchers need to be careful about interpreting results; it may not be appropriate to use only one approach*' (Jeng and Lai, 2005, pp. 151). However, Cummins and Weiss (2013) argued using of financial ratios such as the liquidity ratio, solvency ratio, and return on assets etc. to proxy output is inadequate as these variables do not measure output volume.

5.3. Data, Sample and Variables

The data is obtained from the SynThesys life database (version 10.1, 15-August 2011 released). The sample is based on the initial sample in Chapter 2 and Table 31 in the Appendix; it consists of 368 firms (5,601 observations) over the period 1985-2010. Given that the calculation of value creation and real capital gain have been made for all firms over the period 1985-2010 (as it has been explained in details in Chapter 3), it was possible to include all sample (368 firm and 5,601 observations; see Table 31 in the Appendix); however, all negative or nil 'value' of some variables, namely, claims, capital, premiums and assets are excluded. Furthermore, all firms with less than 5 observations (30 firms) are excluded, and any firm with less than £5 million average value of assets (based on F13, L89, LTIB) over period are also excluded (20 firms). Therefore the final sample regarding the empirical analysis includes 5,030 observations for 318 firms. In this chapter, to ensure inter-temporal comparability of figures and tables the financial data was deflated by the UK GDP deflator index (HM Treasury, 2012). This means all real values are in 2010 prices.

Three output variables are defined: (1) Revenue: it is defined as premiums plus investment income (realised gain only) (see Diacon, 2001and Diacon, Starkey and O'Brien, 2002); this is net premiums (F41, L21, C4) plus investment income (F40, L12). This variable, revenue, does not include valuation gain and loss (unrealised gain) (F40, L13 + L14) as 198 (4%) out 5,030 observations have the sum of premiums plus investment income plus valuation gain and loss negative (see Table 12), which violates the principle output characteristic, namely, non-negativity (Cooper, Seiford and Tone, 2000; 2006). Indeed, 47 (34%) out 140 firms have the sum of premiums, investment income and unrealised gain negative in 2008, suggesting including unrealised gain and loss means the revenue based output would violate non-negativity principle output characteristic (Cooper, Seiford and Tone, 2000, 2006). However,

excluding unrealised gain and loss would create measurement bias as it excludes key part of insurers' revenues, for instance the value of linked assets fell by 23% (14% total assets) (unrealised gain) in 2008, whereas investment income was 5% (realised gain). (2) Claims: it is defined as incurred claims (see Vencappa, Fenn and Diacon, 2013); this is net claims (F42, L46, C4). It is interesting that net claims plus additions to reserves proposed by existing studies (see Yuengert, 1993 and Cummins and Weiss, 2000; 2013) violates the principle output characteristics, namely, non-negativity (Cooper, Seiford and Tone, 2000, 2006). This variable is measured as net claims (F42, L46, C4) plus addition to net mathematical reserves (F50, L48, C4), which is defined as net mathematical reserves (F50, L48, C4) at time t less net mathematical reserves (F50, L48, C4) at t_{-1}. Indeed, 313 out 5,030 (58 (41%) out of 140 in 2008) firms have the sum of net claims plus additions to reserves negative (see Table 12), suggesting including additions to reserves means the claims based output would violate non-negativity principle output characteristic (Cooper, Seiford and Tone, 2000; 2006). However, excluding additions to reserves would create a measurement bias as it excludes key part of insurers' output to proxy the intermediation function (see Cummins and Weiss, 2013). As addition to reserves, as a standalone variable, 1,188 out 5,030 (101 (72%) out of 140 in 2008) firms have the additions to reserves negative (see Table 12). (3) Funds: it is defined as net policyholders' assets (F40, L59) or total policyholders' assets (F13, L89, LTIB) less total other insurance and non-insurance liabilities such as unpaid claims, accrual etc. (F14, L49). However, change in funds (it is defined as increase / decrease in policyholders' funds for a particular period (F40, L39) is not usable practically; 1,210 out 5,030 (107 (76%) out of 140 in 2008) firms have this variable negative (see Table 12). Regarding output prices, Cummins and Weiss (2013) found output prices have not been used in studies that analyse only technical or cost efficiency, these studies utilise value based output measures as defined above rather than units (see also Diacon, 2001; Diacon, Starkey and O'Brien, 2002).

Regarding input variables, the survey by Cummins and Weiss (2013) suggests that there is high degree of uniformity in the inputs utilized in insurance efficiency studies as most of these studies utilize capital (policyholders' assets and shareholders' capital) and labour as input. As for input prices, existing studies utilize insurance industry average weekly wages to measure the price of labour. Following the UK based studies (see Fenn et. al., 2008; Vencappa, Fenn and Diacon, 2013), the average weekly wages are derived from the ONS (ONS, 2014). This variable is measured as nominal average weekly wages except compulsory social security, it is for the whole economy 1985-1989 (ONS code: MD9M); private sector 1990-1999 (ONS code: MD9N) and financial and insurance activities 2000-2010 (ONS code: K58I). The price of capital is proxied using nominal rate of interest of the 15-year-UK-government bond rate (Bank of England, 2014) following Fenn et. al. (2008) and Vencappa, Fenn and Diacon (2013). Finally, total costs are defined as net of reinsurance total expense (F43, L46, C4). The capital variable is measured as sum of policyholders' assets following Leverty and Grace (2010) (sum of assets held to back up long-term liabilities plus long-term debt etc.) (F13, L89, LTIB) plus the value of shareholders capital (see Cummins and Rubio-Misas, 2006) (F2, L12). The capital variable is assumed to be fixed inputs as it is built over time and it is very difficult to be adjusted quickly (see Berger, Cummins and Weiss, 1997; Berger et. al., 2000 and Fenn et. al. 2008).

5.4. Function Form and Estimation Issues

Efficiency analysis is based on modern microeconomic theory; assuming the objective of privately owned firms operating in a competitive industry is to maximise profits by minimising cost and maximising revenue. The basic form of efficiency analysis is the production frontier; assuming a firm minimises input conditional on the output level. Cost efficiency analysis requires the input prices to be known to estimate the cost frontier under the assumption that the

firm minimises cost conditional on the output level and input prices (see Cummins and Weiss, 2013, pp. 795, 796 and 797).

Efficiency analysis is considered to be a framework to identify firms failing to optimise their resources, and, hence, becoming not full efficient (Farrell, 1957). This identification is done by comparing the efficiency score for a particular firm to the efficiency score of the 'best practice' firm that produces the same output under the same conditions (Hardwick and Guirguis, 2007); this has been defined as (non-volume) measure of economic X-efficiency (Mester, 1997). The cost efficiency analysis is evaluated by comparing the firms to the frontier of the most efficient firm in the industry; it also call 'best practice' efficient frontier. Cost efficiency varies between 0 and 1 with a score of 1 indicates that the firm is fully efficient (see Cummins and Weiss, 2013, p.797).

The deviation of from the best practice efficient frontier can be interpreted as the firm is not successful in optimisation, and, hence, it is not full efficient (Farrell, 1957). This variation in efficiency score can related to: (1) firm size (see Demsetz, 1973, p.4). (2) in-completed labour contacts (see Leibenstein, 1966; p.407), (3) unspecified production function (see Leibenstein, 1966; p.407), (4) un-marketed inputs (see Leibenstein, 1966; p.407). This view is supported by insurance based literature; suggesting that factors such as market structure and firm size impact efficiency scores (see Choi and Weiss, 2005; Fenn et al., 2008).

There are two main[94] approaches in the efficient frontier analysis, namely, the econometric approach and the mathematical programming approach. Firstly, the econometric approach requires a specific form (the Translog, the Cobb-Douglas, the Fuss normalised quadratic, the generalised translog, the composite cost and the Fourier flexible) for production, cost, revenue or profit function, and makes assumptions regarding the distribution of error terms and

[94] There is another approach, called index; it defines productivity as an index measuring outputs to inputs.

inefficiency (Cummins and Weiss, 2000; Eling and Lunen, 2010a). Three main types of econometric frontier approaches have been employed in insurance-based literature to measure insurer performance, namely, the Stochastic Frontier Approach (SFA[95]), the Distribution Free Approach (DFA[96]) and the Thick Frontier Approach (TFA[97]). The primary differences between these approaches are assumptions regarding error term distribution and inefficiency (Eling and Lunen, 2010a). Secondly, the mathematical programming, this approach does not require assumptions regarding functional form or error term distribution, and, hence, it avoids the specification error in the function that is considered to be the main drawback of the econometric approach (Cummins and Weiss 2000). Two principle types of mathematical programming approach have been used to measure efficiency in the insurance industry, namely, the Data Envelopment Analysis (DEA[98]) and the Free Disposal Hull (FDH[99]).

The DEA (see Charnes, Cooper and Rhodes, 1978; Cooper, Seiford and Tone, 2000; Ramanathan, 2003; Ray, 2004; Coelli et. al. 2005; Cooper, Seiford and Tone, 2007; Fried, Lovell and Schmidt, 2008 and Cooper, Seiford and Zhu, 2011) and the SFA (see Aigner, Lovell and Schmidt, 1977 and Meeusen and van den Broeck, 1977; Kumbhakar and Lovell, 2000; Coelli et. al., 2005; Fried, Lovell and Schmidt, 2008 and Greene, 2008) are considered to be most popular techniques to estimate efficiency using the non-parametric approach and the econometric approach, respectively (see Eling and Lunen, 2010a; Cummins and Weiss, 2013). However, Cummins and Zi (1998) and Eling and Luhnen (2010b) found that there is no

[95] It requires specifying production, cost, revenue or profit function form (translog the most popular), and assuming inefficiency and error terms follow asymmetric distribution.
[96] It requires specifying production, cost, revenue or profit function form (translog the most popular), assuming efficiency is stable over time, assuming Error terms equal to zero and requiring a long time series.
[97] It requires Specific production, cost, revenue or profit function form (translog the most popular), permitting inefficiencies differences between quartiles, requiring no assumptions regarding inefficiency or error terms.
[98] It requires using linear programming to measure output and input interrelationship, determining efficiency score optimisingly, specifying either the Constant Returns to Scale (CRS) or the Variable Returns to Scale (VRS) and specific cost inefficiency as technical efficiency (pure technical efficiency * scale efficiency)* allocative efficiency.
[99] It special configuration of the DEA; it requires no points on lines connecting vertices, and it relaxes frontier convexity assumption.

difference between average efficiency scores estimated using parametric and non-parametric approaches; suggesting a correct application of DEA and SFA would yield similar results (see Cummins and Weiss, 2013, p. 814). Given the volatile[100] nature of date set utilised in this study, The FSA is considered to be the most appropriate approach compared to the DEA as the FSA incorporates a random effort in the efficiency model to deal with measurement error, and, hence, it provides more accurate results (see Fenn et. al. 2008, p 87; Eling and Luhnen, 2010a, p. 226; Eling and Luhnen, 2010b; p.1501; Cummins and Weiss, 2013, p.813). Therefore chapter utilises the SFA originated by Aigner, Lovell and Schmidt (1977) and Meeusen and van den Broeck (1977) to estimate cost efficiency of the UK life insurers over the period 1985-2010.

It is assumed that insurance outputs Q are produced using a vector of inputs; suggesting the associated production function can be written as follows:

$$Y(Q, X, Z, T) = 0 \tag{17}$$

Where:
Z: a vetor of quasi-fixed inputs.
T: represents time.
Q: Output.
X: a vector of inputs.

Under the assumption that insurance firms are cost minimizers (see Kumbhakar and Lovell, 2000), the associated cost function that assumed to be shared among all firms can be written as follows:

$$C = C(Q, W, Z, T) \tag{18}$$

Where:
Q: the output.
C: the total costs $C_i = \sum_n W_{ni} X_{ni}$.
W: a vector of price input ($W_1, \ldots, W_n$); where W is input price and n=1,2.

[100] The number of the UK life insurers has declined considerably over the period since 1980s due to the M&A (Swiss Re, 2006; Carter and Falush, 2009); it went down from 229 (1985) to 143 (2010). Furthermore, most parents (groups) used to transfer funds (assets) between subsidiaries due to consolidations.

Z: the capital variable is assumed to be quasi-fixed input following (Berger, Cummins and Weiss, 1997; Berger et. al., 2000; Fenn et. al., 2008; Vencappa, Fenn and Diacon, 2013); it is stock and it built over time so it is less likely to changed quickly.

T: is included to take into account of unobserved effects related to time such as technical change or macroeconomic fluctuations.

The exact functional forms of the production function defined by (17) and the cost function defined by (18) are unknown so the well-known translog function form is used (Berger and Humphrey, 1997; Cummins and Weiss, 2000; Cummins et. al., 2009; Eling and Luhnen, 2010a; Cummins and Weiss, 2013) which is given by:

$$Ln\ C_{it} = \left[a_i + \sum_{j=1}^{M} a_{Qj} \ln Q_{jit} + \frac{1}{2} \sum_{j=1}^{M} \sum_{k=1}^{M} a_{Q_j Qk} \ln Q_{jit}\ \ln Q_{kit} + \sum_{l=1}^{S} a_{wj} \ln w_{lit} + \frac{1}{2} \sum_{l=1}^{S} \sum_{f=1}^{S} a_{w_l w_f} \ln w_{lit}\ \ln w_{fit} + \frac{1}{2} \sum_{j=1}^{M} \sum_{l=1}^{S} a_{Q_j w_l} \ln Q_{jit}\ \ln w_{lit} \right] + u_{it} + \mathrm{v_{it}} \quad (19)$$

Where:

$i = \{1, \dots, n\}$; n = 318 firms.

w_{ijt}: the price for firm i at time t, $l\ or\ f = \{1, \dots, S\}$.

Q_{it}: the amount of output and quasi-fixed inputs produced by firm i in year t; $j\ or\ k = \{1, \dots, M\}$.

u_{it}: an inefficiency error term; this error is captured the inefficiency. This is one-sided error term as inefficiency can only increase (not reduce) costs; $u_{it} \geq 0$; $u_{it} \sim Exp(\lambda)$ (see Greene, 2003; 2005).

$\mathrm{v_{it}}$: a two-sided random error term; this measurement error differs across firms and it is assumed to be independent, identically distributed, and beyond the control of individual firms; it does not indicate inefficiency; $\mathrm{v_{it}} \sim (0, \sigma^2_{v_{it}})$.

C_{it} = the observed total costs for firm i at time t.

a_i = the intercept; it can be used for the analysis of insurance-pooling efficiency.

Given that the translog form does not allow any of the independent variables to be equal to zero (see Berger et. al. 2000 and Cummins and Weiss, 2013), any non-positive value is excluded as explained in the sample section (see Section 5.3).

Following Fenn et.al. (2008), the potential endogeneity problem regarding output and quasi-fixed inputs is addressed by lagging these variables one period. Furthermore, the linear homogeneity of degree one in input prices is imposed prior to estimation by dividing total costs and all input prices but one by this last price (Cummins et. al., 2009); therefore (3) can be rewritten as follows:

$$\frac{C_{it}}{w_{it}} = \aleph c \left(Q_{it-1}, Z_{it-1}, \frac{r_{it}}{w_{it}}, t, u_{it}, v_{it}\right) \quad (20)$$

Where
$\aleph c$: Stochastic frontier functional form.

Kumbhakar and Lovell (2000) argued that the longer the panel, the less tenable the time invariant assumption becomes. This chapter is based on 26-year-sample-period; the assumption of the time varying decay is adopted (Cornwell, Schmidt and Sickles, 1990; Kumbhakar, 1990 and Battese and Coelli, 1992). Equation (19) is then estimated by Maximum Likelihood Dummy Variable (MLDV) as implemented in the 'true fixed effect model' (see Greene, 2005) and using 'sfpanel' in Stata (see Belotti et. al., 2013). Following Battese and Coelli (1988), the cost efficiency scores are estimated as follows:

$$\text{Cost efficiency} = \text{E}[\exp(\text{u}|\text{v})] \quad (21)$$

It is argued that heteroskedasticity in the error term may lead to significant estimation bias that significantly affect ranking of inefficient firms (Caudill, Ford and Gropper, 1995). To address this issue, the chapter follows the procedure suggested by Kumbhakar and Lovell (2000); the variances of one-sided and two-sided errors are explicitly modelled when the cost functions is fitted. The variances of one-sided and two-sided errors are modelled as follows

$$\sigma_{ui}^2 = g_u(p_i, \delta_{ui}) \quad (22.1)$$

$$\sigma_{vi}^2 = g_v(p_i, \delta_{vi}) \quad (22.2)$$

Where:
p_i : a vector of valuables that systematically influence the variances.
δ_{ui} : the coefficient to be estimated to one-sided error.
δ_{vi} : the coefficient to be estimated to two-sided error.

It is argued that the above approach will address the effect of heteroskedasticity as well as incorporating exogenous influences on cost efficiency (Kumbhakar and Lovell, 2000). Following Fenn et. al.(2008) the impact of firm size on error structure in also tested.

5.5. Result and Robust Tests

5.5.1. The Univariate Analysis

Table 12 (Panel A) presents the descriptive statistics for the variables used in the chapter. Panel (B) illustrates why using some accounting variables as an output is challenging as most of these variables can be negative such as change in funds, revenue including valuation gain and loss, claims plus addition to reserves and addition to reserves (as a standalone variable). Indeed, substantial proportion of existing sample firms have these variables negative in 1990, 1994, 2000, 2001, 2002, 2007 and 2008. Therefore, it is less likely that these variables to be usable practically as they require the researcher to drop about 50% of sample firms; these could reach 70% such as in 2008. Furthermore, these variables are sensitive to changes in the economic conditions, suggesting this volatility may distort efficiency.

Table 12: Descriptive Statistics

Panel A: Descriptive Statistics of Variables Used in the Empirical Analysis

Variable (£m)	Obs.	Mean	Std. Dev.	Min	Max
Revenue	5030	736	2385	0.0250	81500
Claims	5030	466	1581	0.0030	35600
Funds	5030	4072	11400	0.1127	225000
Wages (£)	5030	535	251	303	1010
Rate of Capital	5030	0.0699	0.0221	0.0423	0.1054
Costs	5030	70	154	0.001	1902
Capital	5030	4723	12700	0.0640	225000

Source: the author.

Panel B: Negativity Issues Regarding some Possible Output Variables

Year	Obs.	Number of firms that have these Variables negative			
		Change In Funds (% of Total)	Revenue Including Valuation Gain (% of Total)	Claims Plus Addition To Reserves (% of Total)	Addition To Reserves (% of Total)
1985	201	15 (7%)	1 (0%)	0 (0%)	0 (0%)
1986	206	16 (8%)	0 (0%)	3 (1%)	17 (8%)
1987	206	33 (16%)	2 (1%)	1 (0%)	34 (17%)
1988	225	31 (14%)	4 (2%)	7 (3%)	28 (12%)
1989	225	13 (6%)	0 (0%)	1 (0%)	15 (7%)
1990	223	99 (44%)	33 (15%)	36 (16%)	101 (45%)
1991	223	29 (13%)	0 (0%)	2 (1%)	27 (12%)
1992	216	22 (10%)	0 (0%)	5 (2%)	23 (11%)
1993	219	27 (12%)	0 (0%)	4 (2%)	27 (12%)
1994	205	99 (48%)	12 (6%)	12 (6%)	90 (44%)
1995	200	17 (9%)	1 (1%)	3 (2%)	20 (10%)
1996	223	39 (17%)	0 (0%)	8 (4%)	34 (15%)
1997	217	18 (8%)	1 (0%)	2 (1%)	21 (10%)
1998	217	19 (9%)	1 (0%)	3 (1%)	15 (7%)
1999	208	25 (12%)	2 (1%)	5 (2%)	22 (11%)
2000	203	66 (33%)	13 (6%)	13 (6%)	57 (28%)
2001	192	100 (52%)	32 (17%)	39 (20%)	93 (48%)
2002	191	120 (63%)	43 (23%)	52 (27%)	116 (61%)
2003	184	49 (27%)	0 (0%)	6 (3%)	55 (30%)
2004	178	55 (31%)	2 (1%)	10 (6%)	60 (34%)
2005	164	31 (19%)	0 (0%)	4 (2%)	30 (18%)
2006	156	57 (37%)	0 (0%)	12 (8%)	61 (39%)
2007	144	59 (41%)	1 (1%)	9 (6%)	65 (45%)
2008	140	107 (76%)	47 (34%)	58 (41%)	101 (72%)
2009	133	34 (26%)	2 (2%)	10 (8%)	46 (35%)
2010	131	30 (23%)	1 (1%)	8 (6%)	30 (23%)
Total	5030	1210 (24%)	198 (4%)	313 (6%)	1188 (24%)

Source: the author.

Where:

Number of observations is 5,030 for 318 firms over the period 1985-2010.

Revenue: the sum of net premiums (F41, L21, C4) plus investment income (F40, L12) for firm i at time t.

Claims: net claims (F42, L46, C4) for firm i at time t.

Funds: net policyholders' assets (F40, L59) for firm i at time t.

Wages: the average weekly wages are derived from the ONS (ONS, 2014). This variable is measured as nominal average weekly wages except compulsory social security, it for the whole economy 1985-1989 (ONS code: MD9M); private sector 1990-1999 (ONS code: MD9N) and financial and insurance activities 2000-2010 (ONS code: K58I).

Rate of capital: it is price of capital proxied using nominal rate of interest of the 15-year-UK-government bond rate (Bank of England, 2014).

Costs: total incurred expense net of reinsurance (F43, L46, C4) for firm i at time t.

Capital: it is the sum of policyholders' assets (sum of assets held to back up long-terms liabilities plus long-term debt etc.) (F13, L89, LTIB) plus the value of shareholders capital (F2, L12).

Change in funds: change in net policyholders' assets (F40, L39) for firm i at time t.

Revenue including valuation gain: the sum of net premiums (F41, L21, C4) plus investment income (F40, L12) plus valuation gain and loss (F40, L13+L14) for firm i at time t.

Claims plus addition to reserves: net claims (F42, L46, C4) plus addition to reserves ($(F50, L48, C4)_t$ - $(F50, L48, C4)_{t-1}$) for firm i at time t.

Addition to reserves: change in net reserves ($(F50, L48, C4)_t$ - $(F50, L48, C4)_{t-1}$) for firm i at time t.

5.5.2. The Multivariate Analysis

The full parameter estimates for the stochastic frontier cost function for three output proxies are presented in the Table 13. The estimated result is corrected for heteroskedasticity in both error terms. Relevant diagnose tests are reported to ensure the result is robust. It is argued that the parameter estimates regarding the stochastic frontier cost functions have little informative value as they are simple the end of producing a frontier (Fenn et. al., 2008).

Table 13: Parameter Estimates for the Stochastic Fourier Cost Function

	Revenue as Output		Claims as Output		Funds as Output	
	Coef.	**Std.Err.**	**Coef.**	**Std.Err.**	**Coef.**	**Std.Err.**
Output	0.5036***	0.1152	-0.0484	0.1096	0.4116**	0.1792
Rate of Capital	-0.0614	0.099	0.161	0.106	0.1822*	0.1046
Capital	-0.4838***	0.13	0.0898	0.1341	-0.4029**	0.2001
Squared Capital	0.1354***	0.0117	0.0266**	0.0107	0.0472*	0.0243
Squared Output	0.0406***	0.0089	-0.0012	0.0065	-0.0263	0.0221
Capital*Output	-0.1108***	0.0135	0.0338***	0.012	0.0351	0.0274
Rate of Capital*Output	-0.0263	0.0231	0.0475**	0.0241	0.1035**	0.0471
Rate of Capital*Capital	0.1193***	0.0243	0.0334	0.028	-0.0323	0.0498
1987	0.0617	0.0425	0.052	0.0406	0.049	0.0409
1988	0.1041**	0.042	0.0786*	0.0404	0.0688*	0.0404
1989	0.1334***	0.0414	0.0739*	0.0401	0.0685*	0.0402
1990	0.0547	0.0469	-0.0345	0.0461	-0.0399	0.0462
1991	-0.0429	0.0414	-0.024	0.0406	-0.0273	0.0408
1992	-0.0285	0.0406	-0.0338	0.0398	-0.0306	0.0401
1993	-0.0046	0.0401	-0.0084	0.0393	-0.0042	0.0396
1994	-0.0144	0.0407	-0.0504	0.0403	-0.0514	0.0403
1995	-0.0428	0.0417	-0.1057***	0.0407	-0.0945**	0.0413
1996	-0.0886**	0.0418	-0.1705***	0.041	-0.1649***	0.0412
1997	-0.1075***	0.0415	-0.1359***	0.0407	-0.1221***	0.041
1998	-0.0018	0.0469	-0.0138	0.0467	-0.0051	0.0471
1999	0.2331***	0.0407	0.1872***	0.0398	0.199***	0.0402
2000	-0.3685***	0.0723	-0.305***	0.074	-0.2869***	0.0746
2001	0.0392	0.0451	0.0041	0.0457	0.0199	0.0454
2002	0.0697	0.0451	0.0472	0.0455	0.0531	0.0453
2003	0.0693	0.0444	0.0674	0.0436	0.0742*	0.044
2004	-0.0752*	0.0448	-0.0746*	0.0434	-0.0586	0.0438
2005	-0.0857*	0.0487	-0.0668	0.0476	-0.0501	0.0482
2006	-0.0018	0.0492	-0.0108	0.0477	0.0026	0.048
2007	-0.0199	0.0499	-0.0286	0.0491	-0.0197	0.0492
2008	-0.0985**	0.0491	-0.0774	0.0473	-0.0805*	0.0478
2009	0.0266	0.0502	0.0678	0.0484	0.0638	0.0489
2010						
Log Likelihood	-3223.01		-3415.39		-3422.4	
Wald Test	2540.46***		2039.08***		2005.68***	
Number of Obs.	4712		4712		4712	
Number of Firm	318		318		318	
$\boldsymbol{\sigma^2_{ui}}$ **(Assets)**	-0.1901***		-.2158***		-0.206***	
$\boldsymbol{\sigma^2_{vi}}$ **(Assets)**	-0.1091***		-0.0349		-0.0448	
$\boldsymbol{\sigma^2_{ui}}$ **(One-Sided Error)**	0.4432***		0.5438***		0.5396***	
$\boldsymbol{\sigma^2_{vi}}$ **(Two-Sided Error)**	0.2862***		0.2279***		0.2322***	

Source: the author.

Where:

Number of observations is 5,030 for 318 firms over the period 1985-2010.

Assets: the natural logarithms of total admissible assets for firm i time t (F13, L89, LTIB).

Output: it is either Revenue: the sum of net premiums (F41, L21, C4) plus investment income (F40, L12) for firm i at time t, Claims: net claims (F42, L46, C4) for firm i at time t or Funds: net policyholders' assets (F40, L59) for firm i at time t.

Rate of Capital: it is the price of capital proxied using nominal rate of interest of the 15-year-UK-government bond rate (Bank of England, 2014).

Capital: it is the sum of policyholders' assets (sum of assets held to back up long-terms liabilities plus long-term debt etc.) (F13, L89, LTIB) plus the value of shareholders capital (F2, L12).

Squared Capital: it is squared Capital for firm i time t.

Squared Output: it is squared Output for firm i time t.

Capital*Output: it is Capital multiplied by Output for firm i time t.

Rate of Capital*Output: it is Rate of Capital multiplied by Output for firm i time t.
Rate of Capital*Capital: it is Rate of Capital multiplied by Capital for firm i time t.

Table 13 presents also the result for modelled Heteroskedasticity for both error terms (one-sided and two-sided error term). It shows that the coefficients estimated on firm size (lagged one period to control for any potential endogeneity issue) on both error terms. The effect of firm size on cost efficiency is negative and significant for the one-sided error term for three output proxies, and negative but only significant for revenue based output proxy concerning the two-sided error term. This suggests size decreases the cost efficiency, this result contradicts existing evidence based on the European insurance market reported by Fenn et. al. (2008) regarding the effect of size on cost efficiency. However, the cost efficiency fluctuates more for small firms compared to large firms, which is consistent with previous findings (see Fenn et. al., 2008).

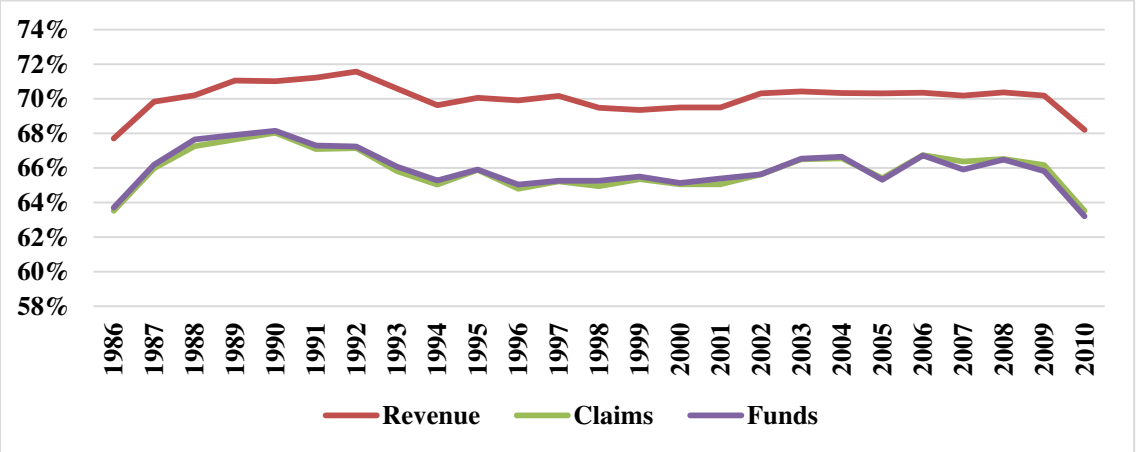
The mean of the cost efficiency and yearly changes for three output measures, namely, revenue, claims and funds are reported in Table 14 and Figure 49 and Figure 50, whereas Kernel Density estimate of cost efficiency for three output proxies is reported in Figure 51. The result shows that, on average, revenue based output proxy reports high level of cost efficiency compared to claims and funds based proxies. Figure 50 shows that revenue based efficiency is more stable compared to funds and claims based efficiency scores. This is consistent with previous findings of Vencappa, Fenn and Diacon (2013); they found claims based efficiency fluctuated over time for European life insurers. One interpretation of the current result is that most life insurance premiums are written in linked form for which payouts are linked to the value of assets, and policyholders do bear investment risks; suggesting fluctuation in the value of assets, and, hence, their benefits (claims) would distort efficiency.

Table 14: Cost Efficiency for all the UK Life Insurers over the Period 1986-2010

Year	Revenue	Claims	Funds	Revenue (Yearly Change)	Claims (Yearly Change)	Funds (Yearly Change)
1986	67.7%	63.5%	63.7%			
1987	69.8%	66.0%	66.2%	3.1%	3.9%	3.9%
1988	70.2%	67.3%	67.6%	0.5%	1.9%	2.2%
1989	71.1%	67.6%	67.9%	1.2%	0.6%	0.4%
1990	71.0%	68.0%	68.2%	-0.1%	0.6%	0.4%
1991	71.2%	67.1%	67.3%	0.3%	-1.4%	-1.2%
1992	71.6%	67.2%	67.3%	0.5%	0.1%	-0.1%
1993	70.6%	65.8%	66.1%	-1.4%	-2.0%	-1.8%
1994	69.6%	65.0%	65.3%	-1.4%	-1.2%	-1.2%
1995	70.1%	65.9%	65.9%	0.6%	1.3%	1.0%
1996	69.9%	64.8%	65.0%	-0.2%	-1.7%	-1.3%
1997	70.2%	65.2%	65.3%	0.4%	0.7%	0.4%
1998	69.5%	64.9%	65.3%	-1.0%	-0.4%	-0.01%
1999	69.4%	65.4%	65.5%	-0.2%	0.6%	0.4%
2000	69.5%	65.1%	65.1%	0.2%	-0.5%	-0.6%
2001	69.5%	65.1%	65.4%	0.002%	-0.01%	0.4%
2002	70.3%	65.6%	65.6%	1.2%	0.9%	0.4%
2003	70.4%	66.5%	66.5%	0.2%	1.3%	1.4%
2004	70.3%	66.6%	66.7%	-0.1%	0.1%	0.2%
2005	70.3%	65.4%	65.3%	-0.03%	-1.7%	-2.0%
2006	70.4%	66.7%	66.7%	0.1%	2.0%	2.1%
2007	70.2%	66.4%	65.9%	-0.2%	-0.5%	-1.2%
2008	70.4%	66.5%	66.5%	0.3%	0.2%	0.9%
2009	70.2%	66.2%	65.8%	-0.3%	-0.5%	-1.0%
2010	68.2%	63.5%	63.2%	-2.8%	-4.0%	-4.0%

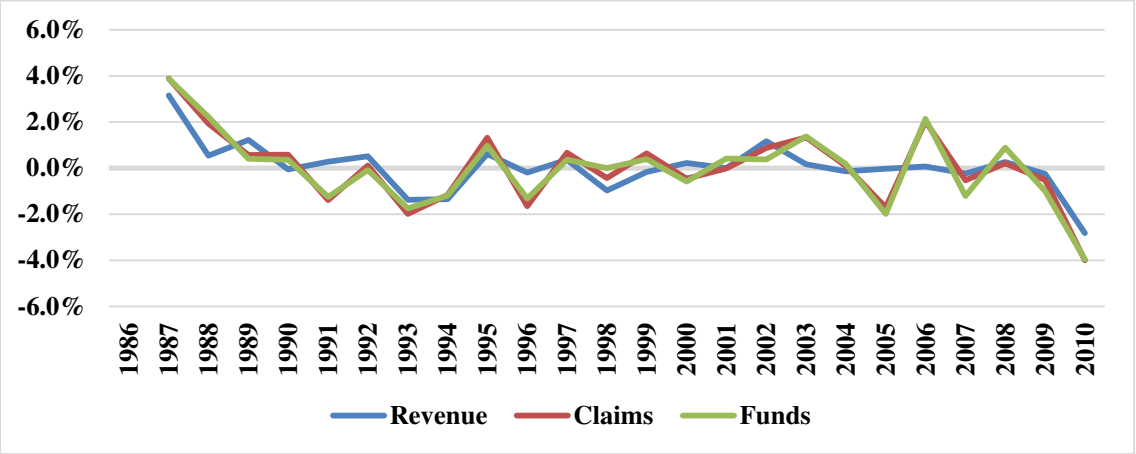
Source: the author.
Where:
Yearly Change: it is efficiency score time t less efficiency score at time t_{-1} divided by efficiency score at time t_{-1} at the aggregated level.

Figure 49: Cost Efficiency for all the UK Life Insurers over the Period 1986-2010



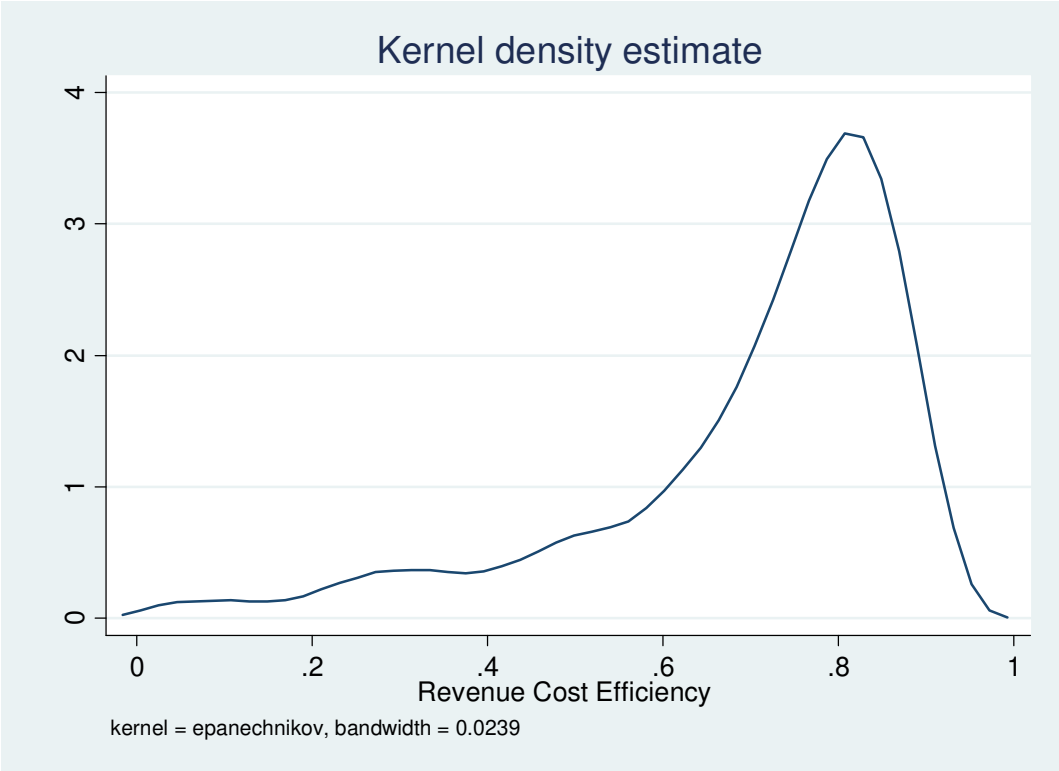
Source: the author.

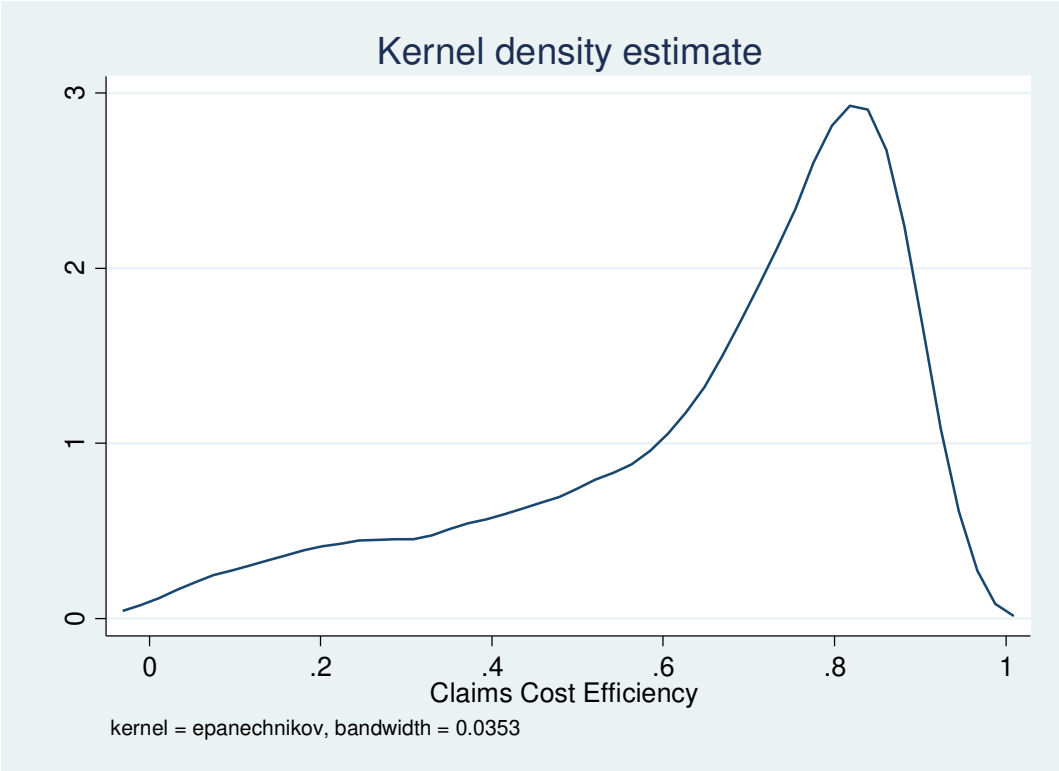
Figure 50: Yearly Changes in the Cost Efficiency for all the UK Life Insurers over the Period 1986-2010

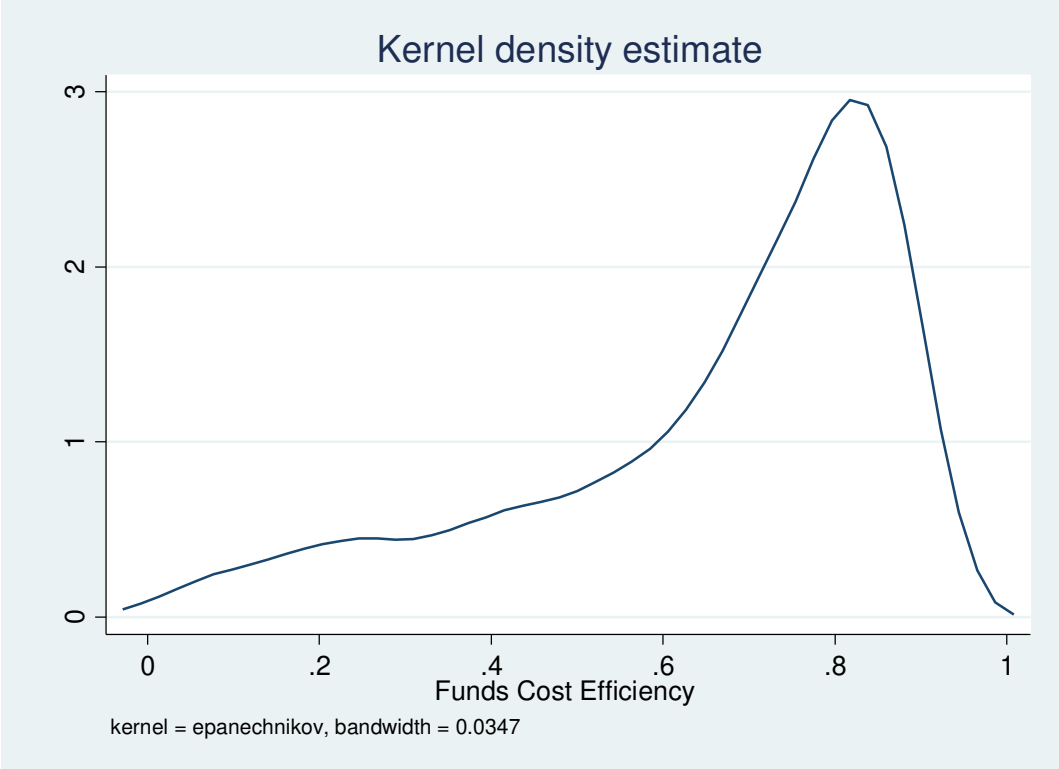


Source: the author.

Figure 51: Kernel Density Estimates of Cost Efficiency







Source: the author.

5.5.3. Robust Tests

Bauer et. al. (1998) argued that efficiency scores estimated using different approaches / estimates should meet certain consistency conditions to be useful for decision making. These conditions are: efficiency scores estimated using different approaches should have comparable descriptive statistics such as mean, standard deviations etc. Firms should be ranked according to estimated efficiency scores from different approaches roughly similarly. Finally, the efficiency scores estimated using different approaches should be consistent with conventional measures of performance such as financial ratios.

Table 15: Comparison of Estimated Cost Efficiency

Panel A: Cost Efficiency Scores

Variable	Obs.	Mean	Std. Dev.	Max	Min	Variance	Skewness	Kurtosis
Revenue	4712	0.7010	0.1856	0.0076	0.9693	0.0344	-1.4691	4.8026
Claims	4712	0.6593	0.2213	0.0041	0.9737	0.0490	-1.0845	3.2795
Funds	4712	0.6604	0.2196	0.0057	0.9733	0.0482	-1.0954	3.3137

Source: the author.

Panel B: Correlation Matrix between Efficiency Ranking and Value Creation

	Value Creation	Real Capital Gain	Revenue	Claims	Funds
Value Creation	1				
Real Capital Gain	0.4666***	1			
Revenue	0.3057***	0.0964***	1		
Claims	0.2813***	0.0782***	0.9374***	1	
Funds	0.2809***	0.0783***	0.9372***	0.9945***	1

Source: the author.

Panel C: Correlation Matrix between Efficiency Scores

	Premiums	Claims	Assets
Premiums	1		
Claims	0.9375***	1	
Assets	0.9375***	0.9949***	1

Source: the author.

Panel D: Cost Efficiency and Conventional Measures of Performance

Variables		Obs.	Mean	Std. Dev.	Min	Max	Efficiency Revenue	Efficiency Claims	Efficiency Funds
Efficiency Score	**Revenue**	4712	0.7010	0.1856	0.0076	0.9693			
	Claims	4712	0.6593	0.2213	0.0041	0.9737			
	Funds	4712	0.6604	0.2196	0.0057	0.9733			
Growth	**Assets**	4712	0.1334	0.2687	-0.9997	0.9965	0.08***	0.1129***	0.1261***
	Premiums	4712	0.1514	0.5223	-0.9998	1.9918	0.1855***	0.1318***	0.139***
Size	**Reserves**	4712	13.4044	2.3591	3.9886	19.2308	0.2286***	0.2322***	0.2271***
	Assets	4712	13.5018	2.2330	4.1663	19.2317	0.2342***	0.2388***	0.2338***
	Premiums	4712	11.4477	2.3751	0.7459	18.1441	0.2732***	0.2969***	0.2953***
	Market Share	4712	0.0028	0.0082	0.0001	0.1632	0.1355***	0.1443***	0.1432***
Expense	**Expense**	4712	0.0589	0.1319	0.0001	0.9892	0.0417***	0.0185	0.0255*
Investment Performance	**Valuation Gain**	4712	0.0255	0.0939	-0.8567	1	0.0085	0.0079	0.0058
	Investment Income	4712	0.0474	0.0218	0.0001	0.1497	-0.0709***	-0.0684***	-0.0682***
	Value Creation	4712	0.2477	0.1697	-0.4995	0.6961	0.0927***	0.0963***	0.1029***
	Capital Gain	4712	0.0191	0.1609	-0.4996	0.4996	0.0198	-0.0026	-0.0013
	Tobin's Q	4712	1.0551	0.2256	0.0035	1.9925	0.0016	-0.0216	-0.0216
Risk	**Free Asset**	4712	0.0936	0.1457	0.0001	0.9875	-0.0984***	-0.1179***	-0.1211***
	Liquidity	4712	0.0736	0.1433	0.0001	0.9986	-0.1121***	-0.1182***	-0.1163***
	Capitalization	4712	0.0441	0.0713	0.0001	0.9870	-0.1305***	-0.1204***	-0.1203***
	Derivatives	4712	0.2381	0.4260	0	1	0.1142***	0.125***	0.123***
	Reinsurance	4712	0.1212	0.2147	0.0001	0.9989	-0.0415***	-0.063***	-0.0661***
	Surrender	4712	0.4607	0.3284	0.0001	1	-0.0231	-0.0088	-0.0101
	Volatility	4712	0.0692	0.0631	0.0001	1	-0.0463***	-0.0571***	-0.0561***
	Instability	4712	0.0006	0.0325	-0.3585	0.5750	-0.0014	0.0025	0.0034
Products	**Linked**	4712	0.4414	0.4093	0	1	-0.0562***	-0.0585***	-0.0575***
	Non-linked	4712	0.5586	0.4093	0	1	0.0562***	0.0585***	0.0575***
	With-Profits	4712	0.1882	0.2848	0	1	0.1354***	0.1493***	0.1475***
	Non-Profit	4712	0.2725	0.3276	0	1	-0.09***	-0.1078***	-0.1036***
	Unitised With-Profits	2603	0.0783	0.1645	0	0.9817	0.1318***	0.1643***	0.1572***
	Property Linked	4712	0.4763	0.4134	0	1	-0.045***	-0.0459***	-0.0451***
	Index Linked	2603	0.0316	0.1019	0	1	0.0071	-0.0072	-0.0135
Diversification	**Product line**	4712	0.5919	0.4915	0	1	0.1842***	0.1767***	0.1754***
	HHI liability	4712	0.7204	0.2498	0.2088	1	-0.1231***	-0.1247***	-0.1202***
	Overseas	4712	0.2912	0.4544	0	1	0.0688***	0.065***	0.0665***

Source: the author.
Where:
Number of observations is 5,030 for 318 firms over the period 1985-2010.
***, ** and * represent statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
Efficiency Revenue: efficiency score based on using revenue as output for firm i at time t.
Efficiency Claims: efficiency score based on using claims as output for firm i at time t.
Efficiency Funds: efficiency score based on using funds as output for firm i at time t.
Growth Assets: the growth rate of policyholders' assets for firm i at time t (F13, L89, LTIB).
Growth Premiums: the growth rate of gross premiums for firm i at time t (F41; L19).
Assets: the natural logarithms of total admissible assets for firm i time t (F13, L89, LTIB).
Reserves: the natural logarithms of total gross mathematical reserves for firm i time t (F50; L18, C4).
Premiums: the natural logarithms of total gross premiums for firm i time t (F41; L19; C4).
Expense: the ratio of gross expense to admissible assets for firm i at time t (F43, L16, C4) / (F13, L89, LTIB).
Valuation Gain: valuation gain and loss deflated by the value of admissible assets for firm i, time t (F40, L13+L14) / (F13, L89, LTIB).

Investment Income: investment income deflated by the value of admissible assets for firm i, time t (F40, L12) / (F13, L89, LTIB).

Value Creation: it is based on Chapter 3 calculation deflated by the value of admissible assets (F13, L89, LTIB).

Capital Gain: it based on Chapter 3 calculation deflated by the value of admissible assets (F13, L89, LTIB).

Tobin's Q: it based on Chapter 3 calculation.

Free Asset: the amount of reported free assets divided by admissible assets for firm i at time t (F2, L42) / (F13, L89, LTIB).

Liquidity: liquid assets (the sum of the cash in hand, deposits not subject to time restriction on withdrawal, bank and approved credit and financial deposits <= 1 month, bank and approved credit and financial deposits > 1 month and deposits with ceding undertakings (see classification of admissible assets in Table 17 in Appendix) divided by admissible assets for firm i at time t (F13; L54 + L55 + L57 + L81 + L82; LTIB) / (F13, L89, LTIB).

Capitalization: minimum capital requirement divided by admissible assets for firm i at time t (F2, L36) / (F13, L89, LTIB).

Derivatives: 1 for use of derivative in business and 0 otherwise for firm i time t (it is based on (F17; L51, C1; LTIB), (F17; L51, C2; LTIB) and (F13; L44; LTIB; prior to 1994).

Reinsurance: premiums ceded to gross premiums written for firm i time t (F41; L20; C4) / (F41; L19; C4).

Surrender: the value of gross surrender and partial surrender claims to total gross claims for firm i, time t (F42, L13; C4)/ (F42, L16; C4).

Volatility: the absolute values of weighted average valuation gain and loss of linked and non-linked assets for firm i, time t |((F40, L14) / (F13, L58+L59, LTIB))|*((F13, L58+L59, LTIB) / (F13, L89, LTIB)+ |((F40, L13) / (F13, L89-(L58+L59), LTIB))|*((F13, L89-(L58+L59), LTIB) / (F13, L89, LTIB).

Overseas: 1 for an insurer that has overseas operations and 0 otherwise for firm i time t. (it is based on F50, L18, C3).

Linked: the linked assets divided by total policyholders' assets for firm i at time t. (F13, L58+L59, LTIB) / (F13, L89, LTIB).

Non-linked: the non-linked assets divided by total policyholders' assets for firm i at time t. (F13, L89- (L58+L59), LTIB) / (F13, L89, LTIB).

HHI liability: HHI score is expressed as the sum of the squared share of each business line (Non-Profit, With-Profits, Unitised With-Profits, Property Linked and Index Linked) in gross mathematical reserves. With-Profits (F50; L11, C4), Non-Profit (F50; L12, C4), Unitised With-Profits (F50; L13, C4), Property Linked (F50; L14+L15, C4) and Index Linked (F50; L16+L17, C4).

With-Profits: the proportion of with-profits product reserves to total reserves for firm i at time t (F50, L11, C4) / (F50, L18, C4).

Non-Profit: the proportion of non-profit product reserves to total reserves for firm i at time t (F50, L12, C4) / (F50, L18, C4).

Unitised With-Profits: the proportion of unitised with-profits product reserves to total reserves for firm i at time t (F50, L13, C4) / (F50, L18, C4).

Property Linked: the proportion of Property unit-linked product reserves to total reserves for firm i at time t (F50, L14+L15, C4) / (F50, L18, C4).

Index Linked: the proportion of index unit-linked product reserves to total reserves for firm i at time t (F50, L16+L17, C4) / (F50, L18, C4).

Product line: 0 for insurer writes over 90% of new premiums from a single line, namely, non-profit, with-profits, unitised with-profits, property unit-linked or index unit-linked and 1 otherwise for firm i time t. With-Profits ((F47; L100-215, C4 + (L100-215, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix); Non-Profit (F47; L300-445, C4 + (L300-445, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix); Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) Table 29 in Appendix; Property Linked ((F47; L580-800, C4 + (L580-800, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix); and Index Linked ((F47; L900-915, C4 + (L900-915, C6)); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29 in Appendix).

Market Share: the value of policyholders' assets for firm i time t expressed as a share of total policyholders' assets for all firms at time t. (F13, L89, LTIB).

Instability: a dummy is set 1 in 1985, 1987, 1990, 1991, 1994, 2000, 2001, 2002, 2007 and 2008 (during these years change in real capital gain and sometimes change in value creation were negative) and 0 otherwise multiplied by the absolute values of weighted average capital gain and loss of linked and non-linked assets |((F40, L14) / (F13, L58+L59, LTIB))|*((F13, L58+L59, LTIB) / (F13, L89, LTIB)+ |((F40, L13) / (F13, L89-(L58+L59), LTIB))|*((F13, L89-(L58+L59), LTIB) / (F13, L89, LTIB).

The consistency conditions are tested and reported in Table 15. The result, as shown in Table 15 Panel A, shows that the three output proxies have roughly similar mean and standard deviation. The revenue based efficiency has the highest mean and the lowest standard deviation compared to claims and funds based efficiency scores. This can be attributed partly to linking payouts for the holders of life assurance policies to the market value of asserts such as unit-linked products, suggesting the value of assets, and, hence, payouts to policyholders fluctuated as the market value of assets fluctuated, such as changes in the economic conditions. This may suggest revenue based efficiency gives the most consistent estimation for efficiency scores. However, this measure does not take into account the effect of the changes in the market value of assets as valuation gain and loss needs to be dropped to avoid negativity issues (see Table 15), and systematic differences in price across large and small firms may lead to misleading inferences about average costs (see Allen, 1974; Blair, Jackson and Vogel, 1975; Doherty, 1981 and Yuengert, 1993, p.489).

As for ranking, the result, as shown in Table 15 Panel B, shows that three output proxies rank firms approximately similarly. Indeed, 99% is the Spearman's rank correlation coefficient between claims based ranking and funds for all firms over the period 1986-2010. Furthermore, the Spearman's rank correlation coefficient between revenue based efficiency ranking and claims or funds is almost 94%, suggesting the three proxies give roughly similar ranking for all firms. Similarly, the correlation between efficiency scores estimated using different proxies are relatively high; 99% is the Spearman's rank correlation coefficient between claims based cost efficiency scores and funds for all firms over the period 1986-2010 see Table 15 Panel C. Furthermore, the Spearman's rank correlation coefficient between revenue based cost efficiency scores and claims or funds is almost 94% see Table 15 Panel C. It is interesting that value creation or real capital gain based ranking (see Chapter 3) is positively related to cost

efficiency based ranking, suggesting more efficient firms are more likely to deliver higher value for policyholders compared with less efficient firms.

To test how efficiency scores estimated using different proxies are related to conventional measures of firm performance, such as growth, size, expense, investment performance, risk management, product decomposition and diversification, Pearson correlation coefficient matrix (pairwise correlation) is calculated between efficiency scores estimated using different proxies and all predetermined variables. Table 14 Panel D presents the descriptive statistics for variables used in this analysis and the tabulated results of the Pearson correlation coefficient matrix (pairwise correlation) between efficiency scores and all predetermined variables. The result shows the relationship between all predetermined variables and efficiency scores estimated using different output proxies are almost consistent, providing further evidence regarding the consistent between efficiency scores estimated using different proxies. The overall result shows that cost efficiency scores are positively related to firm size, market share, growth rate, value creation, expense ratio and diversified firm. In contrast, cost efficiency scores are negatively related to overcapitalisation, volatility of assets and linked products.

The cost efficiency is positively related to firm size regardless how the size of business is measured. Similarly, the cost efficiency is positively related to financial performance measured by value creation; however, it is inversely related to investment income. With reference to cost ratio, the result shows that cost efficiency is positively related to cost ratio. The result also shows the cost efficiency is negatively related to proportion of assets invested in linked funds and concentrated firms. Therefore, the type of products on which life insurers are focused determines efficiency at which a firm operates. For the second issue of the discussion on capitalization, hedging strategies and business risk, the result suggests cost efficiency is inversely related to the asset-liquidity ratio, free asset ratio, amount of reinsurance purchase,

volatility of assets and capitalisation ratio. In short, on the basis of the discussion above, it is claimed that a cost efficiency scores are closely related to conventional measure of firm performance. A firm with more investment in linked funds are less efficient compared to non-linked based firm. Furthermore, it seems that volatility, overcapitalisation, reinsurance dependency distort efficiency scores. However, efficiency scores positively related to value creation based measure of firm performance.

5.6. Conclusion

A failure in defining an output proxy for the operation processes of life insurers implies that efficiency scores can be biased for indicating the performance of life insurers. Given the intangible nature of output in the life insurance business, it is challenging to find an appropriate accounting proxy for output of life insurers. Theoretically, the output proxy has been defined based on different theoretical foundations that are not mutually consist, creating two schools of thought on how to proxy output: claims or premiums.

This chapter discusses the theoretical foundation for different output proxies utilised in the existing studies and then verifies analytically and empirically whether each of this proxy is a valid proxy to estimate cost efficiency. This chapter employs the stochastic frontier cost function to estimate efficiency scores based on three output proxies, namely, revenue, claims and funds. The chapter goes further to test whether cost efficiency scores estimated using different proxies are consistent and related to conventional measure of firm performance and value creation. The result suggests revenue based efficiency scores, on average, are higher and less volatile compared to average cost efficiency based on funds or claims. However, funds and claims give relatively similar cost efficiency scores. It is also found that three output proxies give consistently similar ranking for competitive firms, and cost efficiency based on

different proxies are closely related to conventional measurers of firm performance and value creation.

6. Chapter 6: Conclusion

There have been dramatic changes not only in the macroeconomic and regulatory environments of the UK life insurers but also ownership structures as well as product and segment structures. The main issues concerning policyholders and shareholders are transferring investment risks to the policyholders and changing insurer's roles from surplus and risk sharing to managing policyholders' assets for fees charged as a discretionary percentage of the value policyholders' assets, suggesting that the policyholders' payouts and shareholders' revenues are now linked to the market value of policyholders' assets. This has increased the importance of changing in the market value of invested assets (unrealised gain) and requires a renovation of some existing performance measures that are oriented towards shareholders. The main aim of the thesis is to understand how the UK life insurance industry performs with respect to policyholders compared to shareholders' oriented conventional measures of performance such as efficiency frontier.

The investigation started by reviewing changes in external and internal environments of the UK life insurers over the period 1985-2010, and how these changes affected the performance and structure of the UK life insurance industry. Chapter 2 — Data, Sample and Review of Latest Developments of the UK Life Insurance Industry over the Period 1985-2010: started by reviewing the performance of the UK economy since the 1970s concerning growth, inflation and the financial market performance. Using the analytical approach, it is found that the 1985-2010 period characterised by a slow rate of economic growth, decline in the interest rates to their lowest levels, minimum inflation rate, and frequent financial crises that significantly affected the whole performance of economy in general and the financial markets in particular.

A detailed review of the regulatory developments of the UK Life insurance industry is also conducted at the EU level with respect to the single passport system and the solvency II, and the UK level concerning the regulatory reform since 1970s. The regulatory developments at the EU and UK levels seem to have significant impact on the structures of the UK life insurance industry: (1) Since the early 1980s, the activities of the individual financial institution have become more varied, making distinction between banks such building societies and non-banks such as asset management and insurers less sharp (Watson, 2004); whereas the developments of the financial intermediary in the UK during the 19th century characterised by existence of clear market segmentations, including banks, brokers, building societies, insurance companies (Thomas, 2004). The dimension of the financial service market segments on the institutional and functional levels has led to broaden the scope of operations which intermediaries can access; creating intensively competitive market and putting pressure on firms to reduce the unit costs of their delivery (Thomas, 2004). (2) The European directives treat foreign financial institutions (from non-member states) that are authorised to operate within a single member state as member states financial institutions (home institutions); permitting the foreign financial institutions operating in the UK to access the European market. This has promoted competition between financial institutions in Europe and increased the attraction of the London base (Thomas, 2004). (3) The liberalization of the European insurance market increases competiveness pressure leading to cost cutting, and, hence, enhance the overall efficiency and productivity of the European insurers (Swiss Re, 1996; Fenn et. al., 2008; Vencappa, Fenn and Diacon, 2013). (4) Increase in the concentration within the industry, making the whole industry dominated by smaller number of groups (see Diacon, Starkey and O'Brien, 2002; and Davutyan and Klumpes, 2008).

Chapter 2 also included a detailed analysis for all UK life insurers over the period 1985-2010 based on annual regulatory returns submitted to the FSA (formerly the DTI) obtained from the

SynThesys life database (version 10.1, 15-August 2011 released). A detailed review for all regulatory forms 1-60 is made to explain how the data used in analytical and empirical investigations in the thesis is derived; suggesting the source of each single variable utilised in the thesis is linked to the regulatory by form, line and column. Furthermore, the purpose of each form as well as the nature of data included in each form, namely, solvency and capital, assets and liabilities and income and expense is discussed. A further illustration on whether each form includes data concerning policyholders' assets, liabilities, income and expense or shareholders' assets, liabilities, income and expense is made to explain how the data is unlisted to analyse performance from policyholders' perspective in this thesis. The chapter also included detailed explanations on how data concerning organisation form (mutual and proprietary), industry structure for parents (insurers, banks and other institutions) and geographic location for parents (UK and overseas) is collected.

The chapter also included detailed descriptions of each product category, namely, with-profits, unitised with-profits, property unit-linked and index unit-linked with respect to definition, risks, payouts to policyholders, exit and persistency, guarantees and capital intensity, transparency and discretion, fund structures and the basis for insurers' revenue. Furthermore, detailed analysis based on data derived from SynThesys life database with respect to market share for each product category, namely, with-profits, unitised with-profits, property unit-linked and index unit-linked at aggregated, segmental (life, pension and overseas), organisation form (mutual and proprietary), industry structure (insurers, banks and other institutions) and parental issue (UK and overseas) levels. It is found that proprietary life insurers regarding ownership, the unit-linked business with respect to products and the pension concerning segmental issues have dominated the UK life insurance market. This change in product structures comes as a response to the changes in the external environment, in particular unparalleled fall in interest rates. The change in market conditions led to many with-profits

insurers, in particular mutual, to close to new business and changes in ownership structures in terms of demutualisation, consolidation with other mutual insurers and the acquisition of mutual insurers by proprietary counterparts. This leads to having predominantly proprietary life insurance industry compared to almost equality controlled industry by mutual and proprietary life insurers in 1980s. It also seems that proprietary life insurers have managed to deal with adverse effects of changes in economic conditions through focusing on less capital intensive products, such as unit-linked products. The analysis of the market trend shows that banks and other financial and non-financial groups as well as foreign groups enter the UK life assurance market through unit-linked products as well as non-profit products, suggesting that these firms focus on standardised and less capital intensive products. In contrast, the UK life insurers still write substantial part of their overseas business in terms of with-profits products.

In Chapter 2, the fund cycle (sources, usages and distribution of life insurance funds) as well as capital structures of the life insurers are constructed using flow charts supported by detailed analyses with respect to flow of the fund account, assets, liabilities, composition of policyholders' assets, released on unreleased gains and loss on policyholders' assets, premiums, expense, size, reinsurance, derivative usage, surplus and net cash flow from premiums and claims. It is reported that the UK life insurers have experienced some common features during the period financial turmoil, such as sharp drop in the value of linked assets, increase in proportion of claims paid in terms of surrender or partial surrender claims and excess in the amount of claims over premiums. It is also found that the amount of valuation losses (unrealised gain) increased in line with the increase in the proportion of assets invested in linked funds. In contrast, it seems that transformation from the participation business to the unit-linked business has enhanced profitability of proprietary life insurers.

The empirical investigation started by assessing the performance of the UK life insurers from policyholders' perspective over the period 1985-2010. Chapter 3 — Does Saving-Investment Create Value for the Savers? – a Case of the UK Life Insurance Firms: started by theoretical and analytical deviation the value creation from a life insurance contract with respect to policyholders. The value creation approach to measure investment performance is based on the economic and accounting valuation of life assurance funds. This valuation assumes that the basic expectation of saving investors is the value of their investment at maturity date should be high than the inflated value of the original investment (measured using current price). Value creation can be decomposed into two components investment incomes (realised gain) and capital gains (unrealised gain) in accumulative terms; however, the contribution of a particular period to the accumulative measure can be found by deducting the current accumulative balance from the proceeding period balance. The valuation also provides a new term called total economic value, which is the sum of basic expected value and economic value of investment income, to provide a benchmark of whether an insurer has managed to keep the value of invested assets in line with changes in purchasing power.

The value creation approach classifies life insurers into three categories with respect to value creation: (1) Full value creation — life insurers that can keep the value of policyholders' contributions and realised gain from investing these contributions in line with the changes in the purchase power of the monetary unit, and, hence, achieve positive real capital gain (unrealised gain); all value are in accumulative terms. (2) Semi value creation — life insurers that can keep the value of policyholders' contributions but only part realised gain from investing these contributions in line with the changes in the purchase power of the monetary unit, and, hence, achieve negative real capital gain (unrealised gain) that destroys part of realised gain generated from investing policyholders' contributions; all value are in accumulative terms. (3) Value destroying — life insurers that cannot keep the value of

policyholders' contributions and realised gain from investing these contributions in line with the changes in the purchase power of the monetary unit, and, hence, achieve negative real capital gain (unrealised gain) that destroys all realised gain generated from investing policyholders' contributions and part of their contributions; all value are in accumulative terms.

In Chapter 3, value creation is calculated for the 369 UK life insurers over the period 1985-2010, and all UK life insurers are ranked based on their abilities to deliver value for policyholders. To examine the variation in life insurers' abilities to derive value for policyholders and how value creation abilities are related to legal form, ownership structure (industry and geographic location of the parents), business strategies, business and financial performance and risk-taking attitudes analytical and empirical analyses are employed. The basic idea was to compare value creation between top 10 and bottom 10 firms, the top firm and the bottom firm, mutual and proprietary, insurer and banks based parents, overseas and UK based parent analytically. Furthermore, empirical investigation is also carried out to examine the difference between top 10 and bottom 10 firms, full value creation and non-value creating (semi value creation and value destroying) on five-year-interval over the period 1985-2010 supported by full sample Pairwise Correlation between identified performance based variables and value creation as well as Tobin's Q.

It is evident that: (1) Value creation is closely related to conventional measure of firm performance such as Tobin's Q; however, value creation is unique in identifying financial healthy of life insurers with respect to their abilities to keep the value of invested policyholders' assets in line with a particular benchmark such as inflation and classify life insurers according to these abilities. (2) There has been a significant decrease in the UK life insurer abilities to deliver real wealth for policyholders in particular during the period of financial turmoil. (3) Value creation is closely related to firm size, growth, financial strength, efficiency, solvency

and risk-taking attitudes. (4) Value destroying insurers keep higher level of liquid assets and extensively hedge through reinsurance purchase and use of derivatives compared to full value creation insurers. (5) Ownership structures and legal form affect life insurers' abilities to deliver value for policyholders; including significant variations between insurers based parents and banks and other financial institutions based parents in their abilities to create value for policyholders.

The value creation approach could be employed as a Key Performance Indicators (KPI) to assess the performance of life insurers since the value creation approach will provide the users with information to rank and classify different investment funds. Another application of value creation could be using economic value as a benchmark to market consistent valuation of assets and liabilities. Indeed, assets and liabilities under the current regulatory valuation for linked products will move in the same direction, and, hence, a free asset ratio may not be a good measure of insurer solvency. In contrast, the basic expected value could be used as a warning sign for regulators; when the market value falls below the expected value of policyholders' assets for a relatively long period, regulators may need to review the insurer investment policy. Further application for the value creation concept is that it could be used to examine whether the value of investment funds is kept at higher value than basic expected value. Furthermore, the current market price of traded investments funds could be used to test whether the market is efficient concerning value creation.

In Chapter 4 — An Investigation into the Diversification- Performance Relationship in the UK Life Insurance Industry: the empirical investigation goes further to examine whether variation in life insurers abilities to create value can be related to composition of the product mix. To establish the link between product diversification and value creation; the investigation started by examining difference between conventional products (non-linked) based life insurers and

modern products (unit-linked) based life insurers with respect to business and financial performance, risk-taking attitude and hedging strategy. The investigation is carried out by comparing the difference between these two groups of firms (linked and non-linked) analytically and empirically on five-year-interval supported by Pairwise Correlation based on full sample between proportion of linked assets and pre-identified performance variables.

To further validate the result of the investigation concerning differences between linked and non-linked based products with respect to value creation, panel data based econometric analysis is also carried out. The basic idea is to examine whether the effect of product diversification on the performance of the UK life insurers is homogenous across conventional ratio such as investment yield (realised gain), and two value creation based measures, namely, capital gain (unrealised gain) and value creation (realised and unrealised gains). In this investigation, product diversification is measured using conventional the HHI, dummy and the proportion of assets invested in linked funds.

The empirical investigation started by establishing the potential effect of product diversification on three proposed measures of performance, namely, realised gain, unrealised gain and value creation (a combined measure of realised and unrealised gains) using the OLS estimator (see Berger and Ofek, 1995). The result of that investigation is validated by comparing the result to fixed effects estimator that controls unobserved firm specific effects; fixed effects estimator is run with and without controlling for the time invariant of some explanatory variables (Plümper and Troeger, 2007). The 2SLS estimator is also employed to control for any potential endogeneity issue concerning the linked asset based variable. The linked asset is instrumented by three variables, namely, Capitalisation, Surrender and Liquidity; this process is validated by employing Kleibergen-Paap rk LM statistic, Kleibergen-Paap rk Wald F statistic and the Hansen–Sargan test or Hansen J test to ensure the instruments

are valid, and, hence, the result of the 2SLS is reliably. Given that value creation is measured in accumulative term, the result is also validated by employing the difference and system Generalized Method of Moments (GMM) estimators suggested by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998) and Holtz-Eakin, Newey and Rosen (1988) for dynamic version of the estimated model. The potential effect of the economic conditions on the result is also controlled by employing interaction term of adverse economic conditions based dummy and linked assets to test whether the result would be sensitive for adverse changes in economic conditions such as the period of the financial turmoil. To validate the interaction term, the empirical model is run on a yearly basis and economic condition based sub-periods to examine whether the result would vary between years /periods with different economic conditions.

It evident that: (1) Life insurers with a high level of assets invested in linked funds perform better in terms of business growth and value creation compared to non-linked insurers. However, linked based insurers have lower investment yield (realised gain) and higher levels of persistency risks and assets volatility. (2) Non-linked insurers are more capital intensive and less cost efficient; in addition, they purchase more reinsurance and they are more likely to use derivatives compared to linked-based insurers. (3) The effect of diversification between linked and non-linked products on financial performance is not homogeneous for investment yield (realised gain), capital gain (unrealised gain) and value creation (realised and unrealised gains), and it also depends on how diversification is measured. (4) Although unit-linked products outperform non-linked products with respect to value creation, unit-linked products are more vulnerable to adverse movements in the market value of the assets, and, hence, the policyholders, who bear the investment risk of linked products, may suffer from adverse movement in the equity market.

In Chapter 5 — The Robustness of Output Proxies in Life Insurance Efficiency Studies: Empirical Evidence from the UK: the empirical investigation goes further to examine how value creation is related to frontier efficiency based measure of firm performance. The investigation started by examining the validity of existing output proxies in the insurance based literature. The output is firstly derived based on a life insurance contract (investment based contract) compared to existing theoretical derivation of output from protection based insurance contract (general insurance contract) (see Arrow, 1971; Cummins and Weiss, 2013; pp.817-819). The output is theoretically defined, using the value added approach, as net management fees (profits based management fees) plus risk premiums on shareholders' capital for bearing the insurance risk compared to insurer's expenses plus the owners' profit for bearing insurance risk based on protection insurance contract (see Cummins and Weiss, 2013; p.819). The investigation went to theoretical and analytically validate the existing proxies of output based on exiting insurance based literature and the theoretical deviation of the output based life insurance based contract. The cost efficiency based on the SFA approach is estimated for three output proxies, namely, revenue, claims and funds, and then the relationship between cost efficiency scores and conventional measures of firm performance is examined as well as the value creation. Furthermore, the ranking of best practice firms based on efficiency scores compared to value reaction based ranking.

Using data on 369 firms over the period 1985-2010, it is found that: (1) Many existing output proxies can violate non-negativity constraints for downsizing firms or during the period of financial turmoil due to the significant changes in the value of assets and other key variables. (2) Claims, revenue and funds give consistently similar ranking for competitive firms, and cost efficiency based on different proxies are closely related to conventional measurers of firm performance and value creation. (3) The ranking of best practice firms based on efficiency

scores is related to value creation based ranking. (3) Average cost efficiency based on revenue is higher and less volatile compared to average cost efficiency based on funds or claims.

The main limitation of thesis is volatility and level of reporting of the SynThesys life database (version 10.1, 15-August 2011 released). As for level of reporting, the data is only available at the legally operating entity level not the group level; suggesting many of the firms in the data set could belong to one group such as Aviva plc based subsidiaries. This mainly because the FSA rules required data to be filed at the legal entity level not the group level (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). Furthermore, the data availability with respect to Form 40 in the SynThesys life database (version 10.1, 15-August 2011 released) is only at the aggregated firm level not the fund level, although the Form 40 is filed to FSA at the fund and operating entity levels (see FSA, 2008a; KPMG, 2009; Philpott, 2009; Standard and Poor's, 2010 and KPMG, 2012). Therefore, it is only possible to calculate the value creation and carry out the empirical investigation at the legal entity level. With respect to data volatility, the number of the UK life insurers based on the SynThesys life database (version 10.1, 15-August 2011 released) has declined considerably over the period since 1980s due to the M&A (Swiss Re, 2006; Carter and Falush, 2009). It went down from 229 (1985) to 143 (2010). The number includes the proprietary and mutual UK life insurers; however, the number of mutual life insurers has declined considerable due to demutualisation and the M&A activities (Swiss Re, 1999; Carter and Falush, 2009). This consolidation is usually done at the group level but it is reflected in data set by transferring funds between subsidiaries; many parents such as Aviva plc used to transfer funds between subsidiaries that crates unusual change in the size of the existing firms.

A further limitation of value creation analysis is that it assumes that there are no guarantees for life assurance products; however, most life assurance products are sold with guarantees. This

was inherited from the nature and availability of the data in the the SynThesys life database (version 10.1, 15-August 2011 released).

The scope of the potential future research lies on expanding the value creation analysis at the EU level, this would provide the basis for comparing performance of in the EU single passport market and test whether the regulatory change the EU level has affected life insurers' abilities to derive value for policyholders. Furthermore, the application of the value creation analysis at fund level would provide more insight on how different investment funds have preformed compared to policyholders' expectations. This analysis would also provide more insight on how the composition of assets held by fund would affect the fund abilities to deliver value for policyholders.

Recent efficiency studies at the EU level (see Fenn et. al. 2008, Vencappa, Fenn and Diacon, 2013) provide insight cornering impact of the regulatory change at the EU on efficiency and productivity of the EU life insurers. A further analysis at EU using output proxies suggested in the thesis would provide more insight on how that regulator change has affected EU life insurers.

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Appendix

Table 16: Form 2 Statement of Solvency - Long-Term Insurance Business

Line	Description	Description
11	**Capital Resources**	Capital resources arising within the LT insurance fund
12		Capital resources allocated towards LT business arising outside the LT fund
13		Capital resources to cover LT business capital resources requirement (11+12)
21	**Guarantee Fund**	Guarantee Fund requirement
22		Excess (deficiency) of capital resources to cover guarantee Fund requirement
31	**Minimum Capital Requirement (MCR)**	LT insurance capital requirement
32		Resilience capital requirement
33		Base capital resources requirement
34		Individual minimum capital requirement
35		Capital requirements of regulated related undertakings
36		Minimum capital requirement (34+35)
37		Excess (deficiency) of available capital resources to cover 50% of MCR
38		Excess (deficiency) of available capital resources to cover 75% of MCR
39	**Enhanced Capital Requirement**	With-profits insurance capital component
40		Enhanced capital requirement
41	**Capital Resources Requirement (CRR)**	Capital resources requirement (greater of 36 and 40)
42		Excess (deficiency) of capital resources to cover LT business CRR (13-41)
51	**Contingent Liabilities**	Contingent liabilities re LT business shown in supplementary note to F14

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 17: Form 13 Analysis of Admissible Assets

Line	Classifications	Classifications	Description	Description
11	**Non-linked**	**Land and Buildings**	**Investments in Group Undertakings and Participating Interests**	Land and buildings
21	**Non-linked**	**Affiliates**		UK insurance dependants - shares
22	**Non-linked**	**Affiliates**		UK insurance dependants - debts and loans
23	**Non-linked**	**Affiliates**		Other insurance dependants - shares
24	**Non-linked**	**Affiliates**		Other insurance dependants - debts and loans
25	**Non-linked**	**Affiliates**		Non-insurance dependants - shares
26	**Non-linked**	**Affiliates**		Non-insurance dependants - debts and loans
27	**Non-linked**	**Affiliates**		Other group undertakings - shares
28	**Non-linked**	**Affiliates**		Other group undertakings - debts and loans
29	**Non-linked**	**Affiliates**		Participating interests - shares
30	**Non-linked**	**Affiliates**		Participating interests - debts and loans
41	**Non-linked**	**Equities**	**Other Financial Investments**	Equity shares
42	**Non-linked**	**Equities**		Other shares and other variable yield participations
43	**Non-linked**	**Equities**		Holdings in collective investment schemes
44	**Non-linked**	**Other Assets**		Rights under derivative contracts
45	**Non-linked**	**Bonds**		Fixed interest securities - approved
46	**Non-linked**	**Bonds**		Fixed interest securities - other
47	**Non-linked**	**Bonds**		Variable interest securities - approved
48	**Non-linked**	**Bonds**		Variable interest securities - other
49	**Non-linked**	**Other Assets**		Participation in investment pools
50	**Non-linked**	**Mortgages and Loans**		Loans secured by mortgages
51	**Non-linked**	**Mortgages and Loans**		Loans to public / local authorities and nationalised industries
52	**Non-linked**	**Mortgages and Loans**		Loans secured by policies of insurance issued by the company
53	**Non-linked**	**Mortgages and Loans**		Other loans
54	**Non-linked**	**Cash**		Bank and approved credit and financial inst deposits <= 1 month
55	**Non-linked**	**Cash**		Bank and approved credit and financial inst deposits > 1 month
56	**Non-linked**	**Other Assets**		Other financial investments
57	**Non-linked**	**Cash**		Deposits with ceding undertakings
58	**Linked**	**Linked Assets**		Assets held to match linked liabilities: index linked
59	**Linked**	**Linked Assets**		Assets held to match linked liabilities: property linked
60	**Non-linked**	**Other Assets**	**Reinsurers' Share of Technical Provisions**	Provision for unearned premiums
61	**Non-linked**	**Other Assets**		Claims outstanding
62	**Non-linked**	**Other Assets**		Provision for unexpired risks
63	**Non-linked**	**Other Assets**		Other
71	**Non-linked**	**Debtors**	**Debtors and Salvage**	Direct insurance business - policyholders
72	**Non-linked**	**Debtors**		Direct insurance business - intermediaries
73	**Non-linked**	**Debtors**		Salvage and subrogation recoveries
74	**Non-linked**	**Debtors**		Reinsurance accepted
75	**Non-linked**	**Debtors**		Reinsurance ceded
76	**Non-linked**	**Debtors**		Dependants - due in 12 months or less
77	**Non-linked**	**Debtors**		Dependants - due in more than 12 months
78	**Non-linked**	**Debtors**		Other - due in 12 months or less
79	**Non-linked**	**Debtors**		Other - due in more than 12 months
80	**Non-linked**	**Other Assets**	**Other Assets**	Tangible assets
81	**Non-linked**	**Cash**		Deposits not subject to time restriction on withdrawal
82	**Non-linked**	**Cash**		Cash in hand
83	**Non-linked**	**Other Assets**		Other assets
84	**Non-linked**	**Accrued Income**		Accrued interest and rent
85	**Non-linked**	**Accrued Income**		Deferred acquisition costs (general business only)
86	**Non-linked**	**Accrued Income**		Other prepayments and accrued income
87	**n/a**	**n/a**		Deductions from the aggregate value of assets
89	**n/a**	**Total Admissible Assets**		Grand total of admissible assets (11 to 86 less 87)
91	**n/a**	**n/a**	**Reconciliation to Asset Values Determined in Accordance with GAAP/IFRSs**	Total admissible assets (as per line 89)
92	**n/a**	**n/a**		Admissible Assets in excess of market and counterparty limits
93	**n/a**	**n/a**		Inadmissible Assets directly held
94	**n/a**	**n/a**		Capital resources requirement deduction of regulated related undertakings
95	**n/a**	**n/a**		Ineligible surplus capital and restricted assets in regulated related ins undertakings
96	**n/a**	**n/a**		Inadmissible assets of regulated related ins undertakings
97	**n/a**	**n/a**		Book value of related ancillary services undertakings
98	**n/a**	**n/a**		Other differences in the valuation of assets
99	**n/a**	**n/a**		Deferred acquisition costs excluded from line 89
100	**n/a**	**n/a**		Reinsurers' share of technical provisions excluded from line 89
101	**n/a**	**n/a**		Other asset adjustments (may be negative)
102	**n/a**	**n/a**		Total assets (91 to 100)
103	**n/a**	**n/a**		Amount included in Line 89 attributable to debts from related insurers

Source: the author — based on the FSA return forms (see FSA, 2008a).
Where:
Form 13 is available separately for the LTIB (life) and the OLTIB (general's and shareholders' assets).

Table 18: Form 44 Long-Term Insurance Business: Linked Funds Balance Sheet

Line	Description	Description
11	**Internal Linked Funds (Excluding Cross Investment)**	Directly held assets (excluding collective investment schemes)
12		Directly held assets - collective investment schemes of connected cos
13		Directly held assets - other collective investment schemes
14		Total assets (11+12+13)
15		Provision for tax on unrealised capital gains
16		Secured and unsecured loans
17		Other liabilities
18		Total net assets (14-15-16-17)
21	**Directly Held Linked Assets**	Value of directly held linked assets
31	**Total**	Value of directly held linked assets and units held (18+21)
32		Surplus units
33		Deficit units
34		Net unit liability (31-32+33)

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 19: Form 17 Analysis of Derivative Contracts

Line/Column	Description	Description	Value as at the End of this Financial Year		Notional Amount as at the End of this Financial Year	
			Assets	Liabilities	Bought /Long	Sold /Short
			1	2	3	4
11	Futures and Contracts for Differences	Fixed-interest securities				
12		Interest rates				
13		Inflation				
14		Credit index/basket				
15		Credit single name				
16		Equity Index				
17		Equity Stock				
18		Land				
19		Currencies				
20		Mortality				
21		Other				
31	In the Money Options:	Swaptions				
32		Equity index calls				
33		Equity stock calls				
34		Equity index puts				
35		Equity stock puts				
36		Options				
41	Out of the Money Options	Swaptions				
42		Equity index calls				
43		Equity stock calls				
44		Equity index puts				
45		Equity stock puts				
46		Other				
51		Total (11 to 46)				
52		Adjustment for variation margin				
53		Total (51+ 52)				

Source: the author — based on the FSA return forms (see FSA, 2008a).
Where:
Form 17 is available separately for the LTIB (life) and the OLTIB (general's and shareholders' assets).

Table 20: Form 14 Long-Term Insurance Business: Liabilities and Margins

Line	Description
11	Mathematical reserves after distribution of surplus
12	Cash bonuses not paid to policyholders prior to end of fin yr
13	Balance of surplus / (valuation deficit)
14	Long-term insurance business fund c/f (11 to 13)
15	Claims outstanding - gross
16	Claims outstanding- reinsurers' share
17	Claims outstanding - net (15-16)
21	Provisions - taxation
22	Provisions - other risks and charges
23	Deposits received from reinsurers
31	Creditors - direct insurance business
32	Creditors - reinsurance accepted
33	Creditors - reinsurance ceded
34	Debenture loans - secured
35	Debenture loans - unsecured
36	Amounts owed to credit institutions
37	Creditors - taxation
38	Creditors - other
39	Accruals and deferred income
41	Provision for ‘reasonably foreseeable adverse variations’
49	Total other insurance and non-insurance liabilities (17 to 41)
51	Excess of the value of net admissible assets
59	Total liabilities and margins
61	Amounts included in Line 59 attributable to related companies
62	Amounts included in Line 59 attributable to property linked benefits
71	Total Liabilities (11+12+49)
72	Increase to liabilities - DAC related
73	Reinsurers' share of technical provisions
74	Other adjustments to liabilities (may be negative)
75	Capital and reserves and fund for future appropriations
76	Total liabilities (71 to 75)

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 21: Form 50 Long-Term Insurance Business: Summary of Mathematical Reserves

Line/Column	Description	Description	UK Life	UK Pension	Overseas	Total Financial Year
			1	2	3	4
11	**Gross**	Form 51 - with-profits				
12		Form 51 - non-profit				
13		Form 52				
14		Form 53 - linked				
15		Form 53 - non-linked				
16		Form 54 - linked				
17		Form 54 - non-linked				
18		Total				
21	**Reinsurance - External**	Form 51 - with-profits				
22		Form 51- non-profit				
23		Form 52				
24		Form 53 - linked				
25		Form 53 - non-linked				
26		Form 54 - linked				
27		Form 54 - non-linked				
28		Total				
31	**Reinsurance - Intra-Group**	Form 51 - with-profits				
32		Form 51 - non-profit				
33		Form 52				
34		Form 53 - linked				
35		Form 53 - non-linked				
36		Form 54 - linked				
37		Form 54 - non-linked				
38		Total				
41	**Net of Reinsurance**	Form 51 - with-profits				
42		Form 51 - non-profit				
43		Form 52				
44		Form 53 - linked				
45		Form 53 - non-linked				
46		Form 54 - linked				
47		Form 54 - non-linked				
48		Total				

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 22: Form 40 Long-Term Insurance Business: Revenue Account

Line	Description	Description
11	**Income**	Earned premiums
12		Investment income receivable before deduction of tax
13		Increase (decrease) in value of non-linked assets brought into account
14		Increase (decrease) in value of linked assets
15		Other income
19		Total income
21	**Expenditure**	Claims incurred
22		Expenses payable
23		Interest payable before deduction of tax
24		Taxation
25		Other expenditure
26		Transfer to (from) non-technical account
29		Total expenditure
31		Business transfers-in
32		Business transfers-out
39		Increase (decrease) in fund in financial year (19-29+31-32)
49		Fund brought forward
59		Fund carried forward (39+49)

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 23: Form 41 Long-Term Insurance Business: Analysis of Premiums

Line/Column	Description	Description	UK Life	UK Pension	Overseas	Total Financial Year
			1	2	3	4
11	Gross	Regular premiums				
12		Single premiums				
13	Reinsurance External	Regular premiums				
14		Single premiums				
15	Reinsurance Intra-Group	Regular premiums				
16		Single premiums				
17	Net of Reinsurance	Regular premiums				
18		Single premiums				
19	Total	Gross				
20		Reinsurance				
21		Net				

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 24: Form 42 Long-Term Insurance Business: Analysis of Claims

Line/column	Description	Description	UK Life	UK Pension	Overseas	Total Financial Year
			1	2	3	4
11	**Gross**	Death or disability lump sums				
12		Disability periodic payments				
13		Surrender or partial surrender				
14		Annuity payments				
15		Lump sums on maturity				
16		Total				
21	**Reinsurance - External**	Death or disability lump sums				
22		Disability periodic payments				
23		Surrender or partial surrender				
24		Annuity payments				
25		Lump sums on maturity				
26		Total				
31	**Reinsurance - Intra-Group**	Death or disability lump sums				
32		Disability periodic payments				
33		Surrender or partial surrender				
34		Annuity payments				
35		Lump sums on maturity				
36		Total				
41	**Net of Reinsurance**	Death or disability lump sums				
42		Disability periodic payments				
43		Surrender or partial surrender				
44		Annuity payments				
45		Lump sums on maturity				
46		Total				

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 25: Form 43 Long-Term Insurance Business: Analysis of Expenses

Line/column	Description	Description	UK Life	UK Pension	Overseas	Total Financial Year
			1	2	3	4
11	Gross	Commission - acquisition				
12		Commission - other				
13		Management - acquisition				
14		Management - maintenance				
15		Management - other				
16		Total				
21	Reinsurance - External	Commission - acquisition				
22		Commission - other				
23		Management - acquisition				
24		Management - maintenance				
25		Management - other				
26		Total				
31	Reinsurance - Intra-Group	Commission - acquisition				
32		Commission - other				
33		Management - acquisition				
34		Management - maintenance				
35		Management - other				
36		Total				
41	Net of Reinsurance	Commission - acquisition				
42		Commission - other				
43		Management - acquisition				
44		Management - maintenance				
45		Management - other				
46		Total				

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 26: Form 58 Long-Term Insurance Business: Distribution of Surplus

Line	Description	Description
11	**Valuation Result**	Fund c/f
12		Bonus payments in anticipation of a surplus
13		Transfer to non-technical account
14		Transfer to other funds / parts of funds
15		Subtotal (11 to 14)
21		Mathematical reserves
29		Surplus inc contingency and other reserves (15-21)
31	**Composition of Surplus**	Balance b/f
32		Transfer from non-technical account
33		Transfer from other funds / parts of fund
34		Surplus arising since last valuation
39		Total
41	**Distribution of Surplus**	Bonus paid in anticipation of a surplus
42		Cash bonuses
43		Reversionary bonuses
44		Other bonuses
45		Premium reductions
46		Total allocated to policyholders (41 to 45)
47		Net transfer out of fund / part of fund
48		Total distributed surplus (46+47)
49		Surplus carried forward
59		Total (48+49)
61	**Percentage of Distributed Surplus Allocated to Policyholders**	Current year
62		Current year -1
63		Current year -2
64		Current year -3

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 27: Form 45 Long-Term Insurance Business: Revenue Account for Internal Linked Funds

Line	Description	Description
11	**Income**	Value of total creation of units
12		Investment Income attributable to funds before deduction of tax
13		Increase (decrease) in value of investments in the financial year
14		Other income
19		Total income
21	**Expenditure**	Value of total cancellation of units
22		Charges for management
23		Charges in respect of tax on investment income
24		Taxation on realised capital gains
25		Increase (decrease) in amounts set aside for tax on capital gains not yet realised
26		Other expenditure
29		Total expenditure
39		Increase (decrease) in funds in financial year (19-29)
49		Internal linked funds b/f
59		Internal linked funds c/f (39+49)

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 28: Form 46 Long-Term Insurance Business: Summary of New Business

Line/column	Description	Description	UK Life	UK Pension	Overseas	Total Financial Year
			1	2	3	4
11	Number of New Policyholders / Scheme Members for Direct Insurance Business	Regular premium business				
12		Single premium business				
13		Total				
21	Amount of New Regular Premiums	Direct insurance business				
22		External reinsurance				
23		Intra-group reinsurance				
24		Total				
25	Amount of New Single Premiums	Direct insurance business				
26		External reinsurance				
27		Intra-group reinsurance				
28		Total				

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 29: Form 47 Long-Term Insurance Business: Analysis of New Business

Product Code Number	Product Description	Classification	Regular Premium Business		Single Premium Business	
			Number of Policyholders / Scheme Members	Amount of Premiums	Number of Policyholders / Scheme Members	Amount of Premiums
			3	4	5	6
100	Conventional whole life with-profits ordinary branch	Non-linked: with-profits (participating business)				
105	Conventional whole life with-profits industrial branch	Non-linked: with-profits (participating business)				
110	Conventional whole life with-profits (individual savings account)	Non-linked: with-profits (participating business)				
115	Conventional whole life with-profits (tax exempt)	Non-linked: with-profits (participating business)				
120	Conventional endowment with-profits ordinary branch Savings	Non-linked: with-profits (participating business)				
125	Conventional endowment with-profits ordinary branch target cash	Non-linked: with-profits (participating business)				
130	Conventional endowment with-profits industrial branch	Non-linked: with-profits (participating business)				
135	Conventional endowment with-profits (individual savings account)	Non-linked: with-profits (participating business)				
140	Conventional endowment with-profits (tax exempt)	Non-linked: with-profits (participating business)				
145	Income protection with-profits	Non-linked: with-profits (participating business)				
150	Income protection with-profits (Holloway)	Non-linked: with-profits (participating business)				
155	Conventional pensions endowment with-profits	Non-linked: with-profits (participating business)				
160	Conventional pensions endowment with-profits - increments	Non-linked: with-profits (participating business)				
165	Conventional deferred annuity with-profits	Non-linked: with-profits (participating business)				
170	Conventional deferred annuity with-profits - increments	Non-linked: with-profits (participating business)				
175	Group conventional deferred annuity with-profits	Non-linked: with-profits (participating business)				
180	Group conventional deferred annuity with-profits - increments	Non-linked: with-profits (participating business)				
185	Group conventional pensions endowment with-profits	Non-linked: with-profits (participating business)				
190	Group conventional pensions endowment with-profits - increments	Non-linked: with-profits (participating business)				
195	Annuity with-profits (purchased life annuity)	Non-linked: with-profits (participating business)				
200	Annuity with-profits (compulsory purchase annuity)	Non-linked: with-profits (participating business)				
205	Miscellaneous conventional with-profits	Non-linked: with-profits (participating business)				
210	Additional reserves with-profits ordinary branch	Non-linked: with-profits (participating business)				
215	Additional reserves with-profits industrial branch	Non-linked: with-profits (participating business)				
300	Regular premium non-profit WL/EA ordinary branch	Non-linked: non-profit				
305	Single premium non-profit WL/EA ordinary branch	Non-linked: non-profit				
310	Non-profit industrial branch	Non-linked: non-profit				
315	Individual deposit administration non-profit	Non-linked: non-profit				
320	Group deposit administration non-profit	Non-linked: non-profit				
325	Level term assurance	Non-linked: non-profit				
330	Decreasing term assurance	Non-linked: non-profit				
335	Decreasing term assurance (rider benefits)	Non-linked: non-profit				
336	Mortality risk premium reinsurance	Non-linked: non-profit				
340	Accelerated critical illness (guaranteed premiums)	Non-linked: non-profit				
345	Accelerated critical illness (reviewable premiums)	Non-linked: non-profit				
350	Stand-alone critical illness (guaranteed premiums)	Non-linked: non-profit				
355	Stand-alone critical illness (reviewable premiums)	Non-linked: non-profit				
360	Income protection non-profit (guaranteed premiums)	Non-linked: non-profit				
365	Income protection non-profit (reviewable premiums)	Non-linked: non-profit				
370	Long-term care policy	Non-linked: non-profit				
375	Protection menu policy	Non-linked: non-profit				
380	Miscellaneous protection rider	Non-linked: non-profit				
385	Income protection claims in payment	Non-linked: non-profit				
390	Deferred annuity non-profit	Non-linked: non-profit				
395	Annuity non-profit (purchased life annuity)	Non-linked: non-profit				
400	Annuity non-profit (compulsory purchase annuity)	Non-linked: non-profit				
401	Annuity non-profit (bulk transfer)	Non-linked: non-profit				
405	Annuity non-profit (compulsory purchase annuity impaired life)	Non-linked: non-profit				
410	Group Life	Non-linked: non-profit				
411	Group death in service dependants' annuities	Non-linked: non-profit				
415	Collective Life	Non-linked: non-profit				
420	Group income protection	Non-linked: non-profit				
425	Group income protection claims in payment	Non-linked: non-profit				
430	Group critical illness	Non-linked: non-profit				
435	Miscellaneous non-profit	Non-linked: non-profit				
440	Additional reserves non-profit ordinary branch	Non-linked: non-profit				
445	Additional reserves non-profit industrial branch	Non-linked: non-profit				
500	Life unitised with-profit single premium	Unit-linked: unitised with-profits				
505	Life unitised with-profit whole life regular premium	Unit-linked: unitised with-profits				
506	Life unitised with-profit whole life regular premium (individual savings account)	Unit-linked: unitised with-profits				
510	Life unitised with-profit endowment regular premium - savings	Unit-linked: unitised with-profits				
515	Life unitised with-profit endowment regular premium - target cash	Unit-linked: unitised with-profits				
516	Life unitised with-profit endowment regular premium (individual savings account)	Unit-linked: unitised with-profits				
520	Holloway member accounts	Unit-linked: unitised with-profits				
525	Individual pensions unitised with-profit	Unit-linked: unitised with-profits				
530	Individual pensions unitised with-profit - increments	Unit-linked: unitised with-profits				
535	Group money purchase pensions unitised with-profit	Unit-linked: unitised with-profits				
540	Group money purchase pensions unitised with-profit - increments	Unit-linked: unitised with-profits				
545	Individual deposit administration with-profits	Unit-linked: unitised with-profits				
550	Individual deposit administration with-profits - increments	Unit-linked: unitised with-profits				
555	Group deposit administration with-profits	Unit-linked: unitised with-profits				
560	Group deposit administration with-profits - increments	Unit-linked: unitised with-profits				
565	The Department for Work and Pensions National Insurance rebates unitised with-profit	Unit-linked: unitised with-profits				
570	Income drawdown unitised with-profit	Unit-linked: unitised with-profits				
571	Trustee investment purchased life annuity unitised with-profit	Unit-linked: unitised with-profits				
574	unitised with-profit investment only reinsurance	Unit-linked: unitised with-profits				
575	Miscellaneous unitised with-profit	Unit-linked: unitised with-profits				
580	Term assurance rider	Unit-linked: Property linked				
585	Accelerated critical illness rider	Unit-linked: Property linked				
590	Stand-alone critical illness rider	Unit-linked: Property linked				
595	Income protection rider	Unit-linked: Property linked				
605	Miscellaneous protection rider	Unit-linked: Property linked				
610	Additional reserves accumulating with-profit	Unit-linked: Property linked				
700	Life property linked single premium	Unit-linked: Property linked				
705	Life property linked single premium quasi index linked	Unit-linked: Property linked				
710	Life property linked whole life regular premium	Unit-linked: Property linked				
715	Life property linked endowment regular premium - savings	Unit-linked: Property linked				
720	Life property linked endowment regular premium - target cash	Unit-linked: Property linked				
725	Individual pensions property linked	Unit-linked: Property linked				
730	Individual pensions property linked - increments	Unit-linked: Property linked				
735	Group money purchase pensions property linked	Unit-linked: Property linked				
740	Group money purchase pensions property linked - increments	Unit-linked: Property linked				
745	The Department for Work and Pensions National Insurance rebates property linked	Unit-linked: Property linked				
750	Income drawdown property linked	Unit-linked: Property linked				
755	Trustee investment purchased life annuity	Unit-linked: Property linked				
760	Small self administered schemes	Unit-linked: Property linked				
765	Group managed fund	Unit-linked: Property linked				
770	Term assurance rider	Unit-linked: Property linked				
775	Accelerated critical illness rider	Unit-linked: Property linked				
780	Stand-alone critical illness rider	Unit-linked: Property linked				
785	Income protection rider	Unit-linked: Property linked				
790	Miscellaneous protection rider	Unit-linked: Property linked				

794	Property linked investment only reinsurance	Unit-linked: Property linked				
795	Miscellaneous property linked	Unit-linked: Property linked				
800	Additional reserves property linked	Unit-linked: Property linked				
900	Life index linked single premium	Unit-linked: Index linked				
901	Indexed linked income protection claims in payment	Unit-linked: Index linked				
902	Group indexed linked income protection claims in payment	Unit-linked: Index linked				
905	Index linked annuity	Unit-linked: Index linked				
906	Index linked annuity (bulk transfer)	Unit-linked: Index linked				
907	Index linked deferred annuity	Unit-linked: Index linked				
910	Miscellaneous Index linked	Unit-linked: Index linked				
915	Additional reserves Index Linked	Unit-linked: Index linked				

This form is available separately as follows:

UK Life	Direct Insurance Business	UKL_DB
	Reinsurance accepted external	UKL_RE
	Reinsurance accepted intragroup	UKL_RG
UK Pension	Direct Insurance Business	UKP_DB
	Reinsurance accepted external	UKP_RE
	Reinsurance accepted intragroup	UKP_RG
Overseas	Direct Insurance Business	OS_DB
	Reinsurance accepted external	OS_RE
	Reinsurance accepted intragroup	OS_RG

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 30: Form 16 Profit and Loss Account (Non-Technical Account)

Line	Description
11	Transfer (to)/from general business technical account: From Form 20
12	Transfer (to)/from general business technical account: Equalisation provisions
13	Transfer from LT business revenue account
14	Investment income: Income
15	Investment income: Value re-adjustments on investments
16	Investment income: Gains on the realisation of investments
17	Investment charges: Investment management charges, including interest
18	Investment charges: Value re-adjustments on investments
19	Investment charges: Loss on the realisation of investments
20	Allocated investment return transferred to general business technical account
21	Other income and charges
29	Profit or loss on ordinary activities before tax (11+12+13+14+15+16-17-18-19-20+21)
31	Tax on profit or loss on ordinary activities
39	Profit or loss on ordinary activities after tax (29-31)
41	Extraordinary profit or loss
42	Tax on extraordinary profit or loss
43	Other taxes not shown under preceding items
49	Profit or loss for the financial year (39+41-(42+43))
51	Dividends (paid or foreseeable)
59	Profit or loss retained for the financial year (49-51)

Source: the author — based on the FSA return forms (see FSA, 2008a).

Table 31: The UK Life Insurers Included in the Thesis

Full Name	Average Size (£m)*	Sample Period		Legal Form		Parent Country of Origin		Parent Main Business			
		Period	Number of years	Proprietary	Mutual	UK	Overseas	Insurer	Bank	Other Financial Services	Non-Financial Services
Abbey Life Assurance Co Ltd	10213	1985-2010	26	1985-2010		1985-2007	2008-2010		1985-2010		
Abbey Life Pension and Annuities Ltd	233	1985-1996	12	1985-1996		1985-1996			1985-1996		
Aberdeen Asset Management Life and Pensions Ltd	2997	1998-2010	13	1998-2010		1998 and 2006-2010	1999-2005		1998-2005	2006-2010	
Aberdeen Asset Management Pooled Pensions Ltd	2602	1993-2009	17	1998-2009	1993-1997		1993-2009	1993-2001		2002-2009	
ACE Europe Life Ltd	6	2007-2010	4	2007-2010			2007-2010	2007-2010			
AEGON Insurance Co (UK) Ltd	2	1985-1997	13	1985-1997			1985-1997	1985-1997			
Aetna Life Insurance Co Ltd	300	1985-1992	8	1985-1992		1985-1992		1985-1992			
Aetna Pensions Ltd	29	1985-1990	6	1985-1990		1985-1990		1985-1990			
Ageas Protect Ltd	11	2008-2010	3	2008-2010			2008-2010	2008-2010			
ALAC (UK) Ltd	204	1985-1997	13	1985-1997			1985-1997	1985-1997			
Alba Life Ltd	3846	1985-2005	21	2000-2005	1985-1999	1985-2005		2000-2005	1985-1999		
Albany Life Assurance Co Ltd	1836	1985-1998	14	1985-1998			1985-1998	1985-1998			
All Counties Insurance Co Ltd	11	1985-2002	18	1985-2002		1985-2002					1985-2002
Alliance and Leicester Life Assurance Co Ltd	287	1995-2002	8	1995-2002		1995-2002		1995-2002			
Allianz Insurance plc	779	1985-2004	20	1985-2004			1985-2004	1985-2004			
Allied Dunbar Assurance plc	19028	1985-2004	20	1985-2004		1985-1998	1999-2004	1985-2004			
Allied Dunbar Provident plc	10	1985-1989	5	1985-1989		1985-1989		1985-1989			
Ambassador Life Assurance Co Ltd	106	1985-1997	13	1985-1997		1985-1997			1985-1997		
American Life Insurance Co UK Branch	4159	1985-2010	26	1985-2010			1985-2010	1985-2010			
Ancient Order of Foresters Friendly Society Ltd (The)	144	1996-2010	15		1996-2010	1996-2010		1996-2010			
Assicurazioni Generali	389	1985-1993	9	1985-1993			1985-1993	1985-1993			
Assurant Life Ltd	10	1998-2010	13	1998-2010			1998-2010	1998-2010			
Australian Mutual Provident Society	2489	1985-1996	12		1985-1996		1985-1996	1985-1996			
Aviva Annuity UK Ltd	16717	1997-2010	14	2000-2010	1997-1999	1997-2010		1997-2010			
Aviva Insurance Ltd	2	1985-2004	20	1998-2004	1985-1997	1985-2004		1985-2004			
Aviva Insurance UK Ltd	63	1986-1997	12		1986-1997	1986-1997		1986-1997			
Aviva International Insurance Ltd	5356	1985-1986	2		1985-1986	1985-1986		1985-1986			
Aviva Investors Pensions Ltd	3079	1985-2010	26	2000-2010	1985-1999	1985-2010		1985-2010			
Aviva Life and Pensions UK Ltd	53675	1997-2010	14	2000-2010	1997-1999	1997-2010		1997-2010			
Avon Insurance plc	194	1985-1991	7	1985-1991		1985-1991		1985-1991			
AXA Annuity Co Ltd	1336	2007-2007	1	2007-2007			2007-2007	2007-2007			
AXA Equity and Law Life Assurance Society plc	10333	1985-2000	16	1985-2000			1985-2000	1985-2000			
AXA Wealth Ltd	1510	1985-2010	26	1997-2010	1985-1996		1985-2010	1985-1999 and2007-2010		2000-2006	
BandCE Insurance Ltd	48	1995-2010	16		1995-2010	1995-2010		1995-2010			
BA (GI) Ltd	6915	1985-2005	21	1985-2005		1985-2005		1985-2005			
Baillie Gifford Life Ltd	3878	1998-2010	13	1998-2010		1998-2010				1998-2010	
Barclays Life Assurance Co Ltd	2399	1985-1988 and1991-2010	24	1997-2010	1985-1988 and 1991-1996	1985-1988 and1991-2008	2009-2010	2009-2010	1985-1988 and1991-2008		
BLAC Ltd	4324	1985-2002	18	1985-2002		1985-2002			1985-2002		
Black Sea and Baltic General Insurance Co Ltd	6	1985-1996	12	1985-1996			1985-1996	1985-1996			
BlackRock Asset Management Pensions Ltd	50405	1995-2010	16	1995-2010		1995-2009	2010		1995-2010		
BlackRock Pensions Ltd	1931	1989-2010	22	1989-2010		1989-1994	1995-2010		1989-2010		
Bradford Insurance Co Ltd	2	1985-2004	20	1996-2004	1985-1995	1985-2004		1985-2004			
Britannia Life Association of Scotland Ltd	1064	1985-1993	9		1985-1993	1985-1993			1985-1993		
Britannia Life Ltd (pre1994)	471	1985-1993	9		1985-1993	1985-1993			1985-1993		
Britannia Life Managed Pension Funds Ltd	49	1985-1993	9		1985-1993	1985-1993			1985-1993		
Britannic Unit Linked Assurance Ltd	906	1985-2005	21	1985-2005		1985-2005		1985-2005			
British and European Reinsurance Co Ltd	87	1985-1999	15	1998-1999	1985-1997	1985-1999		1985-1999			
British Airways Benefit Fund	4	1996-2001	6		1996-2001	1996-2001		1996-2001			
British Equitable Assurance Co Ltd	2	1985-2001	17	1985-2001		1985-1998	1999-2001	1985-2001			
British Friendly Society Ltd	104	1996-2010	15		1996-2010	1996-2010		1996-2010			
British Life Office Ltd	212	1985-2003	19		1985-2003	1985-2003		1985-2003			
British National Life Assurance Co Ltd	186	1985-1993	9	1985-1993			1985-1993	1985-1993			
BUPA Health Assurance Ltd	60	1994-2010	17	1994-1994	1995-2010	1995-2010	1994-1994	1994-2010			
Caledonian Insurance Co Ltd	327	1987-1999	13	1987-1999		1987-1999		1987-1999			
Canada Life Assurance Co	1483	1985-1998	14		1985-1998		1985-1998	1985-1998			
Canada Life Irish Operations Ltd	589	1985-1995	11		1985-1995		1985-1995	1985-1995			
Canada Life Ltd	6853	1985-2010	26	1998-2010	1985-1997		1985-2010	1985-2010			
Canterbury Life Assurance Co Ltd	49	1985-2000	16	1985-2000		1985-2000		1985-2000			
CCL Assurance Ltd	216	1985-1991	7	1985-1991		1985-1991		1985-1991			
Century Life Assurance	189	1995-2003	9	1995-2003		1995-2003		1995-2003			
Century Life plc	1361	1985-2005	21	1985-2005		1985-2005		1985-2005			
CGNU Life Assurance Ltd	10104	1985-2008	24	1998-2008	1985-1997	1985-2008		1985-2008			
Cirencester Friendly Society Ltd	42	1996-2010	15		1996-2010	1996-2010		1996-2010			
City of London Insurance Co Ltd	1	1985-2004	20	1985-2004		1985-1998	1999-2004	1985-2004			
City of Westminster Assurance Co Ltd	555	1985-2005	21	1985-2005			1985-2005	1985-2005			
City of Westminster Assurance Society Ltd	35	1985-1993	9	1985-1993			1985-1993	1985-1993			
Civil Servants Annuities Assurance Society	18	1997-2000	4		1997-2000	1997-2000		1997-2000			
Clerical Medical and General Life Assurance Society	7606	1985-1995	11		1985-1995	1985-1995		1985-1995			
Clerical Medical Investment Group Ltd	22047	1996-2010	15	1996-2010		1996-2010			1996-2010		
Clerical Medical Managed Fund Ltd	6023	1985-2010	26	1997-2010	1985-1996	1985-2010		1985-1996	1997-2010		
Colonial Mutual Life (Unit Assurances) Ltd	109	1985-1996	12		1985-1996		1985-1996	1985-1996			
Colonial Mutual Life Assurance Society Ltd	2630	1985-1996	12		1985-1996		1985-1996	1985-1996			
Combined Insurance Co of America (UK Branch)	87	1985-2010	26	1985-2010			1985-2010	1985-2010			
Commercial Union Assurance (Unit Trusts) Ltd	32	1985-1986	2		1985-1986	1985-1986		1985-1986			
Commercial Union Life Assurance Co Ltd	11332	1985-2008	24	1998-2008	1985-1997	1985-2008		1985-2008			
Communication Workers Friendly Society Ltd	93	1988-2010	23		1988-2010	1988-2010		1988-2010			
Compass Friendly Society Ltd	0.3	1996-2010	15		1996-2010	1996-2010		1996-2010			
Confederation Life Insurance Co	2592	1985-1993	9		1985-1993		1985-1993	1985-1993			
Confederation Life Insurance Co (UK) Ltd	906	1985-1999	15	1985-1994 and1998-1999	1995-1997		1985-1999	1985-1999			
Consolidated Life Assurance Co Ltd	332	1985-1996	12	1985-1996		1985-1994	1995-1996	1985-1994			1995-1996

Co-operative Insurance Society Ltd	17901	1985-2010	26		1985-2010	1985-2010			1985-2010		
Countrywide Assured plc	725	1988-2010	23	1988-2010		1988-2010		2004-2010	1988-2003		
Criterion Insurance Co Ltd	1	1985-1989	5	1985-1989		1985-1989		1985-1989			
Crown Life Assurance Co Ltd	427	1985-1994	10	1985-1994		1985-1994		1985-1994			
Crown Life Insurance Co	70	1985-1999	15	1985-1999			1985-1999	1985-1999			
Crown Life Pensions Ltd	644	1985-1994	10	1985-1994		1985-1994		1985-1994			
Cuna Mutual Insurance Society	4	1985-2005	21		1985-2005	1985-2005		1985-2005			
Customs Annuity and Benevolent Fund Inc	26	1985-2003	19		1985-2003	1985-2003		1985-2003			
Dentists and General Mutual Benefit Society Ltd	33	1996-2010	15		1996-2010	1996-2010		1996-2010			
Dentists Provident Society Ltd	146	1996-2010	15		1996-2010	1996-2010		1996-2010			
Direct Line Life Insurance Co Ltd	73	1995-2010	16	1995-2010		1995-2010			1995-2010		
Domestic and General Life Assurance Co Ltd	5	1994-2007	14	1994-2007		1994-2007					1994-2007
Eagle Star Insurance Co Ltd	1981	1985-2010	26	1985-2010		1985-1996	1997-2010	1985-2010			
Ecclesiastical Insurance Office plc	236	1985-2002	18		1985-2002	1985-2002					1985-2002
Ecclesiastical Life Ltd	181	1985-2010	26		1985-2010	1985-2010					1985-2010
Edinburgh Assurance Co Ltd	303	1985-1996	12		1985-1996	1985-1996		1985-1996			
Equitable Life Assurance Society (The)	18383	1985-2010	26		1985-2010	1985-2010		1985-2010			
Equity and Law (Managed Funds) Ltd	1032	1985-1991	7	1985-1991			1985-1991	1985-1991			
Esano London Friendly Society	7	2001-2003	3		2001-2003	2001-2003		2001-2003			
Eurolife Assurance Co Ltd	249	1985-2004	20	1985-2004		1985-2004		1985-2004			
Exeter Friendly Society Ltd	37	2008-2010	3		2008-2010	2008-2010		2008-2010			
FandC Managed Pension Funds Ltd	874	1985-2010	26	1985-1997 and2009-2010	1998-2008	1985-2010		1985-2008		2009-2010	
Family Assurance Friendly Society Ltd	1403	1988-2010	23		1988-2010	1988-2010		1988-2010			
Fidelity Life Assurance Ltd	6	1985-2004	20	2000-2004	1985-1999	1985-2004		1985-2004			
FIL Life Insurance Ltd	1296	1998-2010	13	1998-2010			1998-2010	1998-2010			
Financial Assurance Co Ltd	740	2004-2010	7	2004-2010			2004-2010	2004 and2007-2010			2005-2006
First National Assurance Ltd	1	1985-1998	14	1989-1998	1985-1988	1985-1998			1985-1998		
Fleming Life Ltd	73	1985-2000	16	1985-2000		1985-2000			1985-2000		
Forester Life Ltd	435	1995-2010	16		1995-2010	1995-2010		1995-2010			
Friends Life Assurance Society Ltd	11885	1985-2010	26	1985-2010			1985-2010	1985-2010			
Friends Life Co Ltd	17200	1997-2010	14	1997-2010			1997-2010	1997-2010			
Friends Provident (London and Manchester) Assurance Ltd	2381	1985-1999	15	1985-1998	1999-1999	1985-1999		1985-1999			
Friends Provident Life and Pensions Ltd	22202	2001-2010	10	2009-2010	2001-2008	2001-2010		2001-2010			
Friends Provident Life Assurance Ltd	2646	1985-2010	26	2009-2010	1985-2008	1985-2010		1985-2010			
Friends Provident Life Office	14704	1985-2000	16		1985-2000	1985-2000		1985-2000			
Friends Provident Linked Life Assurance Ltd	578	1985-1998	14		1985-1998	1985-1998		1985-1998			
Friends Provident Managed Pension Funds Ltd	1189	1985-1998	14		1985-1998	1985-1998		1985-1998			
Friends Provident Pensions Ltd	4987	1985-2010	26	1985-1999 and 2009-2010	1999-2008	1985-2010		1985-2010			
Friends Provident Reinsurance Services Ltd	313	2004-2009	6	2008-2009	2004-2007	2004-2009		2004-2009			
GE Frankona Reassurance Ltd	1009	1991-2005	15	1991-2005		1991-2005		1991-2005			
GE Keynes Holdings Ltd	1093	1985-2003	19	1985-2003			1985-2003	1985-1991			1992-2003
General Accident Pensions Management	192	1985-1996	12		1985-1996	1985-1996		1985-1996			
General Reinsurance Life UK Ltd	125	1995-2007	13	1995-2007			1995-2007	1995-1998		1999-2007	
General Reinsurance UK Ltd	20	1994-1995	2	1994-1995			1994-1995	1994-1995			
Gisborne Life Assurance Co Ltd	750	1985-1999	15	1985-1999		1985-1999			1985-1999		
GL and P plc	1417	1985-1997	13	1985-1997		1985-1997		1985-1997			
Global General and Reinsurance Co Ltd	14	1985-2004	20	1985-2004			1985-2004	1985-2004			
Gresham Life Assurance Society Ltd	578	1985-1991	7	1985-1991		1985-1991		1985-1991			
Gresham Unit Assurance Ltd	170	1985-1991	7	1985-1991		1985-1991		1985-1991			
Growth and Secured Life Assurance Society Ltd	3	1985-1999	15		1985-1999	1985-1999		1985-1999			
Guardian Assurance plc	7595	1985-2010	26	1985-2010		1985-1997	1998-2010	1985-2010			
Guardian Eastern Insurance Co Ltd	1	1985-1999	15	1985-1999		1985-1999		1985-1999			
Guardian Linked Life Assurance Ltd	1234	1985-2010	26	1985-2010		1985-1998	1999-2010	1985-2010			
Guardian Pensions Management Ltd	646	1985-2010	26	1985-2010		1985-1998	1999-2010	1985-2010			
Halifax Life Ltd	5761	1995-2010	16	1995-2010		1995-2010			1995-2010		
Hamilton Life Assurance Co Ltd	143	1985-2008	24	1985-2008		1985-2008		2008-2008	1985-2007		
Hannover Life Reassurance (UK) Ltd	170	1985-2010	26	1985-2010			1985-2010	1985-2010			
Hannover Standard Life	19	2000-2003	4		2000-2003	2000-2003		2000-2003			
Health Shield Friendly Society Ltd	45	1996-2010	15		1996-2010	1996-2010		1996-2010			
Hearts of Oak Insurance Co Ltd	405	1996-2006	11		1996-2006	1996-2006		1996-2006			
Hermes Assured Ltd	8489	1997-2006	10	2000-2006	1997-1999	2000-2006	1997-1999	1997-2006			
Hill Samuel Life Assurance Ltd (from1995)	1576	1985-1997	13	1985-1997		1985-1997			1985-1997		
Hill Samuel Life Assurance Ltd (pre 1995)	1598	1985-1994	10	1985-1994		1985-1994			1985-1994		
Hiscox Insurance Co Ltd	30	1985-1999	15	1985-1999			1985-1999	1985-1999			
Hodge Life Assurance Co Ltd	99	1985-2010	26	1985-2010		1985-2010		1985-2010			
Homeowners Friendly Society Ltd	699	1988-2010	23		1988-2010	1988-2010		1988-2010			
HSBC Life (UK) Ltd	3024	1988-2010	23	1988-2010		1988-2010			1988-2010		
Ideal Benefit Society (The)	64	1996-2003	8		1996-2003	1996-2003		1996-2003			
Imperial Life (UK) Ltd	58	1985-1988	4	1985-1988			1985-1988	1985-1988			
Independent Order of Foresters	259	1985-1994	10		1985-1994	1985-1994		1985-1994			
Independent Order of Odd Fellows Manchester Unity Friendly Society	214	1996-2003	8		1996-2003	1996-2003		1996-2003			
IntegraLife UK Ltd	553	1985-2010	26	1985-2010		1985-2010		1985-2010			
Invesco Life Ltd	2	2000-2000	1	2000-2000			2000-2000	2000-2000			
Invesco Perpetual Life Ltd	457	1999-2010	12	1999-2010			1999-2010	1999-2010			
Investment Solutions Ltd	151	1997-2010	14	2001-2010	1997-2000	2001-2003	1997-2000 and2004-2010	1997-2010			
Irish Life Assurance plc	502	1985-1993	9	1985-1993			1985-1993	1985-1993			
Irish Progressive Life Assurance Co Ltd	663	1986-1998	13	1986-1998		1986-1992	1993-1998	1986-1998			
JPMorgan Life Ltd	2473	1997-2010	14	1997-2010			1997-2010		1997-2010		
Just Retirement Ltd	1307	2005-2010	6	2005-2010		2005-2010				2005-2010	
Kensington Friendly Collecting Society Ltd	7	1997-2010	14		1997-2010	1997-2010		1997-2010			
Kingston Unity Friendly Society	19	2000-2003	4		2000-2003	2000-2003		2000-2003			
Lancashire and Yorkshire Assurance Society	130	1988-1994	7		1988-1994	1988-1994		1988-1994			
LAS Investment Assurance Ltd	286	1985-1993	9		1985-1993	1985-1993			1985-1993		
LAS Pensions Management Ltd	174	1985-1993	9		1985-1993	1985-1993			1985-1993		
Leeds Life Assurance Ltd	37	1994-1994	1	1994-1994		1994-1994			1994-1994		
Legal and General (Unit Assurance) Ltd	1528	1985-1990	6	1985-1990		1985-1990		1985-1990			

Legal and General (Unit Pensions) Ltd	561	1985-1990	6	1985-1990		1985-1990		1985-1990			
Legal and General Assurance (Pensions Management) Ltd	70125	1985-2010	26	1985-2010		1985-2010		1985-2010			
Legal and General Assurance Society Ltd	36425	1985-2010	26	1985-2010		1985-2010		1985-2010			
Liberty Life Assurance Co Ltd	548	1985-1994	10	1985-1994			1985-1994	1985-1994			
Liberty Re Ltd	66	1997-2000	4		1997-2000		1997-2000	1997-2000			
Life Insurance Corporation of India	60	1985-2010	26	1985-2010			1985-2010	1985-2010			
Lincoln Assurance Ltd (pre 1996)	981	1985-1996	12	1985-1996			1985-1996	1985-1996			
Lindsey House Friendly Society	11	2001-2003	3		2001-2003	2001-2003		2001-2003			
Liverpool Victoria Friendly Society Ltd	4885	1988-2010	23		1988-2010	1988-2010		1988-2010			
Liverpool Victoria Life Co Ltd	866	1985-2010	26		1985-2010	1985-2010		1985-2010			
Lloyds Bowmaker Assurance Ltd	11	1985-1994	10	1985-1994		1985-1994			1985-1994		
London and Edinburgh Life Assurance Co Ltd	96	1987-1999	13	1987-1999		1987-1999		1987-1999			
London Aberdeen and Northern Mutual Assurance Society Ltd	57	1985-2006	22		1985-2006	1985-2006		1985-2006			
London General Life Co Ltd	48	1991-2010	20	1991-2010			1991-2010	1991-2006		2007-2010	
London Life Association Ltd	2479	1985-1988	4		1985-1988	1985-1988		1985-1988			
London Life Linked Assurances Ltd	292	1985-2005	21	1998-2005	1985-1997	2004-2005	1985-2003	1985-2003		2004-2005	
London Life Ltd	2033	1985-2010	26	1998-2010	1985-1997	2004-2010	1985-2003	1985-2003 and2005-2010		2004	
Lucida plc	894	2008-2010	3	2008-2010			2008-2010			2008-2010	
M and G Life Assurance Co Ltd	1597	1985-2000	16	1985-2000		1985-2000				1985-2000	
M and G Pensions and Annuity Co Ltd	1713	1985-2000	16	1985-2000		1985-2000				1985-2000	
Managed Pension Funds Ltd	25150	2003-2010	8	2003-2010			2003-2010			2003-2010	
Manchester Unity Life Insurance Collecting Society	23	1988-1998	11		1988-1998	1988-1998		1988-1998			
Manufacturers Life Insurance Co Ltd	738	1985-1994	10		1985-1994		1985-1994	1985-1994			
Marine and General Mutual Life Assurance Society	1432	1985-2010	26		1985-2010	1985-2010		1985-2010			
Markel International Insurance Co Ltd	1	1985 and1988-2007	21	1985 and 1988-2007			1985 1988-2007	1985 and1988-2007			
Marks and Spencer Life Assurance Ltd	202	1995-2010	16	1995-2010		1995-2010			2006-2010		1995-2005
Medical Sickness Annuity and Life Assurance Society Ltd	658	1985-1996	12		1985-1996	1985-1996		1985-1996			
Mercantile and General Reinsurance Co Ltd (The)	2424	1985-1997	13	1985-1997		1985-1996	1997-1997	1985-1997			
Merchant Investors Assurance Co Ltd	1298	1985-2010	26	1985-2010			1985-2010	1985-2003		2004-2010	
MetLife Assurance Ltd	736	2007-2010	4	2007-2010			2007-2010	2007-2010			
MetLife Ltd	25	1985-2010	26	1985-2010			1985-2010	1985-2010			
Metropolitan Police Friendly Society Ltd	86	1988-2010	23		1988-2010	1988-2010		1988-2010			
Monarch Assurance plc	125	1996-2010	15	1996-2010		1996-2010		1996-2010			
Munich Reinsurance Co United Kingdom Life Branch	459	1985-2003	19	1985-2003			1985-2003	1985-2003			
National Deposit Friendly Society Ltd	174	1996-2010	15		1996-2010	1996-2010		1996-2010			
National Employers' Life Assurance Co Ltd	375	1985-1991	7	1985-1991		1985-1991		1985-1991			
National Farmers Union Mutual Insurance Society Ltd	4543	1985-2010	26		1985-2010	1985-2010		1985-2010			
National Financial Management Corporation plc	520	1985-1990	6	1985-1990		1985-1990			1985-1990		
National Mutual Life Association of Australasia Ltd	831	1985-1987	3		1985-1987	1985-1987		1985-1987			
National Mutual Life Assurance Society	3011	1985-2002	18		1985-2002	1985-2002		1985-2002			
National Mutual Pensions Ltd	143	1985-1995	11		1985-1995	1985-1995		1985-1995			
National Provident Institution	9623	1985-1999	15		1985-1999	1985-1999		1985-1999			
National Provident Life Ltd	7893	2000-2010	11	2000-2010		2004-2010	2000-2003	2000-2003 and2005-2010		2004	
National Westminster Life Assurance Ltd	4873	1993-2010	18	1993-2010		1993-2010			1993-2010		
Nationwide Life Ltd	1434	1995-2010	16	2008-2010	1995-2007	1995-2010		2008-2010	1995-2007		
NEL Britannia Assurance Co Ltd	122	1985-1991	7	1985-1991		1985-1991		1985-1991			
NEL Pensions Ltd	576	1985-1991	7	1985-1991		1985-1991		1985-1991			
NM Life Ltd	817	1985-2006	22	1985-2006		1985-1999	2000-2006	1985-1999			2000-2006
NM Pensions Ltd	6066	2002-2006	5	2002-2006			2002-2006				2002-2006
Northern Assurance Co Ltd	1608	1985-1998	14	1998-1998	1985-1997	1985-1998		1985-1998			
Norwich Union Asset Management Ltd	970	1985-1992	8		1985-1992	1985-1992		1985-1992			
Norwich Union Life (RBS) Ltd	2706	1985-2000	16	1998-2000	1985-1997	1985-2000		1985-2000			
Norwich Union Life Insurance Society	30668	1985-1996	12		1985-1996	1985-1996		1985-1996			
Norwich Union Linked Life Assurance Ltd	8907	1985-2004	20	1998-2004	1985-1997	1985-2004		1985-2004			
Nottingham Oddfellows Assurance Friendly Society Ltd	13	1996-2008	13		1996-2008	1996-2008		1996-2008			
NPI Annuities Ltd	588	1985-1998	14		1985-1998	1985-1998		1985-1998			
NPI Ltd	4451	2000-2010	11	2000-2010		2004-2010	2000-2003	2000-2003 and2005-2010		2004	
NRG London Reinsurance Co Ltd	32	1985-1998	14	1985-1998		1985-1998		1985-1998			
NRG Victory Reinsurance Ltd	473	1985-1993	9	1985-1993		1985-1993		1985-1993			
Old Mutual Life Assurance Co Ltd	972	1985-1993 and1995-1999	14		1985-1993 and 1995-1999	1985-1993 and1994-1999		1985-1993 and1995-1999			
Omnilife Insurance Co Ltd	7	1993-2010	18	1993-2010			1993-2010	1993-2010			
Original Holloway Friendly Society Ltd (The)	43	1996-2010	15		1996-2010	1996-2010		1996-2010			
PA (GI) Ltd	2125	1985-2004	20	1996-2004	1985-1995	1985-2004		1985-2004			
Pacific Life Re Ltd	179	1985-2010	26	2002-2007	1985-2001 and2008-2010	2002-2007	1985-2001 and2008-2010	1985-2010			
Partnership Life Assurance Co Ltd	497	2005-2010	6	2005-2010		2005-2010				2005-2010	
Paternoster UK Ltd	2178	2006-2010	5	2006-2010		2006-2010		2006-2010			
Pearl Assurance (Unit Funds) Ltd	853	1985-2005	21	1998-2005	1985-1997	2004-2005	1985-2003	1985-2003		2004-2005	
Pearl Assurance (Unit Linked Pensions) Ltd	288	1985-2005	21	1998-2005	1985-1997	2004-2005	1985-2003	1985-2003		2004-2005	
Pearl Assurance Ltd	16007	1985-2010	26	1998-2010	1985-1997	2004-2010	1985-2003	1985-2003 and2006-2010		2004-2005	
Pegasus Assurance Ltd	11	1989-1998	10	1989-1998		1989-1998		1989-1995	1996-1998		
Pension Annuity Friendly Society Ltd (The)	190	1995-2005	11		1995-2005	1995-2005		1995-2005			
Pension Insurance Corporation Ltd	3097	2008-2010	3	2008-2010		2008-2010		2008-2010			
Pensions Management (SWF) Ltd	4675	1985-2010	26	2000-2010	1985-1999	1985-2010		1985-1999	2000-2010		
PFM Assurance Ltd	17	1985-1994	10		1985-1994	1985-1994		1985-1994			
Pharmaceutical and General Provident Society Ltd	33	1996-2010	15		1996-2010	1996-2010		1996-2010			
Phoenix and London Assurance Ltd	8713	1985-2010	26	1996-2010	1985-1995	1985-2010		1985-2010			
Phoenix Life and Pensions Ltd	10386	1985-2005	21	1985-2005		1985-2005		1985-2005			
Phoenix Life Assurance Ltd	2381	1993-2007	15	1993-2007		1993-2007			1993-2007		

Phoenix Life Ltd	7971	1985-2010	26	1985-2010		1985-2010		1985-2010			
Phoenix Pensions Ltd	2368	2000-2005 and2007-2010	10	2000-2005 and 2007-2010		2000-2005 and2007-2010		2000-2005 and2006-2010			
Pinnacle Insurance plc	297	1985-2010	26	1985-2010			1985-2010		1985-2010		
Pioneer Friendly Society Ltd	18	1996-2007	12		1996-2007	1996-2007		1996-2007			
POIS Assurance Ltd	199	1988-2001	14		1988-2001	1988-2001		1988-2001			
Police Mutual Assurance Society Ltd	1118	1988-2010	23		1988-2010	1988-2010		1988-2010			
PPP Lifetime Care plc	185	1992-2006	15	1992-2006		1992-1999	2000-2006	1992-2006			
Premium Life Assurance Co Ltd	103	1985-1996	12	1985-1996		1985-1996		1985-1996			
Professional Life Assurance Co Ltd	113	1985-1999	15	1985-1999			1985-1999	1985-1999			
Property Growth Assurance Co Ltd	199	1985-1988	4		1985-1988	1985-1988		1985-1988			
Prosperity Life Assurance Ltd	214	1985-1993	9	1985-1993		1985-1993		1985-1993			
Proteus Insurance Co Ltd	0.02	1985-1998	14	1985-1998		1985-1998		1985-1998			
Provident Mutual Life Assurance Ltd	5676	1985-1995	11		1985-1995	1985-1995		1985-1995			
Prudential (AN) Ltd	412	1985-2009	25	1985-2009		1985-2009		1985-2009			
Prudential Annuities Ltd	12120	1992-2010	19	1992-2010		1992-2010		1992-2010			
Prudential Assurance Co Ltd (The)	76213	1985-2010	26	1985-2010		1985-2010		1985-2010			
Prudential Holborn Life Ltd	1174	1985-2009	25	1985-2009		1985-2009		1985-2009			
Prudential Pensions Ltd	4607	1985-2010	26	1985-2010		1985-2010		1985-2010			
Prudential Retirement Income Ltd	5770	1985-1998 and2000-2010	25	2000-2010	1985-1998	1985-1998 and2000-2010		1985-1998 and2000-2010			
Railway Enginemens Assurance Society Ltd	22	1988-2010	23		1988-2010	1988-2010		1988-2010			
Rational Shelley Friendly Society Ltd	23	1998-2004	7		1998-2004	1998-2004		1998-2004			
Reassure UK Life Assurance Co Ltd	543	1985-2004	20	1985-2004			1985-2004	1985-2004			
Rechabite Friendly Society Ltd	21	1996-2010	15		1996-2010	1996-2010		1996-2010			
Red Rose Friendly Society Ltd	9	1999-2010	12		1999-2010	1999-2010		1999-2010			
Refuge Assurance Ltd	4029	1985-2000	16	1985-2000		1985-2000		1985-2000			
Refuge Investments Ltd	489	1985-2000	16	1985-2000		1985-2000		1985-2000			
Reliance Mutual Insurance Society Ltd	595	1985-2010	26		1985-2010	1985-2010		1985-2010			
RGA Reinsurance UK Ltd	44	2000-2010	11	2000-2010			2000-2010	2000-2010			
RM Life Assurance Ltd	430	1987-2006	20	1987-2006			1987-2006		1987-2006		
Rothesay Life Ltd	823	2008-2010	3	2008-2010			2008-2010		2008-2010		
Royal and Sun Alliance Life Holdings	779	1985-1988	4	1985-1988		1985-1988		1985-1988			
Royal Artillery Widows Insurance Society	5	1997-2010	14		1997-2010	1997-2010		1997-2010			
Royal Life (Unit Linked Assurance)	526	1985-1997	13	1985-1997		1985-1997		1985-1997			
Royal Life (Unit Linked Pension Fund)	745	1985-1997	13	1985-1997		1985-1997		1985-1997			
Royal Liver Assurance Ltd	2706	1988-2010	23		1988-2010	1988-2010		1988-2010			
Royal London Mutual Insurance Society Ltd (The)	13496	1985-2010	26		1985-2010	1985-2010		1985-2010			
Royal London Pooled Pensions Co Ltd	582	1985-2010	26		1985-2010	1985-2010		1985-2010			
Royal National Pension Fund for Nurses	1339	1985-2000	16		1985-2000	1985-2000		1985-2000			
Royal Scottish Assurance plc	1462	1991-2010	20	1991-2010		1991-2010			1991-2010		
Save and Prosper Insurance Ltd	830	1985-2010	26	1985-2010		1985-2010			1985-2010		
Save and Prosper Pensions Ltd	1353	1985-2010	26	1985-2010		1985-2002	2003-2010		1985-2010		
Schoolteachers Friendly Society	19	1996-2003	8		1996-2003	1996-2003		1996-2003			
Schroder Pension Management Ltd	4141	2006-2010	5	2006-2010		2006-2010		2006-2010			
SCOR Global Life Reinsurance UK Ltd	49	1995-2008	14	1995-2003 and2006-2008	2004-2005	2004-2005	1995-2003 and2006-2008	1995-2008			
Scottish Amicable Life Assurance Society	11056	1985-1996	12	1985-1996		1985-1996		1985-1996			
Scottish Amicable Life plc	5624	1997-2001	5	1997-2001		1997-2001		1997-2001			
Scottish Equitable (Managed Funds) Ltd	6085	1985-2009	25	1985-2009			1985-2009	1985-2009			
Scottish Equitable Life Assurance Society	4857	1985-1992	8	1985-1992			1985-1992	1985-1992			
Scottish Equitable plc	21942	1993-2010	18	1993-2010			1993-2010	1993-2010			
Scottish Friendly Assurance Society Ltd	388	1988-2010	23		1988-2010	1988-2010		1988-2010			
Scottish Legal Life Assurance Society Ltd	231	1988-2006	19		1988-2006	1988-2006		1988-2006			
Scottish Life Assurance Co	5865	1985-2000	16		1985-2000	1985-2000		1985-2000			
Scottish Life Investment Assurance Co Ltd	184	1985-1990	6		1985-1990	1985-1990		1985-1990			
Scottish Mutual Assurance Ltd	9061	1985-2008	24	1993-2008	1985-1992	1985-2004 and2007-2008	2005-2006	1985-1992 and2007-2008	1993-2006		
Scottish Mutual Pension Funds Investment Ltd	154	1985-1994	10	1989-1994	1985-1988	1985-1994			1985-1994		
Scottish Mutual Pensions Ltd	154	1985-1988 and1990-1996 and1999-2005	18	1999-2005	1985-1988 and1990-1996	1985-1988 and 1990-1996 and1999-2004	2005		1985-1988 and1990-1996 and1999-2005		
Scottish Provident Assurance Ltd	1192	1985-1994	10		1985-1994	1985-1994		1985-1994			
Scottish Provident Institution	6888	1985-2001	17		1985-2001	1985-2001		1985-2001			
Scottish Provident Ltd	8191	2001-2008	8	2001-2008		2001-2004 and2007-2008	2005-2006	2007-2008	2001-2006		
Scottish Provident Managed Pension Funds Ltd	229	1985-1994	10		1985-1994	1985-1994		1985-1994			
Scottish Widows Administration Services Ltd	5544	1985-2003	19	1985-2003		1985-2003			1985-2003		
Scottish Widows Annuities Ltd	5261	2000-2010	11	2000-2010		2000-2010			2000-2010		
Scottish Widows' Fund and Life Assurance Society	15033	1985-2002	18	2000-2002	1985-1999	1985-2002		1985-1999	2000-2002		
Scottish Widows plc	27134	2000-2010	11	2000-2010		2000-2010			2000-2010		
Scottish Widows Unit Funds Ltd	7896	1985-2010	26	2000-2010	1985-1999	1985-2010		1985-1999	2000-2010		
Security Assurance Ltd	3	1986-1997	12		1986-1997	1986-1997		1986-1997			
Shepherds Friendly Society Ltd (The)	63	1996-2010	15		1996-2010	1996-2010		1996-2010			
Skandia Life Assurance Co Ltd	7520	1985-2010	26	1985-2010		2006-2010	1985-2005	1985-2010			
Skandia MultiFUNDS Assurance Ltd	1220	2002-2010	9	2002-2010		2002-2010		2002-2010			
SL Liverpool plc	1088	1985-1989 and1991-2004	19	1997-2004	1985-1989 and1991-1996		1985-1989 and1991-2004	1985-1989 and1991-2004			
SLFC Assurance (UK) Ltd	4289	1987-2010	24	1987-2010			1987-2010	1987-2010			
St Andrews Life Assurance plc	4477	1996-2010	15	1996-2010		1996-2010			1996-2010		
St George Assurance	70	1985-1993	9		1985-1993	1985-1993		1985-1993			
St James Place UK plc	6219	1992-2010	19	1992-2010		1992-2010		1997-2001	1992-1996 and2002-2010		
Standard Life Assurance Co 2006 (The)	54776	1985-2005	21		1985-2005	1985-2005		1985-2005			
Standard Life Assurance Ltd	51221	2006-2010	5	2006-2010		2006-2010		2006-2010			
Standard Life Investment Funds Ltd	16289	1985-2010	26	2006-2010	1985-2005	1985-2010		1985-2010			
Standard Life Pension Funds Ltd	88	1985-1986	23	2006-2010	1985-1986 and1990-2005	1985-1986 and1990-2010		1985-1986			

		and1990-2010						and1990-2010			
State Life Insurance Corporation of Pakistan	4	1985-2001	17	1985-2001			1985-2001	1985-2001			
Sterling Life Ltd	23	1985-2010	26	1985-2010		1985-2010		1985-2010			
Strand Friendly Society	41	1988-2002	15		1988-2002	1988-2002		1988-2002			
Suffolk Life Annuities Ltd	757	1985-2010	26	1985-2010		1985-2010		1985-2010			
Sun Alliance Linked Life Insurance Ltd	667	1985-1997	13	1996-1997	1985-1995	1985-1997		1985-1997			
Sun Alliance Pensions Ltd	1330	1985-1997	13	1996-1997	1985-1995	1985-1997		1985-1997			
Sun Life Assurance Co of Canada	3291	1985-1999	15	1998-1999	1985-1997		1985-1999	1985-1999			
Sun Life Assurance Co of Canada - Irish Business	122	1986-1999	14	1998-1999	1986-1997		1986-1999	1986-1999			
Sun Life Assurance Co of Canada (UK) Ltd	4718	1985-2010	26	1998-2010	1985-1997		1985-2010	1985-2010			
Sun Life Pensions Management Ltd	7838	1985-2006	22	1985-2006			1985-2006	1985-2006			
Sun Life Unit Assurance Ltd	7280	1985-2006	22	1985-2006			1985-2006	1985-2006			
Swiss Life (UK) Group plc	204	1985-1991	7		1985-1991		1985-1991	1985-1991			
Swiss Life Insurance and Pension Co	251	1985-1989	5		1985-1989		1985-1989	1985-1989			
Swiss Re Life and Health Ltd	3387	1998-2007	10	1998-2007			1998-2007	1998-2007			
Swiss Reinsurance Co (UK) Ltd	352	1985-1997	13	1985-1997			1985-1997	1985-1997			
Teachers Assurance Co Ltd	469	1985-1998	14		1985-1998	1985-1998		1985-1998			
Teachers Provident Society Ltd	528	1988-2010	23		1988-2010	1988-2010		1988-2010			
Threadneedle Pensions Ltd	1388	1985-2010	26	1985-2010		1985-1998	1999-2010	1985-2010			
TPFL Ltd	12	1998-2004	7	2001-2004	1998-2000	1998-2004		1998-2001			2002-2004
Transatlantic Life Assurance Co Ltd	3	1985-2010	26	1985-2010		1985-2010		1985-2010			
Transport Friendly Society Ltd	47	1991-2010	20		1991-2010	1991-2010		1991-2010			
TSB Life Ltd	3197	1985-1997	13	1985-1997		1985-1997			1985-1997		
TSB Pensions Ltd	1277	1985-1997	13	1985-1997		1985-1997			1985-1997		
Tunbridge Wells Equitable Friendly Society Ltd	568	1988-2010	23		1988-2010	1988-2010		1988-2010			
Tunstall Assurance Friendly Society Ltd	18	1997-2002	6		1997-2002	1997-2002		1997-2002			
UBS Global Asset Management Life Ltd	8681	1998-2010	13	1998-2010			1998-2010		1998-2010		
UIA (Insurance) Ltd	54	1985-2004	20		1985-2004	1985-2004		1985-2004			
UK Life Assurance Co Ltd	54	1985-1989	5	1985-1989		1985-1989		1985-1989			
UK Provident Pensions Ltd	53	1985-1989	5		1985-1989	1985-1989		1985-1989			
United Friendly Insurance plc	3540	1985-2000	16	1985-2000		1985-2000		1985-2000			
United Friendly Life Assurance Ltd	181	1986-2000	15	1986-2000		1986-2000		1986-2000			
United Kingdom Civil Service Benefit Society Ltd	221	1988-2002	15		1988-2002	1988-2002		1988-2002			
United Kingdom Temperance and General Provident Institution	3629	1985-1987	3		1985-1987	1985-1987		1985-1987			
University Life Assurance Society	185	1985-2006	22		1985-2006	1985-2006		1985-2006			
UNUM Ltd	899	1985-2010	26	1985-2010			1985-2010	1985-2010			
Wesleyan Assurance Society	2840	1985-2010	26		1985-2010	1985-2010		1985-2010			
Wessex Life Assurance Co Ltd	2	1985-1997	13	1985-1997			1985-1997	1985-1997			
Wiltshire Friendly Society Ltd	18	1996-2010	15		1996-2010	1996-2010		1996-2010			
Windsor Life Assurance Co Ltd	5751	1985-2010	26	1995-2010	1985-1994	1995-2004	1985-1994 and2005-2010	1985-2010			
Winterthur Life UK Ltd	5344	1997-2010	14	1997-2010			1997-2010	1997-2000 and2007-2010		2001-2006	
WLUK Ltd	1267	1985-2000	16	1985-2000			1985-2000	1985-1996		1997-2000	
XL RE Ltd	2680	1999-2010	12	1999-2010			1999-2010			1999-2010	
XSMA Ltd	16	1996-2004	9	1996-2004		1996-2004					1996-2004
Yorkshire Insurance Co Ltd	1	1985-2004	20	1998-2004	1985-1997	1985-2004		1985-2004			
Zurich Assurance (2004) plc	576	1998-2004	7	1998-2004			1998-2004	1998-2004			
Zurich Assurance Ltd	21516	1991-2010	20	1991-2010		1991-2004	2005-2010	1991-2010			

Source: the author.
Where:
Average size: it is based on (F13, L89, LTIB).
The classification is based on the parent status.
Legal and General Pensions Ltd is included in the Synthesys life but there no data provided.
Barclays Life Assurance Co Ltd terminated its operations in 1989 and did not provide returns in 1990.
Markel International Insurance Co Ltd terminated its operations in 1986 and did not provide returns in 1987.
Old Mutual Life Assurance Co Ltd did not provide returns in 1994.
Phoenix Pensions Ltd terminated its operations in 2006.
Prudential Retirement Income Ltd terminated its operations in 1999.
Prudential Retirement Income Ltd terminated its operations in 1999.
Scottish Mutual Pensions Ltd terminated its operations in 1989 and 1997 and did not provide returns in 1998.
SL Liverpool plc did not provide returns in 1990.
Standard Life Pension Funds Ltd terminated its operations in 1987 and did not provide returns in 1988 and 1989.

Table 32: Flow of Funds, Assets and Liabilities in the UK Life Insurance Business over the Period 1985-2010

Year	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985
1. Number of Firms and Ownership																										
1.1 Total																										
Total Number of Firms (see Table 31)	143	148	155	157	164	176	192	203	211	215	228	233	243	250	251	232	232	242	240	246	244	248	252	234	233	229
1.2 Legal Form																										
Mutual % Total (see Table 31)	30%	29%	31%	31%	32%	34%	32%	33%	35%	36%	36%	39%	40%	46%	47%	46%	46%	47%	48%	47%	47%	46%	48%	45%	47%	46%
Proprietary % Total (see Table 31)	70%	71%	69%	69%	68%	66%	68%	67%	65%	64%	64%	61%	60%	54%	53%	54%	54%	53%	52%	53%	53%	54%	52%	55%	53%	54%
1.3 Banks and Insurers Ownership																										
Bank Parents % Total (see Table 31)	17%	16%	16%	17%	18%	18%	16%	16%	17%	16%	15%	13%	13%	14%	14%	13%	14%	15%	14%	13%	13%	12%	12%	12%	12%	12%
Insurers Parents % Total (see Table 31)	76%	76%	76%	75%	72%	70%	72%	76%	75%	78%	79%	81%	82%	82%	80%	83%	83%	82%	84%	85%	85%	86%	86%	85%	86%	86%
Other Parents % Total (see Table 31)	8%	8%	8%	8%	10%	12%	11%	7%	8%	7%	7%	6%	5%	4%	6%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%	2%
1.4 The UK and International Ownership																										
The UK Parents % Total (see Table 31)	68%	68%	70%	71%	69%	69%	71%	68%	70%	70%	70%	70%	74%	75%	75%	72%	73%	73%	74%	74%	74%	74%	74%	72%	73%	72%
International Parents % Total (see Table 31)	32%	32%	30%	29%	31%	31%	29%	32%	30%	30%	30%	30%	26%	25%	25%	28%	27%	27%	26%	26%	26%	26%	26%	28%	27%	28%
2. Size																										
Admissible Assets (£m) (F13; L89; LTIB)	9640	8898	8019	9509	8907	8149	6443	5723	5039	5493	5576	5267	4314	3635	3124	3130	2755	2762	2235	1925	1756	1988	1668	1657	1598	1378
Gross Premiums (£m) (F41; L19; C4)	1122	1170	1309	1866	1524	1077	882	807	767	769	799	650	520	403	347	340	368	408	352	307	283	267	207	230	209	179
3. Assets and Liabilities																										
3.1 Assets																										
Land and Buildings (F13; L11; LTIB)	2%	2%	2%	2%	3%	3%	4%	5%	5%	5%	5%	4%	5%	5%	5%	6%	7%	6%	7%	9%	12%	13%	14%	12%	11%	12%
Cash (F13; L54 + L55 + L57 + L81 + L82; LTIB)	2%	3%	3%	2%	2%	2%	2%	2%	3%	3%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	4%	2%	2%	2%	2%	2%
Bonds (F13; L45 + L46 + L47 + L48; LTIB)	20%	21%	21%	18%	19%	23%	28%	29%	30%	23%	20%	19%	22%	21%	21%	22%	22%	24%	23%	20%	19%	18%	21%	22%	22%	25%
Equities and Other Shares and Affiliates (F13; L21 + L22 + L23 + L24 + L25 + L26 + L27 + L28 + L29 + L30 + L41 + L42 + L43; LTIB)	12%	12%	13%	16%	17%	18%	16%	18%	20%	27%	31%	34%	33%	36%	36%	36%	35%	36%	35%	35%	33%	36%	33%	32%	35%	33%
Assets Held to Cover Linked Liabilities (F13; L58 + L59; LTIB)	61%	60%	57%	59%	55%	52%	47%	44%	39%	40%	40%	39%	35%	32%	32%	31%	30%	29%	27%	26%	25%	26%	25%	25%	25%	23%
Mortgages and Loans and Debtors (F13; L50 + L51 + L52 + L53; LTIB)	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	1%	1%	2%	2%	2%	2%	4%	4%	5%	6%	6%	6%	6%	6%	6%	6%
Other Assets (F13; L44 + L49 + L56 + L60 + L61 + L62 + L63 + L80 + L83; LTIB)	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.05%
Total Assets (£m) (F13; L89; LTIB)	1378547	1316858	1242998	1492914	1460741	1434243	1236981	1161848	1063148	1180891	1271278	1227118	1048226	908695	784059	726238	639176	668445	536417	473481	428405	492991	420343	387686	372360	315641
3.2 Assets, Ownership and Legal Form																										
3.2.1 Legal Form																										
Proprietary % Total Assets (F13; L89; LTIB)	94%	94%	91%	91%	90%	82%	82%	80%	80%	79%	78%	66%	64%	55%	52%	48%	48%	48%	45%	45%	46%	46%	47%	48%	48%	48%
Mutual % Total Assets (F13; L89; LTIB)	6%	6%	9%	9%	10%	18%	18%	20%	20%	21%	22%	34%	36%	45%	48%	52%	52%	52%	55%	55%	54%	54%	53%	52%	52%	52%
3.2.2 Banks and Insurers Ownership																										
Bank Parents % Total Assets (F13; L89; LTIB)	18%	19%	20%	21%	22%	23%	23%	23%	23%	22%	21%	16%	14%	13%	12%	10%	10%	9%	8%	7%	7%	7%	7%	7%	7%	7%
Insurers Parents % Total Assets (F13; L89; LTIB)	78%	78%	77%	76%	73%	72%	71%	74%	75%	76%	78%	83%	85%	86%	87%	89%	90%	89%	92%	92%	92%	92%	92%	92%	92%	92%
Other Parents* % Total Assets (F13; L89; LTIB)	3%	3%	3%	3%	4%	6%	6%	3%	2%	1%	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	0.5%
3.2.3 The UK and International Ownership																										
The UK Parents % Total Assets (F13; L89; LTIB)	74%	80%	80%	79%	78%	76%	80%	77%	78%	79%	79%	80%	82%	83%	84%	83%	83%	84%	83%	84%	84%	84%	85%	85%	85%	85%
International Parents % Total Assets (F13; L89; LTIB)	26%	20%	20%	21%	22%	24%	20%	23%	22%	21%	21%	20%	18%	17%	16%	17%	17%	16%	17%	16%	16%	16%	15%	15%	15%	15%
3.3 Liabilities																										
Mathematical Reserves (F14; L11)	90%	90%	90%	89%	89%	90%	91%	92%	93%	91%	88%	84%	85%	83%	83%	83%	85%	81%	83%	83%	82%	74%	75%	75%	72%	74%
Other Insurance and Non-Insurance Liabilities (F14; L12 + L49)	5%	5%	6%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	4%	4%	3%	4%	3%	3%	4%	5%	4%	5%	5%	5%	5%
Margin (F14; L13 + L51)	5%	5%	4%	7%	8%	7%	6%	5%	3%	6%	9%	13%	11%	13%	13%	13%	11%	16%	13%	13%	14%	22%	20%	20%	23%	21%
3.4 Shareholders' Capital																										
Capital Resources Allocated Towards Long-Term (F2; L12)	2%	2%	2%	2%	2%	2%	2%	1.7%	1.8%	1.3%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%	0.7%	0.7%	0.7%	0.5%	0.4%	0.3%	0.4%	0.4%	0.4%	0.3%
3.5 Capital Requirements (Minimum Capital Requirements)																										
Capital Requirements (F2; L40)	4%	4%	3%	5%	6%	6%	5%	3%	3%	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
3.5.1 Legal Form																										
Proprietary % Proprietary Total Assets (F2; L40)	4%	3%	3%	5%	5%	5%	5%	3%	3%	3%	4%	4%	5%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Mutual % Mutual Total Assets (F2; L40)	8%	8%	6%	9%	9%	6%	5%	4%	4%	5%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
3.6 Free Assets																										
Free Assets % Total Assets (F14; L13 + L51) + (F2; L12) – (F2; L40)	3%	3%	3%	4%	4%	3%	3%	3%	2%	4%	6%	10%	8%	10%	10%	11%	9%	14%	11%	10%	11%	19%	18%	17%	20%	18%
3.6.1 Legal Form																										
Proprietary % Proprietary Total Assets (F14; L13 + L51) + (F2; L12) – (F2; L40)	3%	3%	2%	3%	4%	3%	3%	3%	2%	3%	6%	8%	7%	8%	9%	10%	8%	12%	10%	9%	10%	17%	16%	16%	18%	16%
Mutual % Mutual Total Assets (F14; L13 + L51) + (F2; L12) – (F2; L40)	6%	6%	4%	6%	6%	4%	3%	3%	2%	5%	8%	12%	9%	12%	12%	12%	10%	15%	12%	11%	12%	21%	19%	19%	22%	20%
4. Investment Performance																										
4.1 Total Assets																										
Investment Income % Total Assets (F40; L12)/ (F13; L89; LTIB)	3%	4%	5%	4%	4%	4%	4%	4%	4%	4%	4%	3%	4%	4%	5%	5%	5%	4%	6%	6%	6%	5%	5%	5%	6%	6%
Valuation Gain and Loss % Total Assets (F40; L13+L14)/ (F13; L89; LTIB)	6%	7%	-14%	1%	3%	8%	4%	5%	-10%	-6%	1%	6%	8%	7%	3%	5%	-3%	9%	4%	5%	-4%	6%	3%	2%	5%	3%
4.2 Linked Assets																										
Investment Income % Linked Assets (F45; L12) / (F13; L58+L59; LTIB)	3%	3%	4%	3%	2%	3%	3%	3%	3%	3%	2%	2%	3%	3%	4%	4%	3%	3%	4%	5%	5%	4%	4%	4%	4%	4%
Valuation Gain and Loss % linked Assets (F45; L13) or (F40; L14) / (F13; L58+L59; LTIB)	8%	11%	-23%	2%	6%	12%	6%	10%	-19%	-13%	-4%	13%	8%	9%	5%	10%	-7%	17%	8%	8%	-17%	15%	5%	1%	13%	7%
4.3 Non-linked Assets																										
Investment Income % Non-Linked Assets ((F40; L12) - (F45; L12))/ (F13; L89-(L58+L59); LTIB)	4%	4%	5%	5%	5%	5%	5%	5%	5%	4%	4%	4%	5%	5%	5%	6%	6%	5%	6%	6%	7%	6%	6%	6%	6%	7%
Valuation Gain and Loss % Non-linked Assets (F40; L13) / (F13; L89-(L58+L59); LTIB)	3%	1%	-2%	0.1%	-1%	4%	1%	1%	-4%	-1%	4%	2%	8%	7%	3%	3%	-1%	6%	3%	3%	0.1%	4%	3%	3%	2%	2%
5. Cash Flow																										
Premiums Less Claims (£m) (F41; L19, C4)- (F42; L16, C4)	-25415	-20214	-21796	64699	56174	4423	30025	20669	30460	30885	61216	56232	40788	24186	21391	20588	29271	42319	34308	30833	27098	27103	16771	18668	16186	14116
Premiums Less Claims % Total Assets((F41; L19, C4)- (F42; L16, C4))/ (F13; L89; LTIB)	-2%	-2%	-2%	4%	4%	0.3%	2%	2%	3%	3%	5%	5%	4%	3%	3%	3%	5%	6%	6%	7%	6%	5%	4%	5%	4%	4%
6. Gross Premiums																										
6.1 Segments																										
Life (F41; L19, C1)	15%	15%	22%	22%	24%	31%	35%	34%	40%	43%	38%	43%	44%	47%	52%	52%	57%	49%	50%	50%	49%	50%	58%	64%	64%	60%

Pension (F41; L19, C2)	81%	82%	75%	76%	74%	67%	65%	66%	60%	57%	62%	57%	56%	53%	48%	48%	43%	51%	50%	50%	51%	50%	42%	36%	36%	40%
Overseas (F41; L19, C3)	4%	3%	3%	2%	2%	2%																				
6.2 Regular and Single Premiums																										
Regular Premiums (F41; L11, C4)	22%	21%	20%	14%	15%	21%	25%	27%	27%	26%	25%	28%	33%	40%	46%	52%	48%	41%	47%	50%	56%	56%	62%	51%	55%	61%
Single Premiums (F41; L12, C4)	78%	79%	80%	86%	85%	79%	75%	73%	73%	74%	75%	72%	67%	60%	54%	48%	52%	59%	53%	50%	44%	44%	38%	49%	45%	39%
6.3 Total																										
Total (£m) (F41; L19, C4)	160475	173131	202852	292938	249862	189536	169347	163870	161830	165394	182079	151500	126448	100719	87156	78922	85373	98808	84425	75554	69025	66256	52165	53882	48813	41035
Total % Total Assets (F41; L19, C4)/ (F13; L89; LTIB)	12%	13%	16%	20%	17%	13%	14%	14%	15%	14%	14%	12%	12%	11%	11%	11%	13%	15%	16%	16%	16%	13%	12%	14%	13%	13%
6.4 New Premiums vs. Recurring																										
Gross New Premiums % Total Premiums (F46; L28, C4)/ (F41; L19, C4)	81%	81%	66%	62%	61%	78%	76%	76%	76%	75%	75%	73%	71%	66%	59%	49%	52%	50%	55%	51%	50%	50%	50%	54%	53%	44%
Gross Recurring Premiums % Total Premiums ((F41; L19, C4) - (F46; L28, C4)) / (F41; L19, C4)	19%	19%	34%	38%	39%	22%	24%	24%	24%	25%	25%	27%	29%	34%	41%	51%	48%	50%	45%	49%	50%	50%	50%	46%	47%	56%
6.5 Legal Form																										
Proprietary % Total Premiums (F41; L19, C4; see Table 31)	96%	96%	95%	96%	95%	88%	86%	85%	83%	84%	85%	71%	71%	57%	58%	53%	56%	56%	52%	50%	51%	50%	50%	51%	51%	50%
Mutual % Total Premiums (F41; L19, C4; see Table 31)	4%	4%	5%	4%	5%	12%	14%	15%	17%	16%	15%	29%	29%	43%	42%	47%	44%	44%	48%	50%	49%	50%	50%	49%	49%	50%
6.6 Banks and Insurers Ownership																										
Bank Parents % Total Premiums (F41; L19, C4; see Table 31)	21%	24%	22%	23%	23%	31%	31%	31%	33%	33%	39%	27%	23%	18%	15%	14%	13%	11%	10%	9%	10%	9%	9%	9%	10%	9%
Insurers Parents % Total Premiums (F41; L19, C4; see Table 31)	73%	71%	75%	74%	72%	60%	62%	62%	64%	65%	60%	71%	74%	79%	83%	84%	86%	82%	89%	91%	89%	90%	90%	91%	90%	90%
Other Parents % Total Premiums (F41; L19, C4; see Table 31)	5%	5%	3%	3%	5%	9%	8%	7%	3%	2%	1%	2%	3%	3%	2%	1%	1%	7%	1%	0%	1%	1%	1%	1%	1%	1%
6.7 The UK and International Ownership																										
The UK Parents % Total Premiums (F41; L19, C4; see Table 31)	70%	80%	78%	80%	77%	67%	69%	69%	71%	73%	73%	73%	72%	75%	78%	78%	77%	78%	80%	80%	81%	81%	82%	79%	82%	83%
International Parents % Total Premiums (F41; L19, C4; see Table 31)	30%	20%	22%	20%	23%	33%	31%	31%	29%	27%	27%	27%	28%	25%	22%	22%	23%	22%	20%	20%	19%	19%	18%	21%	18%	17%
7. Gross Claims																										
7.1 Segments																										
Life (F42; L16, C1)	22%	23%	32%	28%	29%	31%	40%	39%	43%	43%	42%	46%	49%	50%	53%	55%	57%	57%	57%	59%	62%	64%	64%	60%	60%	58%
Pension (F42; L16, C2)	75%	75%	66%	70%	68%	67%	60%	61%	57%	57%	58%	54%	51%	50%	47%	45%	43%	43%	43%	41%	38%	36%	36%	40%	40%	42%
Overseas (F42; L16, C3)	2%	2%	2%	2%	2%	2%																				
7.2 Claim Categories																										
Surrender or Partial Surrender (F42; L13, C4)	73%	73%	71%	74%	74%	74%	64%	62%	56%	58%	56%	50%	46%	48%	45%	44%	46%	45%	48%	47%	48%	51%	52%	56%	55%	53%
Death or Disability Lump Sums (F42; L11, C4)	4%	4%	4%	5%	5%	5%	7%	7%	7%	7%	7%	9%	8%	9%	11%	10%	11%	10%	10%	11%	11%	11%	12%	11%	11%	12%
Disability Periodic Payments (F42; L12, C4)	0.4%	0.4%	0.4%	0.7%	0.4%	0.4%	0.7%	0.7%	0.7%	0.7%	0.7%	0.8%	0.9%	0.9%	0.9%	1.0%	0.9%	0.9%	1.0%	0.9%	1.1%	1.1%	1.0%	0.7%	0.8%	0.8%
Annuity Payments (F42; L14, C4)	9%	8%	7%	7%	7%	7%	9%	9%	9%	8%	9%	10%	11%	11%	12%	13%	13%	12%	12%	12%	11%	11%	11%	10%	11%	12%
Lump Sums On Maturity (F42; L15, C4)	13%	14%	17%	14%	14%	13%	20%	22%	27%	26%	27%	30%	34%	31%	31%	31%	30%	31%	29%	29%	29%	25%	24%	22%	22%	22%
7.3 Total																										
Total (£m) (F42; L16, C4)	185890	193345	224648	228239	193688	185113	139322	143201	131370	134509	120862	95268	85659	76533	65765	58334	56102	56489	50116	44721	41927	39154	35394	35214	32628	26918
Total % Total Assets (F42; L16, C4)/ (F13; L89; LTIB)	13%	15%	18%	15%	13%	13%	11%	12%	12%	11%	10%	8%	8%	8%	8%	8%	9%	8%	9%	9%	10%	8%	8%	9%	9%	9%
8. Gross Expense																										
8.1 Segments																										
Life (F43; L16, C1)	43%	44%	47%	51%	54%	56%																				
Pension (F43; L16, C2)	50%	48%	47%	43%	41%	37%																				
Overseas (F43; L16, C3)	7%	8%	7%	6%	5%	7%																				
8.2 Acquisition vs. Maintenance																										
Acquisition (F43; L11+L13, C4)	45%	46%	53%	56%	54%	54%	58%	59%	58%	59%	57%	58%	57%	58%	58%	57%	61%	64%	63%	63%	64%	65%	67%	66%	65%	62%
Maintenance (F43; L12+L14+L15, C4)	55%	54%	47%	44%	46%	46%	42%	41%	42%	41%	43%	42%	43%	42%	42%	42%	38%	36%	37%	37%	36%	35%	33%	34%	35%	38%
8.3 Commission vs. Management																										
Commission (F43; L11+L12, C4)	33%	32%	39%	42%	41%	42%	43%	42%	39%	40%	34%	33%	31%	32%	32%	29%	33%	34%	33%	32%	32%	32%	34%	35%	35%	32%
Management (F43; L13+L14+L15, C4)	67%	68%	61%	58%	59%	58%	57%	58%	61%	60%	66%	67%	69%	68%	68%	71%	67%	66%	67%	68%	68%	68%	66%	65%	65%	68%
8.4 Total																										
Total (£m) (F43; L16, C4)	12462	12509	14969	15763	16130	16159	16979	17513	18800	19901	18359	17506	15567	13880	13197	13102	14030	14731	14516	14427	13882	13459	12543	10621	9672	8386
Total % Total Assets (F43; L16, C4)/ (F13; L89; LTIB)	0.9%	0.9%	1.2%	1.1%	1.1%	1.1%	1.4%	1.5%	1.8%	1.7%	1.4%	1.4%	1.5%	1.5%	1.7%	1.8%	2.2%	2.2%	3%	3%	3%	3%	3%	3%	3%	3%
Expense % Total Premiums (F43; L16, C4)/ (F41; L19, C4)	8%	7%	7%	5%	6%	9%	10%	11%	12%	12%	10%	12%	12%	14%	15%	17%	16%	15%	17%	19%	20%	20%	24%	20%	20%	20%
Life Expense % Life Premiums (F43; L16, C1)/ (F41; L19, C1)	22%	21%	16%	12%	15%	16%																				
Pension Expense % Pension Premiums (F43; L16, C2)/ (F41; L19, C2)	5%	4%	5%	3%	4%	5%																				
9. Net Mathematical Reserves																										
9.1 Segments																										
Life (F50; L48, C1)	19%	21%	22%	23%	24%	25%	27%	28%	31%	32%	32%	33%	34%	37%	38%	39%	39%	39%	41%	42%	43%	45%	47%	48%	49%	49%
Pension (F50; L48, C2)	78%	77%	75%	75%	74%	73%	71%	68%	66%	65%	66%	65%	63%	61%	59%	58%	57%	57%	55%	54%	52%	50%	47%	47%	45%	45%
Overseas (F50; L48, C3)	3%	3%	3%	2%	2%	2%	3%	3%	3%	3%	3%	2%	3%	3%	3%	3%	4%	4%	5%	5%	5%	6%	6%	6%	6%	7%
9.2 Business Lines																										
With-Profits (F50; L41, C4)	8%	9%	10%	10%	11%	12%	14%	15%	18%	19%	19%	20%	24%	25%	27%	43%	44%	42%	45%	45%	46%	43%	45%	44%	43%	45%
Non-Profit (F50; L42, C4)	12%	11%	12%	11%	11%	13%	14%	14%	15%	13%	13%	13%	15%	15%	15%	18%	18%	19%	20%	20%	21%	20%	21%	21%	22%	23%
Accumulative With-Profits (F50; L43, C4)	12%	14%	15%	13%	15%	17%	20%	22%	24%	23%	21%	20%	19%	19%	19%											
Property Linked (F50; L44+L45, C4)	66%	65%	61%	64%	61%	56%	50%	46%	41%	43%	45%	44%	40%	38%	37%	40%	38%	38%	35%	34%	33%	37%	34%	35%	35%	32%
Index Linked (F50; L46+L47, C4)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%											
9.3 Total																										
Total (£m) (F50; L48, C4)	1233496	1189229	1119687	1329053	1295398	1286493	1129716	1066858	988627	1062507	1102238	1018346	880802	743817	641576	593088	533148	526793	433610	379164	336099	349864	302334	277677	258528	224297
Total % of Total Assets (F50; L48, C4)/ (F13; L89; LTIB)	89%	90%	90%	89%	89%	90%	91%	92%	93%	90%	87%	83%	84%	82%	82%	82%	83%	79%	81%	80%	78%	71%	72%	72%	69%	71%
10. Reinsurance																										
10.1 Premiums																										
10.1.1 Intra-Group vs. External																										
Intra-Group (F41; L15+L16, C4)	65%	71%	71%	69%	81%	72%																				
External (F41; L13+L14, C4)	35%	29%	29%	31%	19%	28%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10.1.2 Total																										
Total (£m) (F41; L20, C4)	32687	38163	51631	62412	65279	44091	47724	31958	31657	32126	23688	22785	20611	15366	8689	9090	14611	14013	10766	6196	6568	4993	3600	4781	3852	3052
Total % Total Assets (F41; L20, C4)/ (F13; L89; LTIB)	2.4%	2.9%	4.2%	4.2%	4.5%	3.1%	3.9%	2.8%	3.0%	2.7%	1.9%	1.9%	2.0%	1.7%	1.1%	1.3%	2.3%	2.1%	2.0%	1.3%	1.5%	1.0%	0.9%	1.2%	1.0%	1.0%
Total % Total Gross Premiums (F41; L20, C4)/ (F41; L19, C4)	20%	22%	25%	21%	26%	23%	28%	20%	20%	19%	13%	15%	16%	15%	10%	12%	17%	14%	13%	8%	10%	8%	7%	9%	8%	7%

10.2 Claims																										
10.2.1 Intra-Group vs. External																										
Intra-Group (F42; L36, C4)	78%	78%	81%	89%	86%	82%																				
External (F42; L26, C4)	22%	22%	19%	11%	14%	18%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10.2.2 Total																										
Total (£m) (F42; L26 +L36, C4)	26978	23911	28489	36675	25332	46636	16775	14831	12987	11920	10160	10919	8543	8746	6636	5872	4613	4214	2807	2636	2563	2238	1972	2032	1802	1278
Total % Total Assets (F42; L26 +L36, C4)/ (F13; L89; LTIB)	2.0%	1.8%	2.3%	2.5%	1.7%	3.3%	1.4%	1.3%	1.2%	1.0%	0.8%	0.9%	0.8%	1.0%	0.8%	0.8%	0.7%	0.6%	0.5%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%
Total % Total Claims (F42; L26 +L36, C4)/ (F42; L16, C4)	15%	12%	13%	16%	13%	25%	12%	10%	10%	9%	8%	11%	10%	11%	10%	10%	8%	7%	6%	6%	6%	6%	6%	6%	6%	5%
10.3 Expense																										
10.3.1 Intra-Group vs. External																										
Intra-Group (F43; L36, C4)	91%	93%	97%	96%	94%	89%																				
External (F43; L26, C4)	9%	7%	3%	4%	6%	11%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10.3.2 Total																										
Total (£m) (F43; L26 +L36, C4)	480	511	985	1238	1320	1712	1922	2215	2118	2376	1774	1236	819	499	452	468	557	581	510	471	571	402	390	285	279	173
Total % Total Assets (F43; L26 +L36, C4)/ (F13; L89; LTIB)	0.03%	0.04%	0.08%	0.08%	0.09%	0.12%	0.16%	0.19%	0.20%	0.20%	0.14%	0.10%	0.08%	0.05%	0.06%	0.06%	0.09%	0.09%	0.10%	0.10%	0.13%	0.08%	0.09%	0.07%	0.07%	0.05%
Total % Total Expense (F43; L26 +L36, C4)/ (F43; L16, C4)	4%	4%	7%	8%	8%	11%	11%	13%	11%	12%	10%	7%	5%	4%	3%	4%	4%	4%	4%	3%	4%	3%	3%	3%	3%	2%
10.4 Mathematical Reserves																										
10.4.1 Intra-Group vs. External																										
Intra-Group (F50; L38, C4)	77%	78%	81%	83%	88%	84%																				
External (F50; L28, C4)	23%	22%	19%	17%	12%	16%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10.4.2 Total																										
Total (£m) (F50; L28 +L38, C4)	258005	239089	236073	256525	271633	199700	209107	173348	146785	142049	143424	123856	101825	79152	62298	60113	52433	46949	31449	21688	19059	18799	15430	14019	12130	8667
Total % Total Assets (F50; L28 +L38, C4)/ (F13; L89; LTIB)	19%	18%	19%	17%	19%	14%	17%	15%	14%	12%	11%	10%	10%	9%	8%	8%	8%	7%	6%	5%	4%	4%	4%	4%	3%	3%
Total % Total Mathematical Reserves (F50; L28 +L38, C4)/ (F50; L18, C4)	17%	17%	17%	16%	17%	13%	16%	14%	13%	12%	12%	11%	10%	10%	9%	9%	9%	8%	7%	5%	5%	5%	5%	5%	4%	4%
11. New Premiums (APE)																										
11.1 Segments																										
11.1.1 Segments - All Business Lines																										
Life (F46; L24+L28*10%, C1)	14%	14%	21%	25%	27%	27%	28%	28%	31%	31%	32%	38%	36%	37%	41%	41%	46%	45%	43%	45%	44%	41%	48%	58%	61%	52%
Pension (F46; L24+L28*10%, C2)	82%	83%	76%	72%	71%	70%	67%	68%	63%	64%	64%	58%	60%	58%	53%	52%	45%	46%	49%	47%	49%	52%	45%	35%	32%	41%
Overseas (F46; L24+L28*10%, C3)	4%	3%	4%	3%	2%	3%	6%	4%	5%	5%	4%	4%	4%	5%	6%	7%	9%	9%	7%	8%	7%	7%	7%	6%	7%	7%
11.1.2 Segments - Non-Profit																										
Life (F47; L300-445, C4 + (L 300-445, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	10%	14%	19%	20%	20%	27%	33%	40%	39%	41%	51%	64%	64%	68%	64%	40%	42%	46%	48%	50%	49%	47%	57%	64%	68%	57%
Pension (F47; L300-445, C4 + (L 300-445, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	27%	25%	37%	43%	41%	27%	21%	27%	38%	43%	40%	29%	27%	23%	23%	52%	50%	48%	47%	44%	45%	46%	37%	30%	27%	38%
Overseas (F47; L300-445, C4 + (L 300-445, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	63%	61%	44%	37%	40%	46%	45%	33%	22%	16%	9%	7%	9%	10%	13%	8%	8%	6%	6%	5%	6%	7%	6%	5%	5%	5%
11.1.3 Segments - With-Profits																										
Life (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	43%	39%	41%	44%	46%	48%	51%	58%	56%	54%	55%	49%	47%	50%	49%	49%	51%	41%	45%	52%	53%	47%	47%	49%	50%	48%
Pension (F47; L100-215, C4 + (L 100-215, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	53%	58%	55%	54%	51%	48%	40%	34%	36%	34%	34%	40%	42%	34%	31%	33%	25%	31%	35%	25%	26%	32%	31%	35%	27%	26%
Overseas (F47; L100-215, C4 + (L 100-215, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	4%	3%	3%	3%	4%	4%	9%	8%	8%	11%	11%	11%	11%	16%	20%	19%	24%	28%	20%	23%	21%	21%	21%	16%	22%	26%
11.1.4 Segments - Unitised With-Profits																										
Life (F47; L500-575, C4 + (L 500-575, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	49%	43%	47%	35%	30%	29%	16%	28%	45%	52%	53%	54%	43%	33%	34%											
Pension (F47; L500-575, C4 + (L 500-575, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	44%	41%	36%	44%	51%	46%	45%	54%	40%	37%	39%	39%	54%	64%	63%											
Overseas (F47; L500-575, C4 + (L 500-575, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	7%	16%	18%	21%	19%	25%	39%	18%	15%	12%	8%	7%	3%	2%	3%											
11.1.5 Segments - Property Linked																										
Life (F47; L580-800, C4 + (L 580-800, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	7%	8%	15%	20%	23%	21%	21%	17%	16%	16%	19%	26%	27%	27%	33%	38%	47%	46%	39%	38%	38%	35%	41%	57%	58%	48%
Pension (F47; L580-800, C4 + (L 580-800, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	90%	90%	83%	79%	76%	78%	78%	82%	83%	83%	80%	72%	71%	71%	65%	60%	49%	51%	58%	58%	60%	62%	56%	39%	38%	50%
Overseas (F47; L580-800, C4 + (L 580-800, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	3%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	4%	3%	3%	3%	3%	3%	3%	4%	4%	2%
11.1.6 Segments - Index Linked																										
Life (F47; L900-915, C4 + (L 900-915, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	2%	3%	6%	17%	48%	50%	59%	58%	62%	39%	54%	43%	66%	77%	74%											
Pension (F47; L900-915, C4 + (L 900-915, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	98%	97%	94%	83%	52%	50%	37%	34%	31%	53%	35%	55%	31%	22%	26%											
Overseas (F47; L900-915, C4 + (L 900-915, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	0.04%	0.1%	0.3%	0.03%	0.1%	0.03%	5%	8%	7%	8%	11%	3%	3%	1%	0.3%											
11.2 Business Lines																										
11.2.1 Business Lines- All Segments																										
With-Profits (F47; L100-215, C4 + (L 100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	3%	4%	6%	7%	8%	32%	29%	30%	35%	35%	33%	35%	40%	38%	40%	41%
Non-Profit (F47; L300-445, C4 + (L 300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29	15%	16%	18%	20%	16%	19%	21%	22%	23%	18%	16%	15%	16%	19%	19%	21%	18%	19%	20%	19%	17%	16%	15%	14%	16%	18%
Unitised With-Profits (F47; L500-575, C4 + (L 500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29	3%	3%	5%	3%	3%	5%	7%	8%	16%	19%	18%	23%	20%	24%	26%											
Property Linked (F47; L580-800, C4 + (L 580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29	78%	78%	73%	75%	79%	74%	70%	67%	58%	59%	62%	56%	55%	48%	43%	48%	53%	51%	45%	46%	50%	49%	46%	48%	44%	41%
Index Linked (F47; L900-915, C4 + (L 900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Table 29	2%	2%	3%	1%	1%	1%	1%	1%	2%	2%	1%	2%	2%	3%	4%											
11.2.2 Business Lines - Life Segment																										
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	4%	7%	10%	12%	13%	31%	26%	31%	39%	39%	36%	40%	47%	42%	45%	45%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	47%	45%	36%	35%	27%	34%	39%	46%	41%	32%	27%	19%	21%	25%	22%	25%	20%	18%	20%	21%	21%	18%	14%	12%	13%	17%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	12%	10%	11%	5%	4%	5%	4%	8%	23%	32%	30%	33%	24%	22%	22%											
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	40%	44%	52%	59%	67%	58%	53%	41%	30%	31%	36%	39%	41%	35%	35%	45%	54%	51%	40%	40%	43%	41%	39%	46%	42%	38%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE and UKL_RG) see Table 29	0.4%	0.4%	0.9%	1%	2%	2%	2%	3%	4%	2%	2%	2%	4%	6%	7%											
11.2.3 Business lines - Pension Segment																										
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	0.4%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.6%	1%	1%	2%	2%	3%	3%	4%	32%	32%	31%	33%	33%	30%	31%	33%	33%	34%	38%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	10%	11%	13%	15%	11%	13%	13%	11%	13%	10%	8%	10%	11%	11%	11%	13%	10%	13%	14%	10%	9%	10%	10%	14%	14%	11%
Unitised With-Profits (F47; L500-575, C4 + (L 500-575, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	2%	2%	2%	2%	2%	3%	5%	6%	10%	11%	11%	15%	19%	26%	30%											
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	85%	84%	80%	81%	85%	83%	82%	81%	75%	77%	78%	70%	66%	59%	53%	55%	58%	56%	53%	57%	61%	59%	57%	53%	53%	51%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKP_DB, UKP_RE and UKP_RG) see Table 29	3%	3%	4%	2%	1%	1%	1%	1%	1%	1%	1%	2%	1%	1%	2%											
11.2.3 Business Lines - Overseas Segment																										
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	23%	21%	10%	10%	13%	11%	8%	11%	7%	5%	6%	7%	14%	12%	17%	34%	26%	21%	27%	24%	27%	35%	34%	33%	26%	27%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	16%	16%	17%	19%	25%	22%	34%	43%	35%	38%	39%	36%	45%	57%	58%	54%	49%	61%	53%	55%	53%	48%	48%	36%	50%	62%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	7%	16%	24%	26%	27%	40%	47%	33%	45%	42%	33%	39%	15%	10%	11%											

Property Linked (F47; L580-800, C4 + (L 580-800, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	54%	47%	49%	46%	35%	27%	10%	11%	11%	12%	20%	16%	25%	20%	14%	12%	25%	18%	20%	21%	20%	18%	18%	31%	23%	12%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); OS_DB, OS_RE and OS_RG) see Table 29	0.03%	0.1%	0.2%	0.0%	0.03%	0.01%	1%	2%	3%	2%	3%	1%	1%	0%	0%												
11.3 Total APE																											
Total (£m) (F46; L24+L28*10%, C4)	18787	19933	20911	25087	21715	20390	19642	19598	20020	20643	20235	17795	15571	13008	10932	8703	10137	11124	11184	10671	10754	11092	10424	8788	8010	6668
Total % Total Assets (F46; L24+L28*10%, C4)/ (F13; L89; LTIB)	1.4%	1.5%	1.7%	1.7%	1.5%	1.4%	1.6%	1.7%	1.9%	1.7%	1.6%	1.5%	1.5%	1.4%	1.4%	1.2%	1.6%	1.7%	2.1%	2.3%	2.5%	2.2%	2.5%	2.3%	2.2%	2.1%
11.4 Legal Form																											
11.4.1 Legal Form-Total																											
Proprietary % Total APE (F46; L24+L28*10%, C4 see Table 31)	95%	96%	94%	94%	93%	88%	86%	84%	84%	83%	83%	71%	70%	57%	59%	54%	56%	53%	53%	53%	55%	54%	53%	53%	54%	54%
Mutual % Total APE (F46; L24+L28*10%, C4 see Table 31)	5%	4%	6%	6%	7%	12%	14%	16%	16%	17%	17%	29%	30%	43%	41%	46%	44%	47%	47%	47%	45%	46%	47%	47%	46%	46%
11.4.2 Legal Form- Segment																											
11.4.2.1 Proprietary- Segment																											
Life (F46; L24+L28*10%, C1 see Table 31)	13%	13%	21%	25%	27%	27%	28%	28%	32%	31%	33%	40%	40%	41%	47%	45%	50%	49%	45%	46%	46%	44%	50%	60%	61%	55%
Pension (F46; L24+L28*10%, C2 see Table 31)	84%	84%	76%	72%	71%	71%	68%	68%	64%	64%	64%	56%	57%	53%	47%	48%	41%	42%	48%	46%	46%	48%	42%	32%	30%	37%
Overseas (F46; L24+L28*10%, C3 see Table 31)	4%	3%	4%	3%	2%	3%	4%	3%	4%	5%	3%	3%	3%	6%	6%	6%	10%	9%	7%	8%	8%	8%	8%	8%	9%	9%
11.4.2.2 Mutual- Segment																											
Life (F46; L24+L28*10%, C1 see Table 31)	41%	41%	23%	26%	28%	27%	26%	26%	29%	27%	29%	32%	29%	31%	32%	36%	42%	40%	42%	44%	41%	38%	47%	57%	61%	48%
Pension (F46; L24+L28*10%, C2 see Table 31)	58%	58%	74%	72%	70%	66%	57%	63%	61%	64%	61%	61%	65%	65%	61%	56%	50%	52%	51%	48%	53%	56%	48%	38%	34%	46%
Overseas (F46; L24+L28*10%, C3 see Table 31)	1%	1%	3%	3%	3%	7%	18%	11%	10%	9%	10%	7%	6%	5%	6%	8%	7%	8%	8%	7%	6%	6%	5%	5%	5%	6%
11.4.3 Legal Form- Products																											
11.4.3.1 Proprietary- Products																											
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	3%	4%	4%	4%	20%	18%	21%	24%	24%	22%	24%	28%	28%	31%	34%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	14%	15%	18%	20%	16%	20%	22%	23%	24%	18%	16%	15%	17%	21%	21%	21%	19%	18%	22%	19%	18%	17%	15%	14%	15%	17%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	3%	3%	5%	3%	3%	4%	5%	6%	12%	17%	16%	19%	15%	18%	18%												
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	79%	79%	73%	75%	80%	74%	72%	69%	61%	63%	65%	61%	63%	54%	51%	59%	63%	60%	54%	56%	60%	60%	57%	58%	54%	49%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	2%	3%	1%	1%	1%	1%	1%	2%	2%	1%	2%	2%	4%	6%												
11.4.3.2 Mutual - Products																											
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	4%	5%	3%	3%	3%	2%	3%	4%	5%	5%	7%	8%	11%	11%	14%	45%	42%	40%	47%	47%	46%	48%	53%	50%	51%	49%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	35%	35%	21%	18%	20%	13%	17%	18%	14%	16%	14%	13%	16%	16%	15%	20%	16%	20%	17%	18%	16%	16%	14%	14%	17%	18%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	12%	13%	7%	7%	7%	11%	21%	20%	37%	32%	31%	34%	32%	32%	36%												
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	49%	44%	68%	71%	68%	73%	57%	56%	42%	45%	46%	43%	39%	40%	33%	35%	41%	39%	35%	35%	38%	36%	33%	36%	33%	33%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	1%	2%	0%	1%	3%	1%	1%	2%	2%	2%	2%	2%	3%	1%	2%												
11.5 Industry Parents																											
11.5.1 Industry Parents - Total																											
Bank Parents % Total APE (F46; L24+L28*10%, C4 see Table 31)	23%	25%	26%	31%	31%	32%	30%	29%	31%	31%	35%	24%	21%	17%	15%	15%	15%	15%	12%	11%	11%	11%	10%	10%	11%	11%
Insurers Parents % Total APE (F46; L24+L28*10%, C4 see Table 31)	73%	71%	71%	66%	63%	59%	63%	65%	66%	68%	63%	74%	77%	80%	84%	84%	84%	85%	88%	88%	88%	88%	89%	89%	88%	88%
Other Parents % Total APE (F46; L24+L28*10%, C4 see Table 31)	4%	4%	3%	3%	6%	9%	7%	6%	3%	2%	2%	2%	2%	2%	1%	1%	1%	0%	1%	0%	0%	1%	1%	1%	1%	1%
11.5.2 Industry Parent- Segment																											
11.5.2.1 Bank parent - Segment																											
Life (F46; L24+L28*10%, C1 see Table 31)	2%	3%	6%	7%	6%	3%	2%	11%	32%	25%	44%	40%	45%	64%	91%	90%	79%	77%	83%	65%	64%	52%	63%	55%	45%	33%
Pension (F46; L24+L28*10%, C2 see Table 31)	97%	95%	90%	91%	91%	95%	97%	87%	61%	48%	53%	56%	54%	36%	7%	8%	21%	23%	17%	35%	36%	48%	37%	45%	55%	67%
Overseas (F46; L24+L28*10%, C3 see Table 31)	1%	2%	4%	2%	3%	2%	1%	2%	7%	27%	3%	3%	1%	0.1%	2%	1%	0.0002%	0.2%	0.1%	0%	0%	0%	0%	0%	0%	0%
11.5.2.2 Insurer Parent- Segment																											
Life (F46; L24+L28*10%, C1 see Table 31)	15%	14%	22%	27%	32%	33%	33%	32%	34%	34%	40%	41%	39%	35%	37%	37%	42%	41%	41%	43%	42%	39%	47%	57%	60%	50%
Pension (F46; L24+L28*10%, C2 see Table 31)	81%	82%	74%	69%	65%	63%	60%	63%	60%	61%	55%	54%	57%	59%	56%	54%	48%	48%	51%	48%	50%	52%	46%	36%	32%	41%
Overseas (F46; L24+L28*10%, C3 see Table 31)	5%	4%	4%	4%	3%	4%	7%	6%	6%	5%	6%	5%	4%	6%	7%	8%	10%	10%	8%	9%	8%	8%	7%	7%	8%	8%
11.5.2.3 Other Parent- Segment																											
Life (F46; L24+L28*10%, C1 see Table 31)	14%	15%	20%	22%	21%	22%	22%	23%	24%	23%	17%	27%	27%	44%	58%	60%	68%	63%	62%	58%	58%	54%	59%	71%	69%	63%
Pension (F46; L24+L28*10%, C2 see Table 31)	85%	84%	79%	77%	78%	76%	75%	75%	72%	72%	80%	70%	69%	54%	42%	40%	32%	37%	38%	41%	42%	46%	41%	28%	30%	36%
Overseas (F46; L24+L28*10%, C3 see Table 31)	0.4%	0.4%	1%	1%	1%	2%	3%	2%	4%	4%	2%	3%	3%	2%	0.02%	0.04%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.4%	1%	1%
11.5.3 Industry Parent- Products																											
11.5.3.1 Bank Parent- Products																											
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	0.001%	0.0003%	0.0002%	0.001%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	0.3%	0.3%	0.4%	1%	1%	1%	3%	2%	4%	2%	2%	2%	2%	4%	3%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	19%	22%	25%	18%	12%	14%	13%	18%	62%	54%	59%	47%	34%	36%	29%	40%	15%	18%	52%	24%	14%	10%	8%	6%	5%	7%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	0%	0%	0%	0%	0%	0%	1%	0%	2%	5%	0%	0%	0%	0%	0%												
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	81%	78%	72%	82%	87%	86%	86%	82%	36%	41%	40%	52%	65%	48%	21%	59%	83%	79%	46%	71%	84%	88%	90%	92%	91%	91%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	1%	0.4%	3%	0.2%	0.3%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	1%	0.002%	16%	49%												
11.5.3.2 Insurer Parent - Products																											
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	2%	1%	1%	1%	1%	1%	2%	2%	2%	4%	5%	7%	7%	8%	35%	32%	33%	38%	37%	35%	37%	42%	40%	42%	43%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	16%	17%	20%	24%	19%	23%	26%	26%	24%	21%	20%	16%	17%	20%	19%	21%	18%	21%	20%	19%	18%	17%	16%	15%	17%	19%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	4%	4%	6%	5%	5%	7%	9%	10%	19%	21%	23%	27%	25%	28%	30%												
Property Linked (F47; L580-800, C4 + (L 580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	75%	75%	68%	68%	74%	67%	63%	61%	52%	54%	53%	49%	49%	44%	40%	44%	50%	46%	42%	43%	47%	46%	42%	45%	41%	38%

Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	2%	4%	2%	1%	1%	1%	1%	2%	2%	1%	2%	2%	2%	3%											
11.5.3.3 Other Parent - Products																										
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	1%	1%	1%	2%	2%	4%	6%	10%	13%	12%	15%	20%	18%	17%	18%	21%	23%	23%	24%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	10%	11%	11%	11%	10%	12%	14%	15%	16%	10%	6%	6%	10%	12%	13%	20%	18%	10%	13%	12%	14%	10%	7%	6%	7%	9%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	1%	1%	1%	1%	2%	4%	5%	10%	16%	12%	14%	6%	10%	5%											
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	86%	85%	86%	87%	87%	84%	80%	77%	71%	72%	80%	76%	78%	65%	65%	67%	70%	75%	67%	70%	69%	73%	72%	71%	70%	67%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	3%	1%	1%	1%	2%	2%	2%	2%	1%	1%	2%	3%	7%	7%											
11.6 Overseas Ownership																										
11.6.1 Overseas Ownership-total																										
The UK % Total APE (F47; see Table 31)	71%	78%	73%	73%	72%	68%	69%	69%	69%	71%	70%	71%	70%	74%	77%	78%	78%	81%	81%	81%	82%	82%	83%	81%	83%	82%
Overseas % Total APE (F47; see Table 31)	29%	22%	27%	27%	28%	32%	31%	31%	31%	29%	30%	29%	30%	26%	23%	22%	22%	19%	19%	19%	18%	18%	17%	19%	17%	18%
11.6.2 Overseas Ownership- Segment																										
11.6.2.1 The UK- Segment																										
Life (F46; L24+L28*10%, C1 see Table 31)	14%	13%	18%	22%	23%	25%	27%	27%	28%	29%	29%	36%	34%	38%	41%	41%	46%	44%	43%	45%	44%	40%	48%	58%	60%	51%
Pension (F46; L24+L28*10%, C2 see Table 31)	82%	83%	78%	75%	74%	71%	66%	68%	65%	65%	66%	59%	61%	58%	52%	51%	44%	46%	49%	46%	48%	52%	45%	35%	33%	42%
Overseas (F46; L24+L28*10%, C3 see Table 31)	5%	4%	4%	3%	3%	4%	8%	6%	7%	6%	5%	5%	5%	5%	7%	8%	10%	10%	8%	9%	8%	8%	7%	7%	8%	8%
11.6.2.2 Overseas - Segment																										
Life (F46; L24+L28*10%, C1 see Table 31)	14%	17%	29%	34%	36%	30%	30%	31%	37%	33%	39%	43%	41%	35%	39%	40%	48%	49%	45%	48%	45%	46%	48%	61%	66%	56%
Pension (F46; L24+L28*10%, C2 see Table 31)	85%	83%	70%	65%	62%	68%	69%	67%	60%	63%	59%	55%	57%	59%	57%	54%	47%	47%	52%	50%	52%	51%	46%	36%	30%	37%
Overseas (F46; L24+L28*10%, C3 see Table 31)	1%	1%	1%	1%	2%	2%	1%	2%	3%	4%	2%	2%	2%	7%	4%	5%	5%	4%	3%	3%	3%	4%	6%	3%	4%	7%
11.6.3 Overseas Ownership- Products																										
11.6.3.1 The UK- Products																										
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	1%	1%	1%	1%	1%	1%	2%	2%	2%	3%	5%	7%	8%	10%	36%	33%	33%	38%	37%	36%	38%	43%	42%	43%	44%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	16%	14%	16%	16%	15%	19%	23%	23%	21%	17%	13%	14%	15%	18%	19%	21%	18%	20%	20%	18%	17%	16%	14%	14%	16%	17%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	4%	4%	6%	4%	4%	6%	9%	11%	20%	24%	23%	28%	26%	29%	30%											
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	75%	80%	72%	77%	78%	72%	65%	63%	55%	55%	59%	50%	50%	43%	38%	43%	49%	47%	43%	45%	48%	46%	43%	44%	41%	39%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	1%	4%	2%	1%	2%	2%	2%	2%	2%	1%	3%	2%	3%	4%											
11.6.3.2 Overseas - Products																										
With-Profits (F47; L100-215, C4 + (L100-215, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	1%	1%	1%	2%	2%	3%	3%	4%	15%	15%	18%	25%	26%	21%	20%	24%	21%	25%	29%
Non-Profit (F47; L300-445, C4 + (L300-445, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	13%	24%	22%	32%	19%	17%	18%	21%	27%	21%	21%	16%	20%	22%	18%	21%	18%	17%	21%	20%	19%	18%	16%	14%	16%	20%
Unitised With-Profits (F47; L500-575, C4 + (L500-575, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	1%	1%	1%	1%	1%	3%	1%	2%	7%	8%	8%	11%	8%	10%	12%											
Property Linked (F47; L580-800, C4 + (L580-800, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	84%	70%	75%	67%	80%	79%	81%	76%	63%	70%	69%	70%	68%	62%	62%	64%	67%	65%	54%	54%	61%	63%	60%	65%	59%	52%
Index Linked (F47; L900-915, C4 + (L900-915, C6)*10%); UKL_DB, UKL_RE, UKL_RG, UKP_DB, UKP_RE, UKP_RG, OS_DB, OS_RE and OS_RG) see Tables 29 and 31	2%	6%	1%	1%	0.2%	0.1%	0.1%	0.4%	2%	1%	1%	1%	1%	3%	4%											
12. Derivatives																										
12.1 Assets and Liabilities																										
Assets (F17; L51, C1; LTIB) and (F13; L44; LTIB; prior to 1994)	0.6%	0.7%	1.1%	0.2%	0.2%	0.3%	0.2%	0.2%	0.3%	0.2%	0.14%	0.10%	0.08%	0.08%	0.07%	0.08%	0.10%	0.06%	0.03%	0.03%	0.02%	0.04%	0.02%	0.02%	0.02%	0.01%
Liabilities (F17; L51, C2; LTIB)	0.4%	0.5%	0.8%	0.2%	0.08%	0.10%	0.08%	0.09%	0.08%	0.06%	0.08%	0.05%	0.03%	0.02%	0.03%	0.01%	0.01%									
12.2 Number of Firms																										
Firm Using Derivatives % Total Firms (F17; L51, C1 or C2; LTIB) and (F13; L44; LTIB; prior to 1994 see Table 31)	36%	35%	36%	34%	34%	32%	30%	29%	29%	30%	29%	29%	28%	25%	26%	27%	25%	10%	8%	7%	7%	6%	6%	7%	6%	5%
Proprietary Using Derivatives % Proprietary (F17; L51, C1 or C2; LTIB) and (F13; L44; LTIB; prior to 1994 see Table 31)	43%	39%	39%	34%	35%	36%	32%	31%	34%	33%	30%	30%	31%	27%	28%	25%	25%	8%	6%	5%	6%	5%	4%	5%	3%	3%
Mutual Using Derivatives % Mutual (F17; L51, C1 or C2; LTIB) and (F13; L44; LTIB; prior to 1994 see Table 31)	21%	26%	29%	35%	30%	24%	26%	24%	19%	23%	26%	28%	24%	23%	25%	30%	26%	12%	9%	9%	8%	9%	7%	9%	8%	7%
13. Management Charges to Property Linked Funds																										
Proprietary (£m) (F45; L22, see Table 31)	3451	3281	3472	3688	2633	2547	2092	1920	1888	2090	2269	1686	1324	1193	1001	978	925	760	591	523	484	472	590	412	322	245
Mutual (£m) (F45; L22, see Table 31)	92	86	222	203	227	534	519	668	657	607	623	686	611	628	585	388	377	348	290	256	247	243	210	189	152	108
Total (£m) (F45; L22)	3543	3367	3694	3892	2860	3081	2611	2587	2544	2698	2892	2372	1934	1821	1585	1366	1303	1108	881	779	731	716	800	601	474	353
Total % Property Linked Assets (F45; L22) /(F13; L59; LTIB)	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.005	0.006	0.006	0.006	0.005	0.005	0.006	0.006	0.006	0.007	0.006	0.006	0.006	0.007	0.006	0.008	0.006	0.005	0.005
14. Surpluses																										
14.1 Total																										
Reported % Total Assets (F58; L34) / (F13; L89; LTIB)	0.9%	0.8%	1.1%	1.1%	1.1%	0.7%	0.7%	1.5%	1.5%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	4%	4%	4%	4%	4%	4%	4%
Allocated to Policyholders % Total Assets (F58; L46) / (F13; L89; LTIB)	0.5%	0.5%	1%	0.8%	0.7%	0.6%	0.7%	1.0%	1.6%	1.8%	1.9%	1.8%	2%	2%	2%	3%	3%	3%	3%	4%	4%	3%	4%	4%	3%	4%
Transferred to (from) Non-Technical Account % Total Assets (F58; L47) or (F40, L26) / (F13; L89; LTIB)	0.2%	0.3%	0.1%	0.4%	0.4%	0.2%	0.01%	-0.1%	-0.05%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	0.1%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
Undistributed % Total Assets (F58; L49) / (F13; L89; LTIB)	0.7%	0.7%	0.7%	0.5%	0.6%	0.8%	1.0%	1.2%	0.7%	0.7%	0.6%	0.7%	0.7%	0.8%	0.7%	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.8%	0.7%	0.7%	0.7%
14.2 Proprietary																										
Transferred to Non-Technical Account (£m) (F58, L13)	3593	4289	3782	5736	5571	4434	2361	1622	2228	3965	3088	2309	2313	1416	1789	1655	1601	1567	1444	1425	1293	1160	918	807	838	677
Transferred from Non-Technical Account (£m) (F58, L32)	767	877	2568	610	416	1578	2363	2458	2799	1381	1208	1712	1721	596	1223	331	47	411	485	235	239	256	202	125	88	63
Net Transferred to Non-Technical Account (£m) (F40, L26) or (F58, L47)	2826	3412	1214	5126	5155	2856	-2	-836	-571	2584	1880	597	592	821	566	1323	1553	1156	959	1189	1054	904	716	682	749	613
15. New Premiums																										
Regular Premiums (F46, L24, C4)	5%	5%	6%	4%	5%	4%	6%	6%	7%	7%	5%	7%	8%	11%	12%	14%	14%	14%	16%	20%	23%	26%	33%	22%	23%	30%
Single Premiums (F46, L28, C4)	95%	95%	94%	96%	95%	96%	94%	94%	93%	93%	95%	93%	92%	89%	88%	86%	86%	86%	84%	80%	77%	74%	67%	78%	77%	70%

Source: the author.

Where: *other parents are other financial services and non-financial services as shown in Table 31.

Table 33: The Value Creation of the UK Life Insurers over the Period 1985-2010

Time	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985
1. Full Sample																										
1.1. Number of Firms																										
Total	143	148	155	157	164	176	192	203	211	215	228	233	243	250	251	232	232	242	240	246	244	248	252	234	233	229
Full Value Creation as % Total	46%	33%	24%	57%	61%	65%	53%	45%	37%	60%	77%	76%	77%	70%	56%	55%	47%	58%	36%	23%	22%	59%	53%	53%	63%	47%
Semi Value Creation as % Total	36%	53%	51%	34%	30%	27%	37%	43%	44%	29%	16%	15%	15%	20%	33%	32%	39%	30%	53%	67%	70%	38%	43%	44%	35%	52%
Value Destroying as % Total	17%	14%	25%	9%	9%	7%	10%	12%	19%	11%	7%	9%	8%	10%	11%	13%	14%	12%	11%	10%	8%	3%	4%	3%	2%	1%
1.2. Values																										
Market Value (£m) (F40; L59)	1246269	1200254	1131358	1340007	1307690	1300601	1145266	1084041	1005932	1090159	1121876	1038858	900184	763343	662486	609689	549042	543474	449333	395915	352520	367737	318594	292013	271934	236677
Tobin's Q	101%	97%	91%	109%	111%	112%	105%	102%	98%	111%	123%	127%	122%	115%	107%	106%	102%	107%	97%	95%	95%	106%	102%	102%	103%	99%
Adjusted Tobin's Q	141%	136%	128%	154%	158%	159%	149%	146%	142%	160%	177%	186%	180%	170%	159%	158%	152%	162%	145%	143%	143%	162%	156%	156%	159%	154%
Economic Value Investment Income % Market Value	28%	29%	31%	27%	27%	26%	28%	29%	31%	28%	25%	25%	26%	29%	31%	31%	33%	31%	35%	36%	36%	32%	34%	34%	34%	36%
Value Creation % Market Value	29%	27%	22%	35%	37%	37%	33%	32%	29%	38%	44%	46%	44%	41%	37%	37%	34%	38%	31%	30%	30%	38%	36%	36%	37%	35%
Real Capital Gain % Market Value	1%	-3%	-10%	8%	10%	11%	5%	2%	-2%	10%	18%	22%	18%	13%	6%	5%	2%	7%	-3%	-6%	-6%	6%	2%	2%	3%	-1%
Valuation Gain % Market Value (F40, L13+L14)	7%	8%	-15%	1%	3%	9%	4%	5%	-10%	-6%	1%	7%	10%	9%	4%	6%	-3%	11%	5%	5%	-5%	9%	5%	3%	7%	4%
Investment Yield % Market Value (F40, L12)	4%	4%	5%	4%	4%	4%	4%	4%	5%	4%	4%	4%	5%	5%	6%	6%	6%	6%	7%	7%	8%	7%	7%	7%	8%	8%
Value Creation (Flow) % Market Value	4%	7%	-18%	2%	4%	10%	4%	5%	-9%	-4%	3%	9%	11%	13%	6%	7%	-2%	13%	6%	5%	-7%	10%	5%	4%	7%	35%
Economic Value Investment Income (Flow) % Market Value	0.2%	1%	1%	3%	3%	3%	1%	1%	2%	4%	3%	3%	3%	5%	4%	3%	3%	4%	4%	5%	5%	6%	5%	4%	4%	36%
Real Capital Gain (Flow) % Market Value	4%	6%	-19%	-1%	1%	7%	3%	4%	-12%	-8%	-0.3%	6%	8%	7%	2%	4%	-5%	10%	1%	-1%	-12%	5%	0%	-1%	4%	-1%
2. Top vs. Bottom																										
2.1. Top 10																										
2.1.1 Number of Firms																										
Total	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Full Value Creation as % Total	100%	80%	60%	100%	100%	100%	100%	80%	70%	100%	100%	100%	100%	100%	100%	100%	90%	80%	50%	40%	40%	70%	80%	70%	70%	30%
Semi Value Creation as % Total	0%	20%	40%	0%	0%	0%	0%	20%	30%	0%	0%	0%	0%	0%	0%	0%	10%	20%	50%	60%	60%	30%	20%	30%	30%	70%
Value Destroying as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2.1.2. Values																										
Market Value (£m) (F40; L59)	416433	399608	365968	418032	362236	361380	317932	286113	267374	276913	279497	265021	225880	184994	143934	128533	121236	114261	95831	86754	74662	72178	63744	59461	57437	52939
Tobin's Q	110%	106%	100%	119%	122%	123%	115%	113%	109%	123%	133%	135%	129%	121%	114%	113%	110%	112%	104%	102%	102%	107%	103%	102%	102%	99%
Adjusted Tobin's Q	167%	161%	151%	180%	186%	190%	180%	178%	172%	195%	210%	215%	205%	195%	182%	181%	178%	182%	168%	165%	167%	175%	169%	168%	169%	165%
Economic Value Investment Income % Market Value	31%	32%	34%	29%	28%	29%	31%	32%	34%	30%	28%	27%	29%	31%	33%	33%	35%	34%	37%	38%	38%	36%	38%	38%	39%	40%
Value Creation % Market Value	40%	38%	34%	44%	46%	47%	44%	44%	42%	49%	52%	53%	51%	49%	45%	45%	44%	45%	41%	40%	40%	43%	41%	40%	41%	39%
Real Capital Gain % Market Value	9%	6%	-0.4%	16%	18%	19%	13%	12%	8%	19%	25%	26%	23%	18%	12%	12%	9%	11%	3%	2%	2%	7%	3%	2%	2%	-1%
Valuation Gain % Market Value (F40, L13+L14)	7%	8%	-15%	2%	3%	9%	4%	6%	-10%	-5%	1%	8%	10%	10%	4%	6%	0%	10%	6%	6%	2%	8%	5%	4%	6%	4%
Investment Yield % Market Value (F40, L12)	4%	4%	5%	4%	4%	4%	4%	4%	5%	4%	4%	4%	5%	5%	6%	6%	6%	6%	7%	8%	9%	9%	9%	9%	9%	9%
Value Creation (Flow) % Market Value	5%	7%	-16%	6%	0.4%	9%	6%	6%	-7%	-3%	2%	11%	12%	14%	6%	5%	2%	12%	6%	7%	2%	9%	6%	3%	6%	39%
Economic Value Investment Income (Flow) % Market Value	1%	1%	2%	5%	0.2%	2%	3%	2%	4%	3%	2%	3%	4%	6%	4%	1%	3%	4%	4%	7%	6%	5%	4%	3%	3%	40%
Real Capital Gain (Flow) % Market Value	4%	6%	-18%	1%	0.2%	7%	3%	4%	-11%	-6%	0.3%	7%	8%	8%	2%	4%	-1%	8%	2%	0%	-4%	4%	1%	0%	3%	-1%
2.2. Bottom 10																										
2.2.1. Number of Firms																										
Total	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Full Value Creation as % Total	0%	0%	0%	20%	30%	40%	20%	0%	0%	20%	50%	50%	50%	30%	10%	10%	10%	20%	10%	0%	10%	40%	40%	30%	60%	40%
Semi Value Creation as % Total	70%	70%	70%	70%	60%	50%	70%	90%	90%	70%	40%	40%	40%	60%	70%	60%	50%	50%	70%	80%	80%	50%	50%	60%	40%	60%
Value Destroying as % Total	30%	30%	30%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	20%	30%	40%	30%	20%	20%	10%	10%	10%	10%	0%	0%
2.2.2. Values																										
Market Value (£m) (F40; L59)	19888	20346	20963	30222	26878	23134	20949	20102	20154	20293	19031	17635	16330	13259	9160	8302	7134	7387	6579	6028	5214	5153	4293	3609	3196	3051
Tobin's Q	83%	81%	78%	93%	95%	97%	93%	92%	92%	98%	104%	106%	104%	98%	93%	93%	89%	96%	86%	88%	88%	100%	98%	101%	95%	103%
Adjusted Tobin's Q	105%	102%	97%	118%	125%	130%	128%	132%	133%	145%	156%	163%	163%	160%	145%	148%	145%	156%	138%	142%	142%	165%	165%	175%	167%	182%
Economic Value Investment Income % Market Value	26%	26%	25%	22%	25%	27%	29%	33%	34%	33%	32%	33%	34%	39%	39%	40%	44%	40%	44%	43%	43%	39%	41%	42%	45%	42%
Value Creation % Market Value	5%	2%	-3%	15%	20%	23%	22%	24%	25%	31%	36%	39%	39%	37%	31%	32%	31%	36%	28%	30%	30%	39%	39%	43%	40%	45%
Real Capital Gain % Market Value	-21%	-24%	-29%	-7%	-5%	-3%	-7%	-9%	-9%	-2%	4%	6%	4%	-2%	-8%	-8%	-12%	-4%	-16%	-13%	-14%	0.1%	-2%	1%	-5%	3%
Valuation Gain % Market Value (F40, L13+L14)	5%	4%	-15%	-1%	0.1%	5%	3%	1%	-6%	-4%	-0.4%	3%	7%	5%	2%	5%	-6%	12%	1%	6%	-7%	6%	1%	9%	-4%	8%
Investment Yield % Market Value (F40, L12)	5%	6%	8%	5%	4%	5%	5%	5%	5%	5%	5%	5%	7%	5%	6%	6%	7%	6%	7%	7%	8%	7%	7%	7%	8%	7%
Value Creation (Flow) % Market Value	3%	5%	-25%	-3%	0%	3%	-1%	-1%	-7%	-3%	0.1%	3%	8%	16%	2%	6%	-6%	11%	1%	4%	-9%	6%	3%	7%	-3%	45%
Economic Value Investment Income (Flow) % Market Value	-0.4%	-1%	-7%	0.1%	2%	0%	-3%	-1%	1%	3%	1%	1%	3%	12%	3%	3%	2%	1%	4%	6%	5%	5%	6%	2%	5%	42%
Real Capital Gain (Flow) % Market Value	4%	6%	-19%	-3%	-2%	3%	2%	0%	-7%	-5%	-1%	2%	6%	4%	-1%	3%	-8%	10%	-4%	-1%	-14%	2%	-3%	5%	-8%	3%
2.3. Top Firm																										
2.3.1. Number of Firms																										
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Full Value Creation as % Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Semi Value Creation as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Value Destroying as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2.3.2. Values																										
Market Value (£m) (F40; L59)	80938	79396	80121	80832	80214	84143	81890	82589	81899	80500	78121	73849	67519	61930	43344	39563	42719	39438	34950	33419	29983	29218	25597	23676	22847	20990
Tobin's Q	127%	127%	127%	137%	137%	138%	133%	131%	128%	138%	136%	131%	126%	121%	118%	118%	117%	116%	111%	110%	110%	112%	106%	105%	103%	100%
Adjusted Tobin's Q	203%	203%	204%	221%	220%	224%	217%	215%	210%	227%	222%	215%	206%	197%	191%	191%	195%	194%	186%	184%	183%	187%	177%	175%	172%	168%
Economic Value Investment Income % Market Value	30%	29%	30%	27%	27%	28%	29%	30%	31%	28%	29%	30%	31%	32%	32%	32%	34%	35%	36%	37%	37%	36%	38%	38%	39%	40%
Value Creation % Market Value	51%	51%	51%	55%	55%	55%	54%	53%	52%	56%	55%	53%	52%	49%	48%	48%	49%	48%	46%	46%	45%	46%	43%	43%	42%	40%
Real Capital Gain % Market Value	21%	21%	21%	27%	27%	28%	25%	24%	22%	28%	26%	24%	21%	17%	15%	15%	14%	14%	10%	9%	9%	10%	5%	5%	3%	0.3%
Valuation Gain % Market Value (F40, L13+L14)	3%	3%	-3%	3%	2%	6%	3%	4%	-4%	4%	5%	6%	7%	8%	3%	4%	3%	7%	5%	7%	5%	10%	5%	6%	6%	6%
Investment Yield % Market Value (F40, L12)	5%	6%	6%	6%	6%	5%	6%	6%	5%	5%	6%	5%	6%	5%	6%	7%	6%	6%	7%	8%	9%	9%	9%	9%	9%	10%
Value Creation (Flow) % Market Value	2%	0.2%	-3%	2%	-2%	4%	2%	3%	-1%	4%	5%	7%	7%	17%	6%	-4%	5%	8%	4%	7%	4%	11%	6%	5%	6%	40%
Economic Value Investment Income (Flow) % Market Value	2%	-0.3%	3%	1%	-1%	0.04%	-0.1%	0.2%	4%	1%	1%	2%	2%	10%	4%	-4%	3%	4%	2%	6%	4%	5%	5%	3%	3%	40%
Real Capital Gain (Flow) % Market Value	1%	1%	-6%	1%	-1%	4%	2%	3%	-5%	3%	4%	5%	5%	7%	2%	0.4%	2%	5%	2%	2%	-1%	6%	1%	2%	3%	0.3%

2.4. Bottom Firm																											
2.4.1. Number of Firms																											
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Full Value Creation as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Semi Value Creation as % Total	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	100%	100%	100%	100%	0%	0%	100%	100%	100%
Value Destroying as % Total	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%
2.4.2. Values																											
Market Value (£m) (F40; L59)	4088	4187	2399	2855	3275	3090	2547	2208	1989	2538	2983	3128	2776	2585	2345	2388	2388	2744	2342	2359	1973	2237	1914	1382	1081	740	
Tobin's Q	89%	88%	77%	97%	105%	101%	92%	87%	81%	97%	111%	117%	103%	91%	84%	84%	81%	88%	80%	88%	83%	108%	103%	136%	113%	99%	
Adjusted Tobin's Q	121%	121%	104%	131%	144%	139%	126%	118%	109%	133%	153%	161%	141%	128%	117%	118%	114%	127%	115%	126%	120%	155%	148%	196%	162%	143%	
Economic Value Investment Income % Market Value	30%	31%	34%	27%	26%	27%	29%	30%	32%	28%	25%	24%	27%	31%	34%	34%	36%	35%	38%	35%	37%	28%	30%	22%	27%	31%	
Value Creation % Market Value	18%	18%	4%	24%	31%	28%	20%	15%	9%	25%	35%	38%	29%	22%	14%	15%	12%	21%	13%	21%	17%	36%	32%	49%	38%	30%	
Real Capital Gain % Market Value	-13%	-14%	-30%	-3%	5%	1%	-9%	-15%	-24%	-3%	10%	14%	2%	-10%	-20%	-19%	-24%	-13%	-25%	-14%	-20%	7%	2%	27%	11%	-1%	
Valuation Gain % Market Value (F40, L13+L14)	4%	4%	-22%	-5%	6%	10%	5%	8%	-18%	-13%	-4%	13%	12%	10%	2%	7%	-7%	10%	-6%	9%	-21%	9%	-13%	21%	14%	4%	
Investment Yield % Market Value (F40, L12)	3%	3%	5%	5%	4%	4%	4%	4%	4%	4%	3%	3%	4%	4%	5%	4%	5%	4%	5%	6%	7%	5%	4%	3%	4%	4%	
Value Creation (Flow) % Market Value	-0.01%	15%	-23%	-10%	5%	12%	7%	8%	-22%	-15%	-4%	12%	10%	9%	0%	3%	-12%	10%	-7%	8%	-21%	10%	-1%	21%	19%	30%	
Economic Value Investment Income (Flow) % Market Value	-1%	12%	3%	-2%	2%	3%	4%	2%	-2%	0%	0%	0%	-2%	1%	1%	-2%	-3%	3%	4%	6%	7%	5%	15%	2%	7%	31%	
Real Capital Gain (Flow) % Market Value	1%	3%	-26%	-8%	4%	8%	4%	6%	-19%	-15%	-5%	12%	11%	8%	-1%	5%	-9%	7%	-11%	2%	-28%	5%	-16%	18%	12%	-1%	
3. Parental Issues																											
3.1. Insurer Parents																											
3.1.1 Number of Firms																											
Total	108	112	119	118	118	125	139	155	160	168	179	189	200	206	206	191	193	200	201	209	208	213	216	200	200	196	
Full Value Creation as % Total	39%	30%	21%	52%	58%	61%	51%	46%	38%	61%	75%	74%	77%	68%	54%	53%	47%	57%	35%	22%	22%	59%	54%	54%	64%	47%	
Semi Value Creation as % Total	44%	56%	55%	38%	32%	34%	39%	43%	44%	26%	17%	16%	15%	23%	35%	34%	40%	32%	55%	69%	71%	38%	42%	43%	35%	52%	
Value Destroying as % Total	18%	13%	24%	10%	9%	6%	10%	12%	18%	13%	8%	11%	9%	9%	11%	13%	13%	11%	10%	9%	7%	3%	4%	3%	2%	1%	
3.1.2. Values																											
Market Value (£m) (F40; L59)	968365	932741	865435	1007305	947016	922373	805757	796179	756269	829328	866005	849127	753821	649169	571216	540066	490681	489074	411021	363409	324101	337210	291980	265618	248361	216699	
Tobin's Q	101%	97%	91%	108%	112%	114%	108%	105%	102%	113%	125%	128%	123%	114%	106%	105%	101%	107%	97%	95%	95%	106%	102%	101%	102%	99%	
Adjusted Tobin's Q	148%	144%	136%	163%	169%	171%	160%	158%	155%	172%	188%	193%	186%	172%	160%	159%	153%	163%	146%	144%	144%	162%	156%	155%	158%	154%	
Economic Value Investment Income % Market Value	32%	34%	36%	31%	30%	29%	30%	32%	33%	30%	27%	26%	27%	30%	32%	32%	34%	32%	35%	36%	36%	33%	34%	35%	35%	37%	
Value Creation % Market Value	32%	30%	26%	38%	41%	41%	38%	37%	35%	42%	47%	48%	46%	42%	38%	37%	35%	39%	32%	30%	31%	38%	36%	35%	37%	35%	
Real Capital Gain % Market Value	1%	-3%	-10%	7%	11%	12%	8%	5%	2%	12%	20%	22%	19%	12%	6%	5%	1%	7%	-3%	-6%	-6%	6%	2%	1%	2%	-1%	
Valuation Gain % Market Value (F40, L13+L14)	7%	7%	-14%	1%	3%	8%	4%	4%	-9%	-5%	1%	7%	10%	9%	4%	6%	-3%	11%	5%	5%	-5%	9%	5%	3%	6%	4%	
Investment yield % Market Value (F40, L12)	4%	4%	5%	4%	4%	4%	4%	5%	5%	4%	4%	4%	5%	5%	6%	6%	6%	6%	7%	7%	8%	7%	7%	7%	8%	8%	
Value Creation (Flow) % Market Value	4%	7%	-17%	3%	6%	11%	4%	4%	-8%	-3%	3%	9%	11%	13%	5%	6%	-3%	13%	6%	5%	-6%	10%	6%	3%	7%	35%	
Economic Value Investment Income (Flow) % Market Value	0.4%	2%	1%	3%	5%	4%	1%	1%	2%	4%	3%	3%	3%	6%	3%	3%	2%	4%	5%	6%	5%	5%	5%	4%	4%	37%	
Real Capital Gain (Flow) % Market Value	4%	5%	-18%	-1%	1%	7%	3%	3%	-10%	-7%	0%	6%	9%	7%	2%	4%	-5%	9%	1%	-1%	-11%	5%	1%	-1%	3%	-1%	
3.2. Bank (and other) Parents																											
3.2.1. Number of Firms																											
Total	35	36	36	39	46	51	53	48	51	47	49	44	43	44	45	41	39	42	39	37	36	35	36	34	33	33	
Full Value Creation as % Total	69%	42%	33%	72%	67%	76%	58%	42%	33%	55%	82%	84%	81%	82%	62%	61%	49%	62%	38%	24%	22%	57%	47%	44%	61%	45%	
Semi Value Creation as % Total	14%	42%	39%	23%	26%	12%	32%	46%	43%	38%	12%	14%	14%	7%	24%	24%	31%	21%	44%	57%	64%	37%	50%	53%	36%	55%	
Value Destroying as % Total	17%	17%	28%	5%	7%	12%	9%	13%	24%	6%	6%	2%	5%	11%	13%	15%	21%	17%	18%	19%	14%	6%	3%	3%	3%	0%	
3.2.2. Values																											
Market Value (£m) (F40; L59)	277904	267512	265923	332701	360674	378229	339509	287861	249663	260831	255872	189731	146362	114174	91270	69624	58361	54400	38312	32506	28419	30526	26614	26395	23573	19979	
Tobin's Q	104%	98%	91%	111%	109%	109%	99%	95%	88%	103%	117%	126%	119%	118%	111%	110%	105%	110%	97%	95%	93%	109%	104%	112%	108%	101%	
Adjusted Tobin's Q	120%	115%	107%	132%	134%	136%	128%	121%	113%	132%	148%	161%	155%	158%	150%	150%	145%	151%	135%	135%	134%	159%	154%	165%	162%	153%	
Economic Value Investment Income % Market Value	14%	15%	17%	14%	17%	20%	23%	22%	25%	22%	18%	17%	20%	22%	24%	24%	26%	25%	29%	31%	33%	29%	31%	29%	31%	34%	
Value Creation % Market Value	17%	13%	7%	24%	25%	27%	22%	17%	11%	24%	32%	38%	36%	37%	33%	33%	31%	34%	26%	26%	25%	37%	35%	40%	38%	34%	
Real Capital Gain % Market Value	3%	-2%	-10%	10%	8%	8%	-1%	-5%	-13%	3%	14%	21%	16%	15%	10%	9%	5%	9%	-3%	-5%	-8%	9%	4%	11%	7%	1%	
Valuation Gain % Market Value (F40, L13+L14)	8%	9%	-17%	2%	4%	10%	3%	7%	-15%	-9%	-1%	9%	8%	9%	4%	8%	-2%	13%	5%	7%	-10%	9%	-1%	8%	10%	6%	
Investment Yield % Market Value (F40, L12)	3%	4%	5%	4%	4%	4%	4%	4%	4%	3%	3%	3%	4%	5%	4%	5%	5%	5%	6%	7%	8%	6%	6%	6%	6%	7%	
Value Creation (Flow) % Market Value	5%	7%	-22%	-0.3%	1%	8%	4%	8%	-14%	-6%	0.2%	11%	11%	10%	9%	9%	1%	14%	5%	5%	-12%	9%	-2%	7%	10%	34%	
Economic Value Investment Income (Flow) % Market Value	-0.5%	-1%	-0.4%	-0.3%	-2%	1%	1%	2%	3%	5%	3%	3%	4%	3%	6%	3%	4%	3%	3%	4%	5%	4%	4%	3%	3%	34%	
Real Capital Gain (Flow) % Market Value	5%	8%	-22%	0%	1%	8%	2%	6%	-16%	-10%	-3%	8%	7%	7%	3%	6%	-3%	11%	1%	1%	-16%	5%	-5%	4%	7%	1%	
3.3.The UK Parents																											
3.3.1. Number of Firms																											
Total	97	101	108	111	113	122	136	139	149	151	159	163	179	187	190	169	169	176	177	181	181	183	186	169	170	166	
Full Value Creation as % Total	44%	33%	23%	60%	63%	66%	51%	43%	39%	60%	81%	79%	80%	72%	57%	55%	47%	57%	33%	22%	22%	57%	52%	53%	61%	43%	
Semi Value Creation as % Total	41%	55%	52%	35%	33%	30%	43%	47%	44%	30%	14%	15%	14%	20%	34%	33%	39%	31%	56%	67%	71%	41%	46%	46%	37%	57%	
Value Destroying as % Total	14%	12%	25%	5%	4%	4%	7%	10%	17%	9%	5%	7%	6%	7%	9%	12%	14%	13%	11%	10%	8%	2%	3%	1%	2%	0%	
3.3.2. Values																											
Market Value (£m) (F40; L59)	909450	949249	894885	1055146	1008283	988734	911555	833760	785882	853745	875216	816922	736637	630132	550780	503771	455142	449342	373977	332268	296927	306130	268419	245442	229986	201226	
Tobin's Q	101%	98%	92%	109%	111%	113%	105%	102%	98%	110%	122%	126%	122%	114%	106%	105%	101%	107%	97%	95%	95%	106%	102%	102%	102%	98%	
Adjusted Tobin's Q	145%	138%	130%	155%	160%	162%	152%	148%	143%	161%	178%	187%	182%	172%	159%	158%	152%	162%	147%	145%	145%	163%	156%	157%	159%	154%	
Economic Value Investment Income % Market Value	30%	30%	32%	27%	27%	27%	30%	30%	32%	29%	26%	26%	27%	29%	32%	32%	33%	32%	35%	36%	37%	33%	34%	35%	35%	37%	
Value Creation % Market Value	31%	27%	23%	35%	37%	38%	34%	32%	30%	38%	44%	46%	45%	42%	37%	37%	34%	38%	32%	31%	31%	39%	36%	36%	37%	35%	
Real Capital Gain % Market Value	1%	-2%	-9%	8%	10%	12%	5%	2%	-2%	9%	18%	20%	18%	12%	6%	5%	1%	6%	-4%	-5%	-5%	5%	2%	2%	2%	-2%	
Valuation Gain % Market Value (F40, L13+L14)	6%	7%	-14%	1%	3%	9%	4%	5%	-10%	-6%	1%	7%	10%	9%	4%	6%	-3%	11%	5%	5%	-4%	8%	4%	4%	6%	4%	
Investment Yield % Market Value (F40, L12)	4%	4%	5%	4%	4%	4%	4%	4%	5%	4%	4%	4%	5%	5%	6%	6%	6%	6%	7%	7%	8%	7%	7%	7%	8%	8%	
Value Creation (Flow) % Market Value	4%	7%	-17%	1%	5%	9%	4%	5%	-9%	-3%	2%	9%	12%	13%	6%	7%	-2%	12%	5%	5%	-6%	9%	5%	4%	7%	35%	
Economic Value Investment Income (Flow) % Market Value	0.3%	2%	1%	2%	4%	3%	1%	1%	2%	5%	2%	3%	3%	6%	4%	3%	3%	3%	4%	5%	5%	5%	5%	4%	4%	37%	
Real Capital Gain (Flow) % Market Value	4%	5%	-18%	-0.5%	1%	7%	3%	4%	-11%	-8%	0%	6%	8%	7%	2%	4%	-5%	9%	1%	-1%	-11%	4%	0.1%	-0.1%	3%	-2%	
3.4. Overseas Parents																											
3.4.1. Number of Firms																											
Total	46	47	47	46	51	54	56	64	62	64	69	70	64	63	61	63	63	66	63	65	63	65	66	65	63	63	
Full Value Creation as % Total	50%	34%	26%	48%	57%	65%	59%	48%	32%	59%	68%	69%	70%	65%	52%	54%	48%	61%	44%	25%	22%	63%	56%	51%	68%	56%	
Semi Value Creation as % Total	26%	47%	49%	33%	25%	20%	23%	36%	45%	25%	19%	17%	17%	19%	31%	30%	38%	29%	44%	66%	68%	29%	36%	42%	29%	41%	

Value Destroying as % Total	24%	19%	26%	20%	18%	15%	18%	16%	23%	16%	13%	14%	13%	16%	16%	16%	14%	11%	11%	9%	10%	8%	8%	8%	3%	3%
3.4.2. Values																										
Market Value (£m) (F40; L59)	336819	251005	236474	284861	299407	311867	233711	250281	220050	236414	246661	221936	163546	133211	111706	105918	93900	94133	75355	63648	55593	61607	50175	46571	41948	35452
Tobin's Q	101%	95%	88%	108%	110%	110%	106%	103%	98%	113%	125%	134%	124%	116%	110%	110%	105%	111%	97%	94%	93%	110%	104%	102%	106%	100%
Adjusted Tobin's Q	129%	130%	121%	150%	152%	151%	138%	141%	137%	158%	176%	184%	172%	162%	157%	159%	153%	162%	138%	134%	134%	159%	151%	149%	157%	150%
Economic Value Investment Income % Market Value	22%	28%	31%	26%	25%	25%	22%	26%	29%	25%	23%	20%	23%	25%	27%	28%	30%	29%	31%	32%	33%	28%	30%	32%	31%	33%
Value Creation % Market Value	23%	23%	17%	33%	34%	34%	27%	29%	27%	37%	43%	46%	42%	38%	36%	37%	35%	38%	28%	25%	25%	37%	34%	33%	36%	33%
Real Capital Gain % Market Value	1%	-5%	-14%	7%	9%	9%	6%	3%	-2%	12%	20%	25%	19%	14%	9%	9%	4%	10%	-3%	-7%	-7%	9%	4%	1%	5%	-0.02%
Valuation Gain % Market Value (F40, L13+L14)	8%	9%	-19%	2%	3%	10%	4%	6%	-13%	-7%	0%	9%	9%	9%	3%	7%	-3%	12%	7%	6%	-10%	10%	7%	1%	8%	5%
Investment Yield % Market Value (F40, L12)	3%	4%	5%	4%	4%	4%	4%	4%	4%	4%	4%	5%	5%	5%	6%	6%	5%	5%	6%	7%	7%	6%	6%	6%	7%	7%
Value Creation (Flow) % Market Value	5%	7%	-23%	4%	2%	14%	4%	6%	-12%	-5%	5%	10%	9%	12%	3%	8%	-3%	18%	7%	4%	-13%	11%	5%	2%	9%	33%
Economic Value Investment Income (Flow) % Market Value	0.03%	-1%	0.2%	5%	0.2%	6%	1%	1%	2%	3%	5%	2%	1%	4%	1%	2%	2%	7%	5%	5%	4%	5%	3%	5%	4%	33%
Real Capital Gain (Flow) % Market Value	5%	8%	-23%	-1%	1%	8%	4%	5%	-14%	-8%	-1%	8%	8%	8%	1%	5%	-5%	11%	3%	-1%	-17%	6%	2%	-3%	5%	0%
4. Mutual vs. Proprietary																										
4.1. Mutual																										
4.1.1 Number of Firms																										
Total	43	43	48	49	53	59	61	68	73	77	81	92	96	114	117	106	106	114	115	116	114	115	121	106	109	106
Full Value Creation as % Total	40%	23%	17%	49%	49%	51%	38%	35%	32%	56%	74%	75%	79%	73%	59%	58%	48%	60%	40%	27%	26%	62%	55%	61%	61%	45%
Semi Value Creation as % Total	44%	63%	63%	47%	47%	46%	57%	54%	51%	32%	21%	17%	15%	22%	36%	34%	46%	35%	53%	67%	68%	36%	40%	36%	35%	54%
Value Destroying as % Total	16%	14%	21%	4%	4%	3%	5%	10%	18%	12%	5%	8%	6%	5%	5%	8%	6%	5%	7%	6%	5%	3%	4%	3%	4%	1%
4.1.2. Values																										
Market Value (£m) (F40; L59)	67491	65328	93585	105710	114218	223019	206705	207954	204251	231697	242583	346314	316542	337151	307110	311449	281622	281891	242345	213424	190265	195524	168387	148883	137694	119848
Tobin's Q	94%	91%	88%	101%	104%	112%	106%	103%	100%	109%	123%	123%	121%	112%	105%	104%	100%	106%	96%	95%	95%	106%	102%	101%	101%	98%
Adjusted Tobin's Q	140%	135%	129%	149%	154%	166%	158%	155%	152%	168%	186%	188%	183%	171%	160%	160%	154%	163%	146%	145%	146%	162%	157%	156%	157%	153%
Economic Value Investment Income % Market Value	35%	36%	37%	32%	31%	29%	31%	33%	34%	32%	27%	28%	28%	31%	33%	33%	35%	33%	35%	36%	36%	33%	34%	34%	35%	37%
Value Creation % Market Value	28%	26%	22%	33%	35%	40%	37%	36%	34%	40%	46%	47%	45%	41%	38%	38%	35%	39%	32%	31%	31%	38%	36%	36%	36%	35%
Real Capital Gain % Market Value	-6%	-10%	-14%	1%	4%	11%	6%	2%	0%	8%	19%	19%	17%	10%	4%	4%	0.5%	6%	-4%	-5%	-5%	6%	2%	1%	1%	-2%
Valuation Gain % Market Value (F40, L13+L14)	6%	1%	-12%	0.4%	-0.04%	8%	5%	4%	-6%	-5%	4%	5%	11%	9%	4%	6%	-3%	11%	5%	5%	-4%	8%	5%	3%	6%	3%
Investment Yield % Market Value (F40, L12)	5%	5%	5%	5%	5%	4%	5%	5%	5%	4%	4%	4%	5%	6%	7%	6%	6%	6%	7%	7%	8%	7%	7%	7%	8%	8%
Value Creation (Flow) % Market Value	4%	-0.1%	-13%	-3%	-5%	6%	2%	4%	-7%	-0.1%	5%	6%	11%	14%	5%	7%	-3%	12%	5%	4%	-5%	10%	7%	5%	7%	35%
Economic Value Investment Income (Flow) % Market Value	1%	1%	2%	-1%	-2%	0%	-1%	1%	0%	9%	2%	2%	2%	7%	3%	3%	3%	4%	5%	6%	5%	6%	6%	5%	4%	37%
Real Capital Gain (Flow) % Market Value	3%	-1%	-15%	-2%	-3%	6%	3%	3%	-8%	-9%	4%	4%	9%	7%	1%	4%	-5%	9%	1%	-1%	-10%	4%	1%	-0.2%	3%	-2%
4.2. Proprietary																										
4.2.1. Number of Firms																										
Total	100	105	107	108	111	117	131	135	138	138	147	141	147	136	134	126	126	128	125	130	130	133	131	128	124	123
Full Value Creation as % Total	49%	37%	27%	60%	67%	73%	60%	50%	40%	62%	78%	76%	76%	68%	53%	52%	46%	56%	32%	19%	18%	56%	50%	45%	65%	48%
Semi Value Creation as % Total	33%	49%	46%	29%	23%	18%	27%	38%	41%	27%	13%	14%	15%	18%	31%	30%	33%	26%	53%	67%	72%	40%	46%	52%	35%	51%
Value Destroying as % Total	18%	14%	27%	11%	11%	9%	12%	13%	20%	11%	9%	10%	9%	13%	16%	18%	21%	18%	15%	14%	11%	4%	4%	3%	1%	1%
4.2.2. Values																										
Market Value (£m) (F40; L59)	1178778	1134926	1037774	1234297	1193472	1077582	938562	876087	801681	858462	879293	692544	583642	426192	355376	298241	267420	261583	206988	182492	162255	172212	150207	143131	134240	116830
Tobin's Q	102%	98%	91%	109%	112%	112%	105%	102%	98%	111%	123%	130%	123%	117%	109%	107%	103%	109%	97%	95%	93%	107%	102%	102%	104%	99%
Adjusted Tobin's Q	141%	136%	128%	154%	158%	158%	147%	144%	139%	159%	175%	185%	178%	170%	158%	156%	151%	161%	144%	141%	141%	162%	154%	156%	160%	154%
Economic Value Investment Income % Market Value	27%	29%	31%	26%	26%	26%	27%	28%	31%	27%	25%	23%	25%	27%	29%	29%	31%	29%	34%	35%	36%	32%	34%	34%	34%	36%
Value Creation % Market Value	29%	27%	22%	35%	37%	37%	32%	31%	28%	37%	43%	46%	44%	41%	37%	36%	34%	38%	31%	29%	29%	38%	35%	36%	37%	35%
Real Capital Gain % Market Value	2%	-3%	-9%	9%	11%	11%	5%	2%	-2%	10%	18%	23%	19%	14%	8%	7%	3%	8%	-3%	-6%	-7%	6%	2%	2%	4%	-1%
Valuation Gain % Market Value (F40, L13+L14)	7%	8%	-15%	2%	3%	9%	4%	5%	-11%	-7%	-0.1%	8%	9%	9%	4%	7%	-3%	12%	6%	6%	-7%	9%	4%	3%	7%	5%
Investment Yield % Market Value (F40, L12)	4%	4%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	5%	5%	6%	6%	5%	7%	7%	8%	7%	7%	7%	7%	8%
Value Creation (Flow) % Market Value	4%	7%	-19%	2%	5%	11%	4%	6%	-10%	-5%	2%	10%	11%	12%	6%	7%	-2%	14%	6%	5%	-9%	10%	3%	3%	8%	35%
Economic Value Investment Income (Flow) % Market Value	0.2%	1%	0.4%	3%	4%	4%	2%	1%	3%	3%	3%	3%	3%	4%	4%	2%	3%	4%	4%	5%	5%	4%	4%	4%	3%	36%
Real Capital Gain (Flow) % Market Value	4%	6%	-19%	-0.4%	1%	7%	3%	4%	-13%	-8%	-1%	7%	8%	8%	2%	4%	-5%	10%	2%	0.03%	-13%	5%	-0.4%	-1%	4%	-1%
5. Value Creating vs. Non-value Creating																										
5.1. Value Creating																										
5.1.1 Number of Firms																										
Total	66	49	37	89	100	115	102	91	78	129	175	176	188	176	140	127	109	140	86	56	53	146	133	123	147	107
Full Value Creation as % Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Semi Value Creation as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Value Destroying as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5.1.2. Values																										
Market Value (£m) (F40; L59)	763208	478931	193604	1050462	1087721	1169615	790611	590837	516240	892048	1094015	1018269	878277	693752	440095	397139	329304	379608	187788	144158	104602	246420	205188	170316	160871	103411
Tobin's Q	109%	108%	114%	114%	116%	115%	113%	113%	112%	116%	124%	129%	124%	117%	115%	114%	110%	116%	108%	106%	107%	115%	108%	109%	109%	103%
Adjusted Tobin's Q	148%	154%	160%	156%	158%	162%	163%	167%	171%	172%	180%	188%	182%	174%	168%	167%	162%	172%	161%	161%	166%	172%	162%	163%	161%	153%
Economic Value Investment Income % Market Value	24%	28%	25%	23%	23%	25%	28%	28%	31%	28%	25%	25%	26%	28%	27%	27%	29%	28%	30%	32%	33%	28%	31%	31%	29%	32%
Value Creation % Market Value	33%	35%	37%	36%	37%	38%	39%	40%	42%	42%	44%	47%	45%	42%	40%	40%	38%	42%	38%	38%	40%	42%	38%	39%	38%	35%
Real Capital Gain % Market Value	8%	7%	13%	13%	14%	13%	11%	12%	11%	14%	19%	22%	19%	15%	13%	13%	9.2%	14%	8%	6%	7%	13%	8%	8%	9%	3%
Valuation Gain % Market Value (F40, L13+L14)	8%	9%	-9%	2.2%	3.76%	9%	5%	5%	-6%	-6%	1%	7%	10%	9%	4%	8%	-3%	14%	7%	7%	-3%	11%	6%	5%	10%	8%
Investment Yield % Market Value (F40, L12)	3%	4%	5%	4%	4%	4%	4%	5%	5%	4%	4%	4%	5%	5%	5%	5%	5%	5%	6%	7%	8%	7%	7%	7%	6%	7%
Value Creation (Flow) % Market Value	5%	7.9%	-11%	3%	3%	11%	5%	5%	-6%	-4.6%	4%	9%	11%	13%	6%	8%	-2%	15%	7%	9%	-4%	12%	5%	4%	11%	35%
Economic Value Investment Income (Flow) % Market Value	1%	1%	2%	3%	1%	4%	1%	2%	2%	3%	4%	3%	3%	6%	4%	2%	2%	3%	4%	7%	5%	5%	4%	3%	3%	32%
Real Capital Gain (Flow) % Market Value	5%	7%	-12%	0%	1%	8%	3%	3%	-8%	-7%	0%	6%	8%	8%	2%	5%	-5%	12%	4%	2%	-8%	7%	2%	0.9%	8%	3%
5.2. Non-value Creating																										
5.2.1. Number of Firms																										
Total	77	99	118	68	64	61	90	112	133	86	53	57	55	74	111	105	123	102	154	190	191	102	119	111	86	122
Full Value Creation as % Total	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Semi Value Creation as % Total	68%	79%	67%	79%	78%	79%	79%	79%	70%	72%	68%	63%	65%	68%	75%	70%	73%	72%	82%	87%	90%	92%	92%	94%	94%	98%
Value Destroying as % Total	32%	21%	33%	21%	22%	21%	21%	21%	30%	28%	32%	37%	35%	32%	25%	30%	27%	28%	18%	13%	10%	8%	8%	6%	6%	2%
5.2.2. Values																										
Market Value (£m) (F40; L59)	483061	721323	937754	289545	219969	130986	354656	493204	489691	198111	27862	20589	21907	69590	222391	212550	219738	163866	261545	251758	247918	121316	113406	121697	111063	133267

Tobin's Q	91%	91%	87%	92%	93%	90%	92%	92%	87%	92%	88%	88%	88%	92%	94%	93%	91%	92%	90%	89%	90%	92%	92%	93%	94%	96%
Adjusted Tobin's Q	130%	127%	123%	147%	157%	136%	125%	128%	120%	124%	119%	120%	120%	141%	144%	144%	140%	142%	136%	134%	136%	145%	145%	147%	155%	154%
Economic Value Investment Income % Market Value	33%	31%	33%	40%	44%	40%	29%	31%	32%	28%	30%	31%	31%	37%	37%	38%	39%	39%	38%	38%	37%	40%	40%	39%	42%	40%
Value Creation % Market Value	23%	21%	18%	32%	36%	27%	20%	22%	17%	19%	16%	17%	17%	29%	31%	30%	29%	29%	26%	26%	26%	31%	31%	32%	35%	35%
Real Capital Gain % Market Value	-10%	-10%	-14%	-8%	-8%	-11%	-9%	-9%	-15%	-9%	-14%	-14%	-14%	-8%	-7%	-8%	-10%	-9%	-11%	-12%	-11%	-9%	-9%	-7%	-6%	-4%
Valuation Gain % Market Value (F40, L13+L14)	6%	7%	-16%	-1%	-1%	5%	3%	6%	-14%	-9%	-3.8%	0%	2%	6%	3%	4%	-4%	6%	4%	4%	-6%	3%	2%	1%	1%	1%
Investment Yield % Market Value (F40, L12)	4%	4%	5%	5%	5%	5%	4%	4%	4%	3%	6%	6%	6%	6%	7%	7%	7%	6%	7%	7%	8%	8%	8%	8%	9%	9%
Value Creation (Flow) % Market Value	2%	6%	-20%	-2%	12%	2%	2%	6%	-13%	0%	-38%	3%	5%	6%	5%	5%	-3%	10%	5%	2%	-8%	5%	6%	4%	3%	35%
Economic Value Investment Income (Flow) % Market Value	-0.2%	1%	0.4%	1%	14%	1%	0%	1%	3%	10%	-20%	3%	4%	2%	4%	3%	3%	5%	5%	5%	5%	6%	8%	6%	5%	40%
Real Capital Gain (Flow) % Market Value	2%	5%	-20%	-3.2%	-2%	3%	2%	5%	-16%	-10%	-18%	0%	1%	4%	1%	1%	-6%	5%	0%	-2.22%	-13%	-1%	-2.1%	-3%	-2%	-4%

Source: the author.

Table 34: Ranking of the UK Life Insurers with Respect to Value Creation (Capital Gain in Parenthesis) Over the Period 1985-2010

Year (Number of Firm)/Firm Name	2010(143)	2009(148)	2008(155)	2007(157)	2006(164)	2005(176)	2004(192)	2003(203)	2002(211)	2001(215)	2000(228)	1999(233)	1998(243)	1997(250)	1996(251)	1995(232)	1994(232)	1993(242)	1992(240)	1991(246)	1990(244)	1989(248)	1988(252)	1987(234)	1986(233)	1985(229)
Abbey Life Assurance Co Ltd	28(12)	31(12)	38(108)	32(14)	35(17)	32(21)	46(35)	46(144)	61(192)	36(22)	29(13)	20(11)	26(16)	27(17)	27(12)	27(10)	27(12)	23(10)	28(184)	31(225)	33(232)	26(18)	28(132)	29(218)	25(66)	24(217)
Abbey Life Pension and Annuities Ltd															247(208)	228(186)	226(162)	237(196)	236(177)	241(167)	79(205)	100(224)	84(229)	85(210)	84(210)	67(199)
Aberdeen Asset Management Life and Pensions Ltd	142(117)	146(117)	144(107)	153(133)	162(145)	175(168)	189(178)	200(192)	210(205)	87(205)	81(83)	114(105)	143(122)													
Aberdeen Asset Management Pooled Pensions Ltd		140(93)	149(113)	157(143)	164(158)	176(171)	192(181)	202(187)	209(191)	214(212)	89(227)	75(230)	74(241)	79(247)	61(246)	31(220)	28(221)	24								
ACE Europe Life Ltd	119(67)	126(49)	118(44)	143																						
AEGON Insurance Co (UK) Ltd														231(184)	227(155)	207(143)	204(117)	218(149)	219(93)	225(63)	227(58)	242(151)	245(139)	228(127)	190(127)	191(86)
Aetna Life Insurance Co Ltd																			164(164)	208(169)	191(167)	130(113)	138(194)	128(174)	132(130)	200(98)
Aetna Pensions Ltd																					197(75)	202(128)	197(131)	180(116)	168(121)	159(87)
Ageas Protect Ltd	121(70)	129(54)	115																							
ALAC (UK) Ltd														147(119)	145(99)	142(97)	151(105)	154(116)	156(152)	190(143)	186(135)	166(115)	173(165)	169(158)	164(110)	160(143)
Alba Life Ltd						77(57)	76(46)	61(36)	47(23)	46(37)	52(49)	31(29)	30(29)	31(38)	35(73)	36(125)	38(216)	77(224)	72(218)	72(223)	58(222)	76(233)	65(238)	64(219)	58(211)	48(197)
Albany Life Assurance Co Ltd													66(53)	67(42)	65(32)	65(33)	61(28)	55(29)	55(18)	60(18)	54(12)	45(21)	53(22)	59(20)	52(14)	63(11)
All Counties Insurance Co Ltd									185(109)	204(156)	220(195)	225(201)	239(221)	242(212)	238(192)	218(166)	217(144)	229(173)	212(123)	216(92)	210(84)	223(176)	217(163)	204(153)	206(166)	204(133)
Alliance and Leicester Life Assurance Co Ltd									112(132)	118(93)	120(112)	129(125)	132(131)	155(142)	157(185)	167										
Allianz Insurance plc							89(54)	91(52)	88(135)	97(74)	106(97)	102(98)	112(103)	116(109)	114(104)	117(165)	120(190)	122(122)	115(189)	118(193)	112(173)	108(82)	104(77)	113(60)	102(52)	106(54)
Allied Dunbar Assurance plc							5(4)	6(5)	9(6)	7(4)	7(4)	7(3)	7(3)	7(3)	7(2)	6(2)	7(2)	5(2)	8(4)	9(16)	11(224)	4(2)	6(4)	7(5)	5(1)	11(8)
Allied Dunbar Provident plc																						212(175)	210(161)	195(144)	197(167)	194(136)
Ambassador Life Assurance Co Ltd														244(216)	241(199)	190(182)	179(170)	191(192)	181(156)	180(134)	164(124)	162(181)	160(190)	144(162)	140(172)	134(144)
American Life Insurance Co UK Branch	143(130)	148(133)	154(138)	60(150)	73(159)	92(170)	99(179)	114(184)	72(184)	86(203)	94(223)	107(229)	111(239)	135(238)	140(229)	161(203)	230(200)	239(216)	186(203)	203(201)	161(187)	156(209)	249(222)	232(205)	187(201)	181(179)
Ancient Order of Foresters Friendly Society Ltd (The)	126(89)	133(78)	125(70)	126(109)	132(124)	147(148)	150(140)	152(128)	146(125)	150(171)	166(207)	171(211)	175(223)	178(210)	173(186)											
Assicurazioni Generali																		116(203)	112(182)	122(174)	137(165)	177(208)	198(203)	197(187)	199(190)	190(158)
Assurant Life Ltd	123(77)	121(62)	102(43)	139(98)	152(107)	161(124)	174(113)	177(96)	169(85)	188(136)	207(178)	210(180)	223(191)													
Australian Mutual Provident Society															38(40)	33(37)	31(35)	33(36)	26(50)	22(163)	23(168)	27(45)	81(78)	81(77)	83(78)	74(161)
Aviva Annuity UK Ltd	9(138)	10(139)	9(136)	17(151)	19(141)	18(29)	17(32)	17(21)	17(12)	25(28)	21(37)	18(39)	14(22)	13(35)												
Aviva Insurance Ltd							169(97)	172(85)	163(74)	182(118)	200(183)	207(186)	217(196)	215(182)	210(150)	209(148)	203(124)	221(155)	218(100)	221(70)	219(64)	233(164)	230(151)	212(146)	216(164)	211(125)
Aviva Insurance UK Ltd														160(225)	155(209)	172(183)	175(165)	183(182)	175(142)	176(121)	183(119)	191(186)	187(176)	174(123)	177(162)	
Aviva International Insurance Ltd																									21(226)	16(221)
Aviva Investors Pensions Ltd	87(81)	138(88)	136(100)	59(39)	54(33)	56(33)	45(22)	39(22)	48(27)	48(30)	55(40)	39(26)	40(32)	42(25)	42(19)	42(20)	42(23)	40(25)	42(13)	43(21)	43(27)	44(27)	52(34)	62(48)	53(31)	49(44)
Aviva Life and Pensions UK Ltd	3(115)	3(141)	4(149)	4(7)	4(6)	5(7)	6(12)	5(13)	5(9)	5(6)	6(9)	5(6)	6(7)	6(9)												
Avon Insurance plc																				119(139)	118(121)	134(178)	126(111)	126(105)	131(141)	128(97)
AXA Annuity Co Ltd				114(94)																						
AXA Equity and Law Life Assurance Society plc											38(31)	44(41)	45(48)	19(40)	21(227)	24(217)	25(225)	28(231)	32(236)	71(243)	81(241)	8(4)	11(6)	10(9)	8(5)	14(28)
AXA Wealth Ltd	138(107)	141(97)	138(88)	154(134)	44(37)	49(51)	54(79)	58(168)	66(181)	60(75)	82(72)	72(65)	77(65)	76(57)	79(49)	80(52)	87(55)	90(61)	89(42)	100(85)	109(41)	117(71)	132(67)	137(68)	124(86)	129(96)
BandCE Insurance Ltd	94(90)	95(76)	94(74)	112(116)	118(118)	128(114)	136(119)	144(110)	137(80)	158(145)	195(203)	198(185)	209(184)	216(192)	209(147)	191(131)										
BA (GI) Ltd						46(45)	35(29)	32(19)	29(16)	33(21)	37(41)	45(66)	39(84)	40(243)	36(242)	46(229)	40(227)	44(241)	35(233)	32(238)	32(234)	39(243)	37(245)	36(223)	35(223)	31(215)
Baillie Gifford Life Ltd	32(10)	36(7)	143(120)	48(33)	50(27)	55(32)	81(145)	119(172)	205(186)	119(195)	131(220)	111(111)	127(138)													
Barclays Life Assurance Co Ltd	29(13)	29(9)	30(15)	39(20)	40(23)	44(34)	47(40)	44(166)	94(152)	102(177)	109(109)	112(115)	122(125)	129(132)	125(162)	133(167)	134(151)	147(129)	151(79)	187(55)			203(115)	205(118)	211(133)	124(164)
BLAC Ltd									36(21)	37(20)	39(22)	37(21)	37(25)	37(20)	39(18)	39(22)	43(37)	38(27)	48(180)	61(215)	74(216)	43(29)	46(26)	54(30)	55(24)	57(17)
Black Sea and Baltic General Insurance Co Ltd															200(168)	186(158)	186(135)	201(164)	203(114)	206(84)	207(73)	224(171)	222(159)	207(148)	208(165)	207(128)
BlackRock Asset Management Pensions Ltd	10(6)	17(136)	153(152)	7(3)	8(3)	8(9)	106(192)	203(203)	211(211)	215(215)	28(48)	25(16)	50(45)	83(68)	115(80)	130(93)										
BlackRock Pensions Ltd	47(19)	55(15)	69(22)	57(29)	71(41)	74(41)	70(43)	82(147)	199(178)	83(67)	85(66)	81(63)	91(75)	78(51)	107(74)	114(70)	142(92)	164(118)	169(66)	202(82)	205(51)	230(146)				
Bradford Insurance Co Ltd							179(115)	186(105)	178(96)	196(150)	215(190)	213(195)	222(208)	220(202)	219(177)	198(157)	198(134)	207(158)	210(103)	217(76)	216(68)	228(162)	226(150)	208(133)	210(160)	205(126)
Britannia Life Association of Scotland Ltd																		118(225)	106(214)	80(220)	71(214)	89(230)	80(231)	74(211)	76(212)	61(203)
Britannia Life Ltd (pre1994)																		91(51)	98(33)	101(27)	111(32)	119(74)	120(66)	127(69)	137(84)	145(76)
Britannia Life Managed Pension Funds Ltd																		209(135)	226(110)	238(124)	240(129)	207(195)	181(209)	170(198)	152(124)	155(141)
Britannic Unit Linked Assurance Ltd						121(163)	190(172)	198(182)	204(193)	93(210)	75(144)	113(102)	118(105)	119(95)	121(85)	121(84)	128(71)	140(95)	132(53)	150(44)	158(42)	158(102)	163(90)	153(98)	165(105)	183(83)
British and European Reinsurance Co Ltd												226(203)	164(144)	171(144)	184(213)	165(184)	168(158)	172(180)	158(139)	159(123)	169(115)	181(167)	168(174)	154(136)	158(137)	149(154)
British Airways Benefit Fund										180(122)	196(165)	200(167)	208(174)	211(166)	205(137)											
British Equitable Assurance Co Ltd										191(129)	206(184)	209(187)	218(197)	219(183)	211(154)	196(139)	195(112)	206(140)	206(85)	210(56)	214(53)	226(140)	225(130)	211(134)	212(161)	209(114)
British Friendly Society Ltd	93(91)	93(77)	82(71)	106(102)	112(108)	122(131)	126(141)	124(131)	186(131)	203(166)	192(163)	190(160)	201(164)	205(161)	202(178)											
British Life Office Ltd								101(56)	101(62)	109(78)	115(101)	118(107)	128(120)	134(118)	133(103)	134(98)	143(97)	144(106)	146(68)	165(94)	176(78)	197(125)	204(114)	192(109)	195(128)	196(94)
British National Life Assurance Co Ltd																		132(90)	145(74)	173(126)	195(126)	172(110)	172(108)	160(103)	157(95)	169(79)
BUPA Health Assurance Ltd	127(87)	130(75)	121(66)	145(115)	154(133)	144(139)	151(134)	168(122)	192(134)	183(155)	198(191)	224(209)	195(211)	193(205)	218(175)	194(142)	192(113)									
Caledonian Insurance Co Ltd												123(120)	125(124)	131(223)	130(221)	132(201)	135(198)	139(204)	129(199)	128(180)	126(169)	138(216)	135(215)	132(197)		
Canada Life Assurance Co													65(50)	73(48)	67(26)	67(25)	57(13)	66(32)	57(9)	55(8)	55(7)	80(34)	82(24)	86(26)	98(36)	103(23)
Canada Life Irish Operations Ltd																93(64)	95(65)	99(67)	94(69)	98(152)	103(146)	105(66)	110(61)	108(58)	106(63)	111(48)
Canada Life Ltd	25(136)	26(142)	27(141)	31(147)	29(66)	31(53)	39(170)	37(181)	37(187)	40(70)	44(50)	42(47)	61(58)	68(56)	71(64)	84(60)	83(58)	95(80)	90(159)	96(171)	86(127)	86(55)	91(46)	100(54)	104(67)	109(70)
Canterbury Life Assurance Co Ltd											164(136)	165(143)	178(158)	186(164)	191(188)	181(163)	215(153)	195(169)	189(143)	182(119)	181(106)	200(150)	208(167)	194(155)	191(135)	193(147)
CCL Assurance Ltd																				240(198)	235(177)	149(204)	170(220)	166(203)	141(108)	146(80)
Century Life Assurance								151(77)	127(97)	131(101)	129(116)	137(130)	149(136)	156(127)	177(159)	171										
Century Life plc						60(64)	60(63)	57(148)	50(163)	54(73)	63(93)	77(84)	64(73)	63(64)	56(60)	54(63)	53(80)	51(72)	37(36)	41(160)	116(137)	147(161)	133(184)	120(199)	118(126)	131(166)
CGNU Life Assurance Ltd			18(86)	23(22)	33(72)	28(166)	26(174)	30(186)	28(161)	28(24)	30(32)	35(57)	35(80)	35(240)	33(240)	40(225)	45(223)	53(237)	51(232)	49(237)	42(233)	62(242)	45(244)	46(222)	46(221)	36(214)
Cirencester Friendly Society Ltd	101(74)	107(61)	95(47)	116(84)	124(94)	134(106)	145(95)	146(84)	155(71)	172(117)	179(149)	178(150)	191(160)	201(185)	193(131)											
City of London Insurance Co Ltd							180(114)	187(101)	176(90)	198(144)	216(188)	218(189)	231(204)	232(195)	230(161)	210(149)	205(121)	216(152)	216(96)	223(64)	218(62)	234(158)	232(146)	218(138)	218(156)	216(118)
City of Westminster Assurance Co Ltd						84(83)	83(151)	80(155)	68(158)	82(91)	92(100)	89(106)	90(108)	91(113)	153(216)	146(195)	148(186)	157(201)	133(171)	126(155)	121(140)	131(119)	122(104)	124(171)	123(186)	114(172)
City of Westminster Assurance Society Ltd																		179(139)	171(122)	168(98)	174(92)	185(127)	177(116)	164(112)	163(132)	161(105)
Civil Servants Annuities Assurance Society											177(155)	180(163)	189(167)	194(162)												
Clerical Medical and General Life Assurance Society																18(8)	17(6)	20(7)	18(5)	19(3)	19(3)	20(8)	20(3)	24(6)	24(4)	28(14)
Clerical Medical Investment Group Ltd	23(22)	20(107)	22(65)	29(36)	25(36)	16(27)	11(19)	10(14)	14(34)	13(15)	14(23)	17(37)	17(28)	18(47)	17											
Clerical Medical Managed Fund Ltd	38(18)	42(21)	26(125)	26(18)	28(21)	30(23)	37(28)	36(29)	45(167)	42(26)	46(30)	47(31)	53(37)	51(30)	53(24)	51(21)	56(20)	48(26)	59(19)	74(29)	97(156)	75(39)	88(52)	90(64)	79(38)	86(52)
Colonial Mutual Life (Unit Assurances) Ltd															148(105)	147(104)	156(142)	162(120)	173(149)	181(127)	179(118)	173(111)	180(121)	171(114)	178(125)	177(106)
Colonial Mutual Life Assurance Society Ltd															47(23)	45(18)	46(18)	45(28)	34(8)	30(6)	30(8)	24(6)	24(2)	35(35)	40(104)	34(193)
Combined Insurance Co of America (UK Branch)	113(61)	118(45)	108(34)	135(86)	144(97)	149(104)	161(92)	140(71)	140(73)	160(125)	224(210)	230(216)	197(214)	214(219)	245(198)	222(170)	190(154)	177(125)	168(119)	174(122)	144(102)	176(126)	179(109)	163(93)	160(98)	150(49)
Commercial Union Assurance (Unit Trusts) Ltd																									183(174)	168(100)
Commercial Union Life Assurance Co Ltd			11(5)	18(16)	26(34)	23(38)	16(30)	15(32)	16(15)	15(13)	17(20)	29(32)	27(36)	26(41)	25(84)	26(96)	21(178)	27(213)	23(216)	26(231)	25(229)	30(239)	25(234)	23(139)	221(158)	218(120)

Communication Workers Friendly Society Ltd	124(100)	124(87)	98(81)	108(119)	115(129)	123(127)	129(135)	130(127)	126(133)	143(172)	143(131)	147(142)	157(152)	162(143)	164(120)	154(118)	166(143)	188(171)	176(120)	172(87)	170(44)	192(135)	189(123)						
Compass Friendly Society Ltd	117(68)	127(51)	116(39)	142(91)	150(102)	163(118)	176(104)	182(94)	175(83)	195(135)	214(181)	216(184)	227(195)	227(181)	222														
Confederation Life Insurance Co																		241(222)	240(231)	246(234)	244(228)	248(234)	252(235)	234(212)	233(214)	229(204)			
Confederation Life Insurance Co (UK) Ltd												90(97)	75(69)	93(78)	89(72)	86(67)	85(56)	78(53)	91(30)	91(22)	92(23)	87(48)	96(43)	95(47)	114(50)	125(41)			
Consolidated Life Assurance Co Ltd															244(226)	160(205)	180(201)	173(210)	152(175)	156(166)	155(139)	188(196)	200(182)	202(163)	205(177)	202(142)			
Co-operative Insurance Society Ltd	18(11)	16(108)	14(4)	22(21)	17(18)	12(12)	9(11)	9(8)	8(7)	11(9)	9(10)	10(14)	10(14)	10(19)	10(20)	10(32)	9(98)	14(235)	13(226)	12(232)	10(230)	18(240)	14(246)	14(224)	13(218)	12(192)			
Countrywide Assured plc	73(97)	75(98)	133(106)	78(69)	84(73)	106(144)	113(157)	113(158)	132(159)	113(179)	118(113)	124(119)	129(129)	133(128)	146(122)	175(127)	219(152)	231(166)	230(137)	235(113)	237(99)	189(144)	237(135)						
Criterion Insurance Co Ltd																						235(155)	234(145)	216(137)	223(155)	221(121)			
Crown Life Assurance Co Ltd																131(59)	134(76)	127(48)	133(46)	129(37)	106(54)	105(53)	99(63)	100(49)	102(39)				
Crown Life Insurance Co												164(168)	167(180)	174(218)	170(203)	159(179)	161(159)	171(181)	155(115)	149(100)	143(82)	168(132)	154(103)	146(94)	143(107)	133(55)			
Crown Life Pensions Ltd																	124(87)	120(84)	123(160)	94(195)	93(184)	85(61)	97(81)	112(173)	108(85)	110(74)			
Cuna Mutual Insurance Society						162(132)	173(125)	179(114)	174(107)	197(157)	211(196)	220(202)	230(215)	236(207)	214(182)	197(160)	197(138)	210(163)	208(109)	215(78)	215(66)	229(159)	233(147)	219(140)	222(157)	220(117)			
Customs Annuity and Benevolent Fund Inc								148(76)	138(64)	154(106)	169(146)	174(157)	180(162)	182(159)	181(129)	170(121)	172(120)	189(131)	178(82)	177(68)	180(71)	199(130)	193(125)	181(111)	182(142)	176(137)			
Dentists and General Mutual Benefit Society Ltd	107(78)	113(65)	103(56)	123(99)	130(110)	140(123)	148(126)	156(121)	180(111)	181(149)	186(162)	206(199)	199(170)	203(167)	201(136)														
Dentists Provident Society Ltd	85(46)	86(34)	79(29)	101(67)	108(80)	119(94)	123(80)	121(66)	139(68)	140(89)	154(128)	152(138)	160(139)	166(134)	171(119)														
Direct Line Life Insurance Co Ltd	130(92)	132(79)	119(67)	138(117)	143(132)	145(145)	149(136)	184(134)	145(108)	176(159)	218(200)	204(198)	219(212)	233(204)	231(180)	185(153)													
Domestic and General Life Assurance Co Ltd				132(85)	141(96)	152(108)	160(98)	165(87)	151(70)	166(113)	183(157)	192(164)	207(181)	209(172)	206(140)	192(136)	191(109)												
Eagle Star Insurance Co Ltd	125(75)	131(60)	123(49)	148(104)	157(115)	168(133)	183(127)	199(170)	201(171)	213(202)	228(224)	233(231)	243(240)	250(244)	251(237)	232(221)	232(219)	242(232)	239(223)	245(233)	8(243)	11(247)	9(251)	5(233)	6(229)	6(226)			
Ecclesiastical Insurance Office plc									95(44)	115(84)	130(118)	138(134)	141(141)	143(146)	141(191)	138(172)	139(155)	149(187)	134(161)	132(140)	131(132)	151(192)	145(195)	143(186)	147(200)	141(171)			
Ecclesiastical Life Ltd	100(54)	79(86)	71(83)	95(121)	99(135)	111(153)	109(148)	107(149)	159(146)	152(188)	160(215)	157(224)	161(232)	164(231)	159(218)	150(198)	153(188)	158(207)	144(173)	145(168)	159(163)	175(214)	167(206)	162(170)	169(184)	165(153)			
Edinburgh Assurance Co Ltd															249(224)	230(204)	229(204)	238(217)	237(202)	243(210)	243(211)	194(228)	250(233)	149(215)	113(213)	90(207)			
Equitable Life Assurance Society (The)	135(98)	145(113)	131(73)	90(49)	79(43)	24(16)	21(9)	20(6)	12(4)	8(7)	5(6)	6(7)	5(5)	5(5)	5(8)	5(15)	5(53)	6(8)	7(219)	7(218)	7(220)	6(13)	8(11)	9(14)	15(13)	15(4)			
Equity and Law (Managed Funds) Ltd																				56(15)	65(18)	69(36)	74(38)	60(46)	45(25)	47(31)			
Esano London Friendly Society								171(91)	164(84)	186(140)																			
Eurolife Assurance Co Ltd							130(76)	126(58)	99(37)	114(72)	103(92)	115(109)	117(109)	126(111)	129(118)	158(117)	218(157)	227(190)	225(140)	192(117)	184(103)	205(183)	207(179)	190(165)	192(181)	188(155)			
Exeter Friendly Society Ltd	109(64)	115(48)	104(37)																										
FandC Managed Pension Funds Ltd	98(53)	109(80)	135(92)	85(59)	87(62)	94(73)	111(146)	110(157)	118(172)	78(65)	78(67)	68(60)	83(63)	82(61)	86(52)	90(51)	94(54)	100(64)	105(43)	129(54)	142(96)	139(92)	152(88)	158(101)	159(100)	170(91)			
Family Assurance Friendly Society Ltd	65(41)	62(26)	58(82)	71(52)	76(55)	76(62)	74(51)	67(45)	56(40)	65(54)	76(69)	69(71)	71(79)	74(80)	73(82)	71(90)	73(192)	84(85)	77(197)	90(203)	98(195)	95(96)	98(199)						
Fidelity Life Assurance Ltd							162(94)	166(81)	158(67)	174(112)	184(153)	188(161)	196(163)	197(151)	192(124)	180(119)	182(102)	197(132)	195(80)	204(53)	201(47)	214(134)	216(122)	200(117)	200(134)	198(101)			
FIL Life Insurance Ltd	67(29)	83(31)	59(12)	68(37)	77(46)	80(48)	103(64)	131(145)	196(166)	209(184)	159(134)	158(137)	216(179)																
Financial Assurance Co Ltd	140(113)	142(105)	137(97)	156(137)	163(149)	174(162)	117(120)																						
First National Assurance Ltd													233(200)	235(191)	233(160)	212(147)	208(122)	223(153)	220(97)	226(65)	228(59)	243(154)	244(141)	229(132)	229(153)	227(108)			
Fleming Life Ltd											125(123)	128(129)	135(134)	154(130)	175(171)	200(144)	202(114)	217(146)	217(90)	224(61)	220(56)	236(149)	236(137)	223(128)	226(149)	223(110)			
Forester Life Ltd	72(48)	69(39)	66(68)	91(71)	94(77)	103(89)	105(75)	99(57)	86(48)	106(83)	121(110)	126(121)	126(121)	130(124)	128(200)	120(100)													
Friends Life Assurance Society Ltd	36(120)	28(116)	17(94)	24(38)	27(50)	19(25)	15(18)	14(15)	15(13)	14(16)	16(26)	15(35)	15(43)	14(246)	13(249)	11(228)	11(228)	12(240)	12(238)	11(244)	14(242)	19(248)	15(250)	13(232)	12(230)	10(225)			
Friends Life Co Ltd	8(139)	8(146)	8(153)	9(152)	43(162)	36(173)	27(189)	27(194)	25(185)	29(60)	225(214)	231(221)	237(228)	247(226)															
Friends Provident (London and Manchester) Assurance Ltd												66(62)	68(60)	70(53)	59(38)	55(36)	50(27)	50(42)	43(22)	39(13)	36(13)	41(43)	39(44)	42(59)	41(47)	35(196)			
Friends Provident Life and Pensions Ltd	33(137)	27(143)	15(144)	16(154)	14(160)	9(161)	8(185)	8(197)	7(202)	9(207)																			
Friends Provident Life Assurance Ltd	50(122)	46(122)	68(117)	62(130)	57(63)	67(93)	73(168)	81(174)	81(177)	71(194)	72(86)	67(83)	78(117)	86(242)	96(239)	91(219)	86(220)	65(227)	67(222)	44(221)	53(225)	40(47)	41(56)	38(13)	59(32)	66(176)			
Friends Provident Life Office											11(18)	13(48)	11(18)	15(76)	15(244)	13(216)	13(217)	19(234)	15(235)	15(242)	16(239)	12(244)	10(249)	21(231)	22(228)	21(222)			
Friends Provident Linked Life Assurance Ltd													92(70)	101(70)	103(61)	113(73)	121(76)	123(73)	142(95)	195(157)	239(160)	132(80)	156(110)	155(164)	150(80)	162(61)			
Friends Provident Managed Pension Funds Ltd													69(54)	75(49)	63(34)	69(38)	67(31)	67(41)	66(24)	79(30)	76(39)	71(40)	79(37)	78(37)	71(34)	69(33)			
Friends Provident Pensions Ltd	35(135)	40(140)	146(146)	30(25)	31(29)	38(44)	48(175)	55(190)	85(199)	58(204)	54(71)	56(58)	70(61)	72(63)	77(62)	76(62)	82(106)	75(57)	86(169)	106(202)	119(201)	116(215)	116(216)	116(184)	116(188)	115(177)			
Friends Provident Reinsurance Services Ltd		99(40)	65(16)	93(55)	93(59)	89(55)	79(33)																						
GE Frankona Reassurance Ltd						108(156)	116(154)	115(150)	103(140)	125(183)	136(209)	143(217)	142(140)	146(138)	139(113)	128(103)	137(167)	205(151)	209(91)	218									
GE Keynes Holdings Ltd								75(27)	89(32)	104(62)	111(95)	104(104)	94(102)	100(114)	126(223)	227(208)	228(205)	174(214)	140(188)	163(181)	171(159)	190(212)	190(213)	184(192)	185(196)	174(167)			
General Accident Pensions Management															226(145)	202(131)	119(63)	121(82)	110(47)	109(33)	114(35)	111(68)	106(58)	102(56)	96(68)	91(56)			
General Reinsurance Life UK Ltd				125(112)	134(122)	131(115)	134(101)	138(89)	119(60)	141(108)	155(139)	166(154)	168(151)	177(152)	178(130)	182													
General Reinsurance UK Ltd																179(122)	183(125)												
Gisborne Life Assurance Co Ltd												85(86)	84(86)	90(90)	84(83)	89(99)	84(164)	94(111)	92(198)	84(183)	100(188)	112(202)	102(120)	98(172)	99(82)	85(46)			
GL and P plc														64(39)	62(30)	72(44)	68(30)	88(56)	117(194)	108(154)	102(33)	129(94)	151(107)	135(57)	162(102)	171(95)			
Global General and Reinsurance Co Ltd							181(109)	190(109)	183(102)	206(163)	221(199)	227(204)	240(218)	243(209)	239(190)	219(164)	222(146)	234(178)	232(138)	236(115)	238(113)	246(200)	247(208)	230(193)	231(204)	228(190)			
Gresham Life Assurance Society Ltd																				86(173)	80(153)	103(189)	85(98)	84(83)	86(179)	75(163)			
Gresham Unit Assurance Ltd																				155(42)	173(87)	144(83)	147(73)	148(78)	139(71)	147(57)			
Growth and Secured Life Assurance Society Ltd												221(193)	229(206)	230(200)	221(173)	199(155)	194(132)	199(156)	199(108)	200(71)	200(60)	215(143)	215(133)	199(122)	201(147)	197(124)			
Guardian Assurance plc	55(132)	53(131)	37(123)	46(144)	48(155)	48(159)	38(164)	28(167)	27(169)	30(51)	31(55)	33(61)	24(46)	21(91)	19(235)	17(215)	18(218)	17(126)	17(228)	14(235)	15(237)	14(227)	12(237)	11(226)	14(231)	5(1)			
Guardian Eastern Insurance Co Ltd												222(192)	235(205)	238(197)	236(169)	215(156)	212(130)	224(157)	221(102)	230(72)	231(65)	245(160)	246(153)	206(149)	209(168)	208(139)			
Guardian Linked Life Assurance Ltd	70(37)	67(25)	64(28)	74(46)	80(52)	83(60)	82(50)	79(47)	69(136)	76(58)	86(73)	82(70)	82(66)	81(71)	80(54)	77(58)	80(83)	73(60)	76(174)	97(206)	91(206)	61(42)	66(69)	77(207)	67(46)	77(37)			
Guardian Pensions Management Ltd	133(94)	137(83)	132(80)	151(118)	160(131)	157(121)	158(89)	105(50)	100(49)	101(66)	107(89)	101(89)	108(90)	114(85)	110(69)	96(59)	93(49)	93(59)	81(46)	78(177)	72(171)	54(30)	63(39)	73(73)	66(40)	64(21)			
Halifax Life Ltd	141(116)	147(125)	152(129)	80(44)	88(51)	45(43)	61(180)	85(193)	208(203)	81(208)	90(82)	91(85)	110(101)	125(110)	142(109)	155(112)													
Hamilton Life Assurance Co Ltd			128(64)	110(74)	114(81)	124(95)	131(81)	129(60)	128(53)	121(82)	137(115)	141(127)	150(123)	153(122)	162(121)	226(176)	181(168)	186(184)	174(134)	175(112)	162(90)	208(180)	212(162)	201(150)	213(170)	213(134)			
Hannover Life Reassurance (UK) Ltd	92(99)	97(85)	86(77)	115(122)	122(134)	127(142)	138(143)	132(136)	125(122)	148(174)	170(208)	187(214)	185(217)	218(220)	240(201)	221(177)	223(156)	232(183)	228(135)	233(109)	217(100)	220(182)	214(172)	198(152)	202(169)	210(123)			
Hannover Standard Life								193(133)	191(127)	207(170)	223(205)																		
Health Shield Friendly Society Ltd	105(58)	114(52)	120(55)	113(79)	123(89)	141(105)	157(111)	164(113)	157(105)	164(116)	174(147)	181(155)	187(159)	188(148)	189(125)														
Hearts of Oak Insurance Co Ltd					95(78)	100(86)	95(74)	93(63)	84(59)	105(86)	114(106)	117(114)	121(115)	121(115)	119(111)														
Hermes Assured Ltd					12(7)	17(10)	34(16)	38(24)	200(188)	67(98)	65(62)	61(54)	76(76)	84(84)															
Hill Samuel Life Assurance Ltd (from1995)														56(46)	55(37)	58(49)	77(70)	86(102)	100(210)	53(197)	85(198)	74(56)	71(55)	40(11)	57(26)	72(32)			
Hill Samuel Life Assurance Ltd (pre 1995)																	65(41)	63(46)	60(41)	52(26)	57(172)	57(46)	49(29)	58(39)	42(12)	46(3)			
Hiscox Insurance Co Ltd												177(210)	184(225)	184(222)	183(204)	173(180)	178(161)	192(188)	184(145)	179(116)	182(117)	195(187)	188(187)	172(176)	176(183)	158(157)			
Hodge Life Assurance Co Ltd	83(43)	82(29)	72(23)	99(66)	106(74)	115(88)	121(69)	116(61)	115(55)	137(99)	153(150)	168(212)	171(227)	176(224)	174(212)	164(190)	169(171)	181(191)	183(157)	186(135)	187(128)	193(191)	192(183)	188(175)	194(180)	195(99)			
Homeowners Friendly Society Ltd	80(108)	94(100)	90(93)	94(131)	97(143)	104(160)	100(162)	98(163)	107(164)	112(197)	122(219)	121(226)	123(238)	123(239)	113(233)	112(212)	96(211)	101(220)	78(207)	73(208)	69(189)	98(217)	93(212)						
HSBC Life (UK) Ltd	43(15)	44(11)	40(11)	41(19)	47(25)	52(28)	57(27)	56(23)	52(25)	53(31)	57(43)	58(40)	56(40)	59(36)	78(50)	92(77)	91(66)	110(91)	177(200)	120(118)	168(155)	169(114)	223(157)						
Ideal Benefit Society (The)								134(69)	116(57)	133(90)	145(137)	148(148)	155(156)	159(157)	156(167)														
Imperial Life (UK) Ltd																							248(170)	231(166)	154(97)	167(84)			
Independent Order of Foresters																	127(199)	126(194)	119(196)	124(190)	123(182)	136(218)	125(224)	119(200)	122(203)	113(178)			
Independent Order of Odd Fellows Manchester Unity Friendly Society								128(123)	113(119)	132(138)	142(151)	144(149)	159(165)	167(163)	166(132)														
IntegraLife UK Ltd	41(39)	41(82)	41(96)	56(53)	81(67)	97(87)	119(87)	120(132)	122(126)	147(121)	158(138)	163(162)	166(171)	169(213)	169(205)	162(189)	167(173)	176(197)	167(163)	161(144)	151(138)	178(198)	157(185)	139(96)	142(123)	143(159)			
Invesco Life Ltd											202																		
Invesco Perpetual Life Ltd	75(40)	72(28)	78(33)	84(51)	92(60)	101(72)	118(65)	125(68)	153(137)	156(169)	156(127)	176(156)																	

Investment Solutions Ltd	90(49)	89(37)	134(85)	105(75)	107(75)	116(85)	128(83)	150(86)	188(121)	167(119)	197(168)	201(173)	211(187)	213(175)															
Irish Life Assurance plc																			109(74)	111(78)	115(130)	113(76)	122(93)	139(191)	142(177)	138(111)	140(81)		
Irish Progressive Life Assurance Co Ltd													101(85)	108(83)	118(94)	125(113)	133(182)	131(119)	233(204)	127(188)	117(178)	93(64)	89(45)	105(84)	107(72)				
JPMorgan Life Ltd	69(34)	87(101)	145(119)	61(40)	69(44)	85(61)	187(160)	196(171)	206(189)	116(198)	108(105)	99(93)	137(137)	172(150)															
Just Retirement Ltd	60(27)	74(36)	84(84)	111(127)	119(121)	138																							
Kensington Friendly Collecting Society Ltd	111(65)	117(50)	107(42)	130(88)	142(98)	154(112)	165(105)	169(97)	161(94)	175(124)	190(164)	196(169)	206(182)	206(171)															
Kingston Unity Friendly Society								155(125)	143(117)	162(162)	176(194)																		
Lancashire and Yorkshire Assurance Society																	171(166)	167(179)	154(153)	153(142)	147(130)	165(156)	166(173)						
LAS Investment Assurance Ltd																		175(193)	235(187)	242(191)	242(183)	155(108)	184(217)	189(204)	146(81)	186(180)			
LAS Pensions Management Ltd																		146(113)	136(118)	138(114)	128(112)	128(91)	131(79)	134(88)	130(87)	137(73)			
Leeds Life Assurance Ltd																	176(123)												
Legal and General (Unit Assurance) Ltd																					64(116)	46(25)	50(31)	49(27)	38(15)	42(15)			
Legal and General (Unit Pensions) Ltd																					127(196)	104(67)	127(210)	133(195)	129(94)	139(131)			
Legal and General Assurance (Pensions Management) Ltd	1(2)	1(13)	1(155)	1(1)	1(1)	1(2)	2(6)	3(201)	3(210)	2(8)	2(2)	1(1)	2(2)	3(2)	6(3)	8(3)	10(8)	10(4)	19(7)	20(17)	26(34)	25(10)	31(13)	32(29)	18(17)	13(201)			
Legal and General Assurance Society Ltd	6(4)	5(2)	5(99)	6(5)	6(8)	4(4)	4(3)	4(3)	4(3)	4(2)	4(5)	4(4)	4(4)	4(6)	4(16)	4(14)	4(50)	4(13)	4(227)	4(230)	4(217)	5(79)	4(19)	4(21)	4(62)	4(227)			
Liberty Life Assurance Co Ltd																	110(47)	117(83)	116(62)	113(34)	110(22)	133(84)	137(65)	114(41)	109(57)	120(40)			
Liberty Re Ltd											204(170)	182(223)	152(149)	157(156)															
Life Insurance Corporation of India	104(96)	106(84)	97(78)	120(123)	129(137)	137(154)	143(149)	145(142)	135(139)	155(181)	171(212)	179(220)	182(231)	183(229)	179(215)	168(193)	170(177)	187(200)	172(162)	167(138)	166(131)	187(197)	175(196)	165(180)	161(191)	156(160)			
Lincoln Assurance Ltd (pre 1996)															70(45)	66(45)	74(45)	87(52)	87(37)	92(47)	96(104)	88(50)	90(50)	93(52)	91(56)	99(198)			
Lindsey House Friendly Society								175(115)	181(115)	184(153)																			
Liverpool Victoria Friendly Society Ltd	40(133)	38(132)	35(132)	77(153)	74(161)	73(174)	59(188)	52(195)	42(195)	55(214)	68(228)	76(233)	67(243)	57(250)	50(248)	49(226)	44(224)	49(238)	40(225)	33(228)	29(223)	36(232)	32(230)						
Liverpool Victoria Life Co Ltd	136(102)	143(104)	140(104)	66(64)	70(68)	72(70)	72(155)	73(160)	60(160)	69(88)	133(122)	139(131)	136(127)	150(145)	151(183)	151(175)	154(148)	166(170)	160(141)	160(108)	157(79)	180(122)	182(112)	178(129)	180(136)	173(146)			
Lloyds Bowmaker Assurance Ltd																	213(131)	230(167)	202(125)	205(96)	199(88)	209(177)	206(168)	193(157)	193(173)	192(138)			
London and Edinburgh Life Assurance Co Ltd												175(219)	179(229)	195(227)	212(211)	225(187)	220(169)	220(195)	196(136)	193(106)	189(83)	211(169)	224(144)	221					
London Aberdeen and Northern Mutual Assurance Society Ltd					135(116)	135(128)	144(132)	143(124)	133(116)	144(109)	144(126)	145(133)	154(143)	161(137)	167(116)	157(114)	164(127)	184(133)	182(126)	191(107)	193(107)	201(170)	201(177)	186(168)	186(159)	184(140)			
London General Life Co Ltd	120(71)	123(53)	113(40)	137(89)	147(100)	158(111)	171(102)	174(90)	167(76)	177(115)	194(159)	202(165)	210(172)	208(158)	197(123)	137(83)	147(64)	153(94)	159(55)	194(49)									
London Life Association Ltd																							29(25)	28(17)	31(44)	32(75)			
London Life Linked Assurances Ltd						114(91)	120(77)	112(64)	106(69)	110(80)	117(104)	119(110)	120(107)	120(101)	117(92)	116(88)	105(81)	113(93)	108(67)	104(97)	105(101)	110(77)	112(72)	107(81)	111(73)	118(60)			
London Life Ltd	88(121)	101(123)	76(115)	81(140)	65(156)	61(167)	58(177)	50(185)	38(179)	43(192)	48(99)	51(94)	44(112)	41(125)	127(102)	123(94)	123(86)	133(104)	128(71)	136(99)	146(97)	118(73)	109(63)	88(53)	81(51)	68(53)			
Lucida plc	77(45)	77(35)	75(25)																										
M and G Life Assurance Co Ltd											70(54)	74(59)	72(55)	58(31)	57(22)	57(24)	55(15)	56(31)	70(38)	45(10)	52(14)	42(17)	44(17)	33(3)	60(19)	73(22)			
M and G Pensions and Annuity Co Ltd											66(52)	60(56)	57(57)	50(33)	52(25)	52(26)	48(16)	54(35)	54(27)	42(11)	51(17)	49(26)	54(23)	39(7)	70(33)	76(45)			
Managed Pension Funds Ltd	11(3)	14(3)	19(13)	10(4)	10(4)	11(5)	20(8)	31(12)																					
Manchester Unity Life Insurance Collecting Society													186(220)	185(217)	182(196)	174(168)	173(145)	190(176)	179(124)	178(91)	185(81)	206(172)	202(152)						
Manufacturers Life Insurance Co Ltd																	107(52)	98(54)	85(28)	83(19)	75(11)	96(62)	92(47)	89(55)	87(59)	87(30)			
Marine and General Mutual Life Assurance Society	59(42)	60(32)	53(26)	67(47)	72(56)	75(59)	69(47)	68(43)	57(42)	72(63)	88(90)	94(103)	93(99)	103(120)	100(222)	107(209)	112(210)	108(219)	102(211)	85(216)	66(212)	73(222)	61(225)	61(194)	63(185)	52(194)			
Markel International Insurance Co Ltd				144(92)	151(101)	164(117)	177(103)	181(92)	173(79)	192(131)	212(177)	214(179)	226(192)	229(179)	228(151)	193(134)	196(108)	211(144)	213(89)	219(60)	224(55)	238(147)	241			225(111)			
Marks and Spencer Life Assurance Ltd	86(57)	90(74)	85(79)	103(73)	109(83)	117(101)	124(122)	123(135)	129(138)	138(152)	152(142)	160(144)	173(150)	180(140)	188(117)	177(111)													
Medical Sickness Annuity and Life Assurance Society Ltd															90(77)	88(68)	92(74)	111(198)	99(170)	89(148)	84(109)	113(193)	108(197)	109(189)	110(193)	100(184)			
Mercantile and General Reinsurance Co Ltd (The)														249(248)	250(241)	231(222)	231(222)	240(233)	238(221)	244(226)	236(226)	123(235)	113(239)	96(217)	93(216)	80(209)			
Merchant Investors Assurance Co Ltd	46(24)	48(16)	46(14)	52(32)	60(40)	66(46)	68(37)	70(38)	65(46)	68(45)	80(64)	79(67)	88(83)	85(73)	83(63)	82(57)	79(48)	74(50)	95(181)	95(196)	90(175)	84(60)	94(75)	103(190)	95(65)	95(182)			
MetLife Assurance Ltd	68(50)	68(38)	73(31)	155(135)																									
MetLife Ltd	129(82)	134(70)	122(63)	147(110)	156(125)	167(146)	178(137)	185(126)	182(114)	205(165)	222(204)	229(207)	241(224)	245(214)	242(194)	224(169)	221(147)	233(175)	231(128)	234(105)	234(93)	225(184)	228(175)	215(161)	220(176)	203(148)			
Metropolitan Police Friendly Society Ltd	95(56)	96(44)	88(32)	107(76)	120(93)	133(143)	140(124)	139(103)	131(86)	146(110)	161(145)	167(153)	169(155)	170(149)	176(184)	169(171)	174(149)	193(174)	187(131)	183(103)	192(98)	196(137)	194(166)						
Monarch Assurance plc	82(44)	80(33)	70(24)	98(68)	104(79)	113(92)	114(68)	108(54)	108(56)	127(96)	140(132)	142(139)	153(153)	152(135)	150(114)														
Munich Reinsurance Co United Kingdom Life Branch								96(156)	98(145)	117(187)	135(218)	151(227)	151(234)	165(233)	163(219)	166(196)	189(189)	185(209)	180(168)	171(150)	178(143)	213(205)	213(205)	196(182)	196(195)	175(169)			
National Deposit Friendly Society Ltd	84(55)	84(41)	77(60)	97(72)	103(82)	112(98)	115(84)	111(72)	105(91)	122(103)	134(129)	136(136)	140(146)	139(139)	136(128)														
National Employers' Life Assurance Co Ltd																				99(178)	94(166)	109(203)	95(202)	92(191)	90(198)	84(187)			
National Farmers Union Mutual Insurance Society Ltd	24(23)	24(18)	24(7)	34(26)	38(30)	40(31)	36(25)	35(17)	32(17)	35(27)	40(34)	41(34)	38(31)	36(21)	41(33)	38(30)	36(25)	39(40)	39(172)	40(211)	39(203)	55(220)	43(84)	47(67)	49(117)	41(62)			
National Financial Management Corporation plc																					150(190)	97(58)	114(68)	79(22)	112(55)	136(59)			
National Mutual Life Association of Australasia Ltd																								51(19)	62(194)	53(168)			
National Mutual Life Assurance Society									35(26)	45(47)	49(61)	55(64)	51(67)	53(112)	54(228)	60(206)	60(202)	72(211)	62(201)	58(179)	48(114)	78(100)	69(62)	67(51)	80(118)	71(185)			
National Mutual Pensions Ltd																204(133)	116(95)	128(87)	137(49)	154(36)	160(30)	179(101)	186(92)	179(90)	175(92)	157(90)			
National Provident Institution												11(9)	13(11)	12(18)	12(13)	15(17)	16(19)	16(19)	14(14)	17(25)	17(28)	22(41)	22(40)	22(32)	26(48)	26(191)			
National Provident Life Ltd	137(131)	43(128)	33(121)	44(142)	42(148)	35(65)	29(166)	26(175)	22(156)	20(59)	13(57)																		
National Westminster Life Assurance Ltd	139(106)	144(106)	147(111)	100(63)	110(71)	172(149)	191(171)	201(179)	82(201)	44(53)	42(33)	38(25)	43(39)	61(50)	72(53)	81(54)	130(197)	119(105)											
Nationwide Life Ltd	96(51)	88(30)	62(19)	82(60)	86(61)	86(67)	88(61)	84(59)	74(110)	100(95)	112(108)	109(101)	115(104)	127(104)	168(193)	178(146)													
NEL Britannia Assurance Co Ltd																				239(147)	241(147)	170(105)	199(186)	224(188)	167(99)	189(113)			
NEL Pensions Ltd																				76(212)	68(208)	82(223)	75(228)	69(209)	74(208)	58(200)			
NM Life Ltd					82(109)	81(80)	71(44)	72(34)	62(29)	94(79)	110(124)	130(218)	139(226)	246(230)	248(217)	229(199)	227(185)	236(212)	229(176)	189(159)	188(144)	182(163)	162(87)	176(113)	189(178)	185(156)			
NM Pensions Ltd					51(154)	53(169)	55(183)	43(176)	41(180)																				
Northern Assurance Co Ltd													62(59)	71(60)	74(57)	73(74)	78(195)	71(70)	84(206)	116(219)	141(221)	91(226)	99(236)	87(213)	85(209)	88(205)			
Norwich Union Asset Management Ltd																			69(29)	70(32)	62(38)	56(38)	60(51)	57(86)	48(37)	70(43)			
Norwich Union Life (RBS) Ltd											100(78)	98(78)	102(78)	104(62)	104(44)	97(41)	102(32)	41(23)	22(17)	18(153)	18(207)	13(7)	18(7)	20(8)	23(7)	30(6)			
Norwich Union Life Insurance Society															2(236)	2(223)	2(231)	2(5)	2(237)	2(241)	2(215)	2(5)	2(20)	2(214)	2(232)	2(228)			
Norwich Union Linked Life Assurance Ltd							12(169)	16(196)	24(208)	17(35)	12(15)	12(18)	23(21)	24(23)	26(35)	85(79)	90(88)	92(68)	93(65)	88(129)	87(91)	94(70)	83(48)	80(38)	78(41)	79(183)			
Nottingham Oddfellows Assurance Friendly Society Ltd			101(48)	127(93)	137(104)	148(122)	154(116)	162(100)	149(93)	173(142)	187(186)	194(188)	203(203)	198(193)	194(164)														
NPI Annuities Ltd													99(114)	107(234)	106(231)	105(210)	97(209)	83(99)	139(76)	139(125)	132(133)	125(88)	129(94)	130(97)	125(83)	135(64)			
NPI Ltd	66(125)	78(126)	141(130)	58(139)	55(157)	71(172)	77(187)	78(198)	124(204)	66(213)	67(225)																		
NRG London Reinsurance Co Ltd													228(194)	222(186)	220(153)	211(140)	207(119)	222(150)	198(133)	185(110)	172(110)	203(188)	196(181)	185(169)	184(182)	178(152)			
NRG Victory Reinsurance Ltd																		137(202)	126(186)	147(187)	140(170)	163(210)	153(211)	141(178)	133(144)	121(170)			
Old Mutual Life Assurance Co Ltd												92(96)	87(92)	94(99)	87(96)	87(194)		68(58)	71(191)	75(200)	82(192)	101(103)	101(178)	110(183)	103(79)	104(127)			
Omnilife Insurance Co Ltd	118(73)	125(57)	111(41)	146(101)	153(112)	165(125)	182(117)	188(102)	171(87)	187(130)	208(182)	219(190)	234(207)	224(187)	225(157)	205(141)	199(111)	213(142)											
Original Holloway Friendly Society Ltd (The)	116(80)	119(64)	109(50)	131(103)	140(113)	151(130)	156(121)	154(106)	162(99)	178(146)	191(175)	193(171)	204(183)	202(173)	199(149)														
PA (GI) Ltd							108(167)	94(164)	71(154)	79(193)	84(98)	88(122)	89(236)	92(241)	81(234)	79(214)	75(212)	80(221)	75(212)	63(214)	49(202)	68(211)	57(221)	53(74)	54(187)	40(206)			
Pacific Life Re Ltd	102(95)	103(81)	92(75)	152(125)	161(138)	173(155)	188(150)	195(143)	194(143)	211(182)	226(213)	232(222)	242(233)	248(232)	246(220)	220(197)	224(184)	196(205)	185(167)	197(149)	167(148)	186(206)	178(200)	175(181)	172(189)	166(162)			
Partnership Life Assurance Co Ltd	89(88)	92(42)	124(76)	128(113)	138(117)	142(113)																							
Paternoster UK Ltd	63(118)	58(112)	56(109)	76(124)	113(106)																								
Pearl Assurance (Unit Funds) Ltd						107(68)	104(49)	97(44)	87(36)	91(55)	98(80)	95(79)	98(71)	95(67)	88(48)	83(48)	81(39)	82(48)	80(32)	87(51)	88(142)	72(44)	77(49)	75(50)	82(43)	96(38)			

Pearl Assurance (Unit Linked Pensions) Ltd						99(79)	96(73)	100(75)	97(144)	103(81)	113(103)	116(108)	119(110)	124(107)	122(95)	122(92)	125(78)	136(98)	130(60)	143(50)	153(49)	164(106)	171(105)	168(104)	170(113)	179(88)					
Pearl Assurance Ltd	21(9)	18(5)	21(2)	25(13)	15(13)	10(6)	7(5)	7(4)	6(2)	6(3)	8(7)	8(8)	9(6)	9(4)	8(4)	9(5)	6(4)	8(9)	5(6)	6(7)	6(6)	9(33)	7(30)	6(44)	7(202)	7(213)					
Pegasus Assurance Ltd													213(199)	234(189)	216(156)	189(152)	210(128)	208(136)	223(111)	231(86)	230(74)	232(145)									
Pension Annuity Friendly Society Ltd (The)						130(102)	137(88)	141(74)	136(61)	157(107)	175(143)	185(152)	193(154)	210(165)	207(135)	195(126)															
Pension Insurance Corporation Ltd	57(36)	63(27)	57(21)																												
Pensions Management (SWF) Ltd	48(17)	50(8)	48(6)	47(24)	56(28)	59(30)	66(23)	64(18)	58(18)	52(23)	51(29)	49(27)	46(26)	34(13)	20(6)	14(4)	15(5)	9(3)	10(2)	13(4)	13(4)	10(3)	16(5)	15(4)	11(2)	17(5)					
PFM Assurance Ltd																	193(136)	203(138)	207(94)	212(59)	213(50)	227(139)	229(126)	182(119)	179(112)	187(93)					
Pharmaceutical and General Provident Society Ltd	106(63)	110(58)	106(53)	117(81)	126(92)	139(109)	152(128)	159(120)	165(124)	159(126)	173(161)	172(147)	181(161)	187(153)	187(133)																
Phoenix and London Assurance Ltd	31(20)	25(10)	23(3)	38(23)	37(22)	27(19)	18(7)	18(7)	18(5)	19(12)	18(14)	16(20)	12(12)	11(10)	11(17)	12(19)	12(11)	11(20)	11(40)	10(28)	9(16)	17(52)	17(54)	16(33)	16(75)	18(210)					
Phoenix Life and Pensions Ltd						43(56)	25(52)	23(169)	21(20)	24(29)	19(25)	19(33)	19(34)	16(88)	16(245)	20(227)	14(84)	15(229)	16(234)	16(239)	12(236)	16(238)	13(241)	12(229)	10(227)	8(224)					
Phoenix Life Assurance Ltd				75(61)	83(65)	88(78)	97(158)	104(161)	110(170)	75(61)	83(70)	83(73)	86(81)	102(86)	99(71)	103(56)	149(176)	161(117)													
Phoenix Life Ltd	12(128)	9(135)	20(142)	14(141)	9(53)	42(84)	52(176)	51(188)	49(198)	39(199)	43(60)	40(49)	41(93)	96(89)	85(81)	78(81)	72(100)	69(71)	65(185)	65(205)	63(200)	63(53)	56(59)	52(49)	50(27)	65(69)					
Phoenix Pensions Ltd	45(109)	45(110)	39(101)	51(65)		87(96)	87(99)	87(73)	80(54)	128(139)	168(156)																				
Pinnacle Insurance plc	132(93)	139(89)	87(91)	92(132)	102(142)	105(99)	102(72)	135(146)	120(142)	134(175)	146(206)	169(213)	172(198)	181(206)	190(189)	216(161)	216(140)	228(165)	227(112)	232(83)	232(72)	244(165)	238(156)	214(143)	215(143)	214(104)					
Pioneer Friendly Society Ltd				133(100)	145(111)	155(126)	167(118)	183(107)	179(101)	194(148)	205(187)	205(183)	215(185)	217(178)	217(158)																
POIS Assurance Ltd										130(104)	139(125)	140(135)	145(135)	140(126)	138(107)	136(106)	145(163)	151(172)	135(151)	131(131)	125(108)	140(118)	130(113)								
Police Mutual Assurance Society Ltd	134(114)	102(109)	81(102)	88(129)	89(144)	90(158)	90(161)	86(159)	70(153)	85(97)	93(96)	86(88)	97(100)	98(100)	98(126)	99(102)	98(183)	97(88)	83(129)	93(165)	95(157)	99(76)	103(192)								
PPP Lifetime Care plc					111(86)	118(97)	122(82)	118(67)	114(58)	136(102)	148(130)	154(145)	158(142)	173(147)	185(181)	184(124)	187(137)	204(154)	200												
Premium Life Assurance Co Ltd															154(112)	156(116)	158(99)	182(137)	191(146)	188(111)	165(40)	183(112)	183(102)	156(79)	171(114)	180(150)					
Professional Life Assurance Co Ltd												125(113)	144(118)	148(116)	152(98)	149(95)	160(93)	169(115)	190(77)	199(67)	222(86)	204(120)	211(119)	187(99)	198(129)	219(145)					
Property Growth Assurance Co Ltd																							195(97)	177(82)	174(90)	82(174)					
Prosperity Life Assurance Ltd																		156(114)	157(147)	162(141)	163(136)	152(109)	165(160)	161(154)	153(101)	164(129)					
Proteus Insurance Co Ltd													225(190)	228(177)	224(144)	203(135)	200(110)	214(143)	214(88)	222(58)	225(54)	240(148)	242(136)	226(126)	227(150)	224(112)					
Provident Mutual Life Assurance Ltd																23(31)	22(160)	21(22)	20(209)	21(224)	20(219)	15(11)	19(8)	17(10)	19(11)	22(19)					
Prudential (AN) Ltd		104(43)	93(30)	119(80)	128(88)	95(71)	94(58)	92(49)	83(50)	96(68)	105(94)	105(99)	107(98)	109(92)	102(75)	102(71)	100(61)	107(79)	103(70)	103(146)	101(145)	107(72)	107(74)	111(72)	115(70)	122(58)					
Prudential Annuities Ltd	17(126)	15(130)	13(133)	20(50)	18(26)	15(18)	13(13)	12(11)	13(10)	16(25)	22(42)	21(46)	16(23)	17(27)	24(47)	25(43)	26(101)	22(18)	25(21)												
Prudential Assurance Co Ltd (The)	2(1)	2(1)	2(1)	2(2)	2(2)	2(1)	1(1)	1(1)	1(1)	1(1)	1(1)	2(2)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(2)	1(3)	1(13)					
Prudential Holborn Life Ltd		54(91)	50(98)	55(45)	61(48)	68(54)	75(41)	83(41)	75(33)	92(57)	101(84)	103(91)	109(88)	111(74)	108(56)	111(53)	109(42)	85(44)	79(26)	81(20)	73(19)	59(32)	55(28)	45(25)	39(18)	43(18)					
Prudential Pensions Ltd	30(105)	33(119)	42(127)	40(35)	41(24)	37(26)	44(26)	40(26)	46(31)	49(33)	47(39)	48(36)	49(38)	48(28)	48(21)	48(23)	47(21)	42(24)	46(25)	50(184)	50(204)	37(19)	47(33)	55(179)	44(64)	50(223)					
Prudential Retirement Income Ltd	13(134)	13(137)	16(143)	21(148)	23(90)	26(42)	30(48)	42(53)	44(47)	77(176)	119(141)		163(132)	144(108)	105(46)	106(46)	108(34)	104(45)	97(56)	38(43)	27(25)	21(9)	23(9)	25(12)	17(8)	19(9)					
Railway Enginemens Assurance Society Ltd	108(83)	112(69)	100(58)	124(105)	133(119)	143(140)	155(138)	158(129)	154(123)	169(168)	185(202)	189(208)	202(222)	199(215)	198(197)	183(173)	184(150)	198(177)	197(127)	198(95)	198(85)	210(173)	205(158)								
Rational Shelley Friendly Society Ltd							142(93)	142(79)	134(65)	151(111)	167(152)	170(158)	177(168)																		
Reassure UK Life Assurance Co Ltd							125(66)	109(48)	96(39)	95(64)	102(91)	106(100)	104(97)	118(103)	124(195)	131(185)	163(194)	168(208)	224(192)	207(175)	175(162)	167(207)	148(198)	136(95)	135(109)	130(50)					
Rechabite Friendly Society Ltd	97(72)	100(59)	96(52)	121(97)	136(114)	146(134)	153(131)	157(119)	147(113)	163(158)	180(192)	186(196)	192(201)	190(196)	186(170)																
Red Rose Friendly Society Ltd	112(69)	120(56)	110(46)	134(96)	146(105)	156(120)	168(112)	170(99)	160(88)	179(137)	193(167)	197(176)																			
Refuge Assurance Ltd											50(46)	54(50)	48(51)	47(43)	46(66)	53(211)	52(213)	59(230)	56(224)	46(229)	41(227)	53(237)	42(240)	43(220)	43(219)	33(211)					
Refuge Investments Ltd											96(88)	100(95)	106(94)	112(87)	111(76)	109(76)	113(75)	112(81)	113(73)	121(133)	124(94)	121(78)	136(89)	129(102)	136(88)	148(78)					
Reliance Mutual Insurance Society Ltd	56(52)	56(90)	52(90)	64(58)	78(64)	82(69)	84(67)	117(139)	117(141)	126(133)	132(119)	134(123)	148(147)	145(133)	147(214)	145(191)	150(179)	148(185)	148(166)	146(162)	135(149)	141(133)	142(189)	138(160)	126(139)	119(165)					
RGA Reinsurance UK Ltd	103(84)	108(71)	91(57)	118(114)	125(127)	132(136)	147(133)	147(117)	144(92)	171(143)	181(174)																				
RM Life Assurance Ltd					121(87)	102(76)	98(60)	95(51)	102(100)	98(69)	99(85)	96(87)	103(95)	105(94)	95(78)	95(78)	103(175)	141(121)	188(83)	196(75)	204(70)	222(141)	227(148)	217(145)					
Rothesay Life Ltd	79(47)	81(66)	83(72)																												
Royal and Sun Alliance Life Holdings																							100(70)	97(80)	92(54)	126(51)					
Royal Artillery Widows Insurance Society	110(60)	116(46)	105(35)	129(83)	139(95)	150(107)	159(96)	161(83)	150(72)	168(114)	182(158)	191(166)	198(169)	200(169)																	
Royal Life (Unit Linked Assurance)														122(96)	120(86)	119(86)	122(77)	127(89)	120(116)	137(161)	148(164)	114(75)	115(106)	106(89)	101(61)	116(71)					
Royal Life (Unit Linked Pension Fund)														99(77)	93(67)	94(65)	99(67)	103(69)	104(144)	112(170)	99(186)	81(57)	86(60)	94(156)	89(69)	97(195)					
Royal Liver Assurance Ltd	53(110)	47(102)	36(69)	49(78)	58(146)	63(165)	64(173)	62(178)	55(182)	73(209)	95(226)	110(232)	105(242)	110(245)	101(238)	101(218)	89(214)	102(226)	73(215)	69(217)	56(210)	77(225)	64(226)								
Royal London Mutual Insurance Society Ltd (The)	15(140)	11(144)	10(147)	15(149)	13(147)	14(81)	14(184)	13(199)	10(194)	12(38)	41(38)	46(52)	33(27)	33(32)	37(90)	37(200)	34(203)	31(33)	27(52)	24(40)	24(10)	28(23)	27(21)	27(28)	28(39)	29(29)					
Royal London Pooled Pensions Co Ltd	52(104)	52(99)	47(95)	72(77)	85(70)	98(74)	101(59)	74(42)	92(45)	107(76)	116(102)	120(112)	124(111)	128(106)	123(91)	124(89)	126(73)	135(96)	122(59)	125(45)	130(43)	127(87)	124(85)	122(91)	117(77)	117(72)					
Royal National Pension Fund for Nurses											79(77)	84(92)	73(74)	77(81)	76(65)	75(72)	71(60)	89(103)	68(64)	68(41)	70(31)	92(95)	87(83)	91(100)	97(131)	89(175)					
Royal Scottish Assurance plc	71(32)	66(20)	61(20)	69(42)	75(47)	78(52)	78(39)	77(35)	64(30)	64(41)	71(58)	80(74)	85(87)	80(69)	92(70)	110(82)	111(69)	130(100)	161(148)	184(80)											
Save and Prosper Insurance Ltd	76(38)	73(23)	67(18)	89(48)	91(54)	91(58)	91(42)	89(37)	77(28)	89(52)	97(79)	97(81)	100(77)	89(58)	82(42)	74(39)	70(29)	76(43)	53(16)	51(14)	40(9)	47(31)	38(16)	44(18)	37(16)	37(20)					
Save and Prosper Pensions Ltd	64(35)	64(24)	55(27)	63(41)	66(42)	64(47)	62(38)	63(40)	53(38)	63(48)	69(68)	65(68)	63(68)	60(52)	64(59)	61(50)	58(51)	60(63)	52(45)	54(176)	46(21)	70(63)	58(32)	66(45)	68(45)	60(36)					
Schoolteachers Friendly Society								189(104)	177(89)	200(151)	203(171)	211(178)	194(166)	204(160)	204(134)																
Schroder Pension Management Ltd	42(14)	65(22)	148(116)	87(56)	101(76)																										
SCOR Global Life Reinsurance UK Ltd			114(61)	140(108)	155(126)	153(137)	164(129)	163(118)	148(103)	199(164)	219(198)	228(206)	232(219)	240(211)	215(166)	201(151)															
Scottish Amicable Life Assurance Society															14(247)	16(230)	20(229)	18(236)	24(239)	25(245)	21(240)	23(245)	21(248)	18(230)	20(222)	20(219)					
Scottish Amicable Life plc										84(211)	60(81)	73(77)	96(116)	106(237)																	
Scottish Equitable (Managed Funds) Ltd		49(14)	45(8)	54(28)	63(35)	70(37)	40(159)	53(189)	202(207)	38(32)	32(16)	27(12)	32(17)	30(12)	32(10)	35(12)	41(14)	35(15)	50(23)	62(93)	77(154)	52(22)	78(35)	82(40)	65(21)	92(12)					
Scottish Equitable Life Assurance Society																			29(229)	28(240)	31(238)	32(236)	30(247)	30(228)	30(225)	25(218)					
Scottish Equitable plc	5(33)	7(138)	7(151)	8(11)	7(14)	7(17)	19(14)	19(10)	20(8)	22(14)	23(17)	30(28)	20(15)	25(22)	28(43)	28(47)	30(193)	25(21)													
Scottish Friendly Assurance Society Ltd	78(112)	76(103)	74(103)	83(128)	98(140)	109(151)	107(144)	103(108)	91(66)	111(85)	126(114)	132(124)	134(126)	142(123)	134(106)	139(107)	136(91)	155(128)	138(121)	135(101)	134(95)	159(179)	150(169)								
Scottish Legal Life Assurance Society Ltd					131(136)	129(150)	141(152)	153(152)	190(151)	145(191)	149(216)	153(225)	170(235)	196(235)	243(225)	223(202)	225(196)	235(215)	234(190)	237(182)	209(181)	153(185)	149(201)								
Scottish Life Assurance Co											34(36)	36(42)	34(44)	39(228)	43(243)	44(224)	51(226)	46(239)	45(230)	47(236)	45(235)	58(241)	48(243)	48(221)	47(220)	39(212)					
Scottish Life Investment Assurance Co Ltd																					194(134)	142(85)	169(95)	173(110)	151(74)	172(68)					
Scottish Mutual Assurance Ltd			150(126)	73(146)	52(153)	39(82)	31(186)	22(162)	23(168)	18(18)	20(21)	32(38)	31(35)	32(66)	31(87)	34(192)	35(208)	34(78)	36(217)	37(222)	34(218)	35(81)	34(207)	34(70)	34(30)	38(47)					
Scottish Mutual Pension Funds Investment Ltd																	140(72)	145(97)	131(54)	141(38)	122(36)	126(86)	128(71)	131(75)	120(76)	107(151)					
Scottish Mutual Pensions Ltd						169(135)	127(147)	127(140)	193(147)	153(178)	165(211)	156(215)			131(93)	129(91)	138(85)	142(101)	143(61)	157(88)	190(77)		240(140)	225(130)	225(152)	226(115)					
Scottish Provident Assurance Ltd																	88(46)	81(49)	88(58)	105(189)	106(191)	67(35)	70(36)	72(43)	64(23)	83(27)					
Scottish Provident Institution										21(10)	25(19)	28(23)	21(20)	23(24)	23(41)	21(42)	24(44)	26(34)	21(179)	23(199)	22(123)	29(59)	26(41)	26(34)	27(42)	27(189)					
Scottish Provident Ltd			139(139)	79(156)	59(163)	51(175)	42(190)	25(200)	26(206)	26(206)																					
Scottish Provident Managed Pension Funds Ltd																	165(90)	165(108)	193(99)	229(104)	208(105)	148(90)	141(86)	115(71)	88(60)	59(67)					
Scottish Widows Administration Services Ltd								65(191)	76(200)	41(71)	33(28)	23(19)	28(30)	44(26)	45(27)	47(27)	54(36)	43(30)	49(31)	66(185)	89(185)	102(69)	123(117)	104(42)	145(89)	152(77)					
Scottish Widows Annuities Ltd	34(129)	32(129)	31(131)	42(145)	45(150)	47(66)	43(71)	41(137)	39(43)	57(185)	73(135)																				
Scottish Widows' Fund and Life Assurance Society									197(162)	212(200)	227(222)	9(17)	8(9)	8(7)	9(14)	7(11)	8(17)	7(6)	6(15)	5(12)	5(5)	7(20)	5(14)	8(23)	9(215)	9(216)					
Scottish Widows plc	26(143)	23(147)	25(150)	28(157)	24(164)	13(176)	10(191)	11(202)	11(209)	10(201)	10(35)																				
Scottish Widows Unit Funds Ltd	20(16)	21(115)	28(140)	12(9)	16(11)	20(15)	28(24)	45(33)	54(174)	56(44)	59(53)	59(44)	59(49)	65(45)	66(36)	62(35)	63(40)	57(38)	61(34)	67(151)	67(141)	48(24)	73(42)	71(36)	73(28)	94(26)					
Security Assurance Ltd														241(203)	237(179)	217(159)	214(133)	225(161)	222(105)	228(69)	229(61)	241(152)	243(138)	227(125)	228					
Shepherds Friendly Society Ltd (The)	131(86)	136(73)	127(62)	150(111)	159(123)	170(141)	184(130)	191(116)	184(104)	201(154)	217(193)	223(197)	236(209)	237(199)	232(163)																
Skandia Life Assurance Co Ltd	22(7)	22(6)	43(128)	19(8)	22(9)	25(13)	41(20)	49(46)	198(197)	47(36)	45(27)	43(24)	55(42)	55(37)	60(31)	59(29)	69(38)	62(37)	101(150)	152(204)	233(199)	90(49)	117(80)	121(167)	94(35)	127(35)					

Skandia MultiFUNDS Assurance Ltd	61(26)	91(63)	142(105)	104(70)	105(69)	120(90)	139(85)	160(80)	168(78)																					
SL Liverpool plc							80(45)	71(39)	63(35)	74(49)	87(75)	87(80)	95(82)	97(75)	97(68)	100(66)	101(79)	96(66)	96(51)	123(39)		137(174)	161(223)	145(201)	128(192)	123(181)					
SLFC Assurance (UK) Ltd	39(31)	39(92)	44(114)	43(30)	46(38)	50(49)	53(163)	59(177)	78(190)	62(77)	56(56)	52(45)	47(56)	43(72)	68(232)	64(213)	64(215)	61(223)	63(220)	77(227)	78(231)	64(231)	67(242)	65(225)						
St Andrews Life Assurance plc	44(127)	37(134)	80(137)	33(43)	39(45)	166(129)	186(142)	122(138)	109(130)	129(173)	150(197)	173(200)	188(210)	191(190)	195															
St George Assurance																		160(107)	150(57)	148(35)	145(29)	157(97)	155(76)	150(76)	155(93)	154(63)				
St James Place UK plc	19(5)	19(4)	29(10)	27(10)	32(16)	41(20)	49(21)	54(28)	79(175)	59(39)	61(47)	63(51)	80(62)	87(65)	94(58)	104(61)	115(68)	124(75)	166(86)											
Standard Life Assurance Co 2006 (The)						3(3)	3(2)	2(2)	2(11)	3(5)	3(3)	3(5)	3(8)	2(54)	3(251)	3(232)	3(232)	3(242)	3(240)	3(246)	3(244)	3(246)	3(252)	3(234)	3(233)	3(229)				
Standard Life Assurance Ltd	4(142)	4(145)	3(148)	3(155)	3(151)																									
Standard Life Investment Funds Ltd	16(141)	34(148)	155(154)	11(12)	11(15)	58(35)	85(53)	197(173)	207(183)	99(56)	15(8)	14(10)	22(10)	20(8)	18(5)	22(7)	23(7)	29(12)	30(10)	29(9)	38(161)	33(14)	36(18)	41(24)	36(10)	54(7)				
Standard Life Pension Funds Ltd	128(76)	135(68)	126(54)	149(106)	158(128)	171(147)	185(139)	192(130)	189(118)	208(167)	172(201)	184(205)	183(175)	175(155)	172(127)	163(120)	162(104)	170(123)	165(72)	166(48)	177(46)				230(171)	78(24)				
State Life Insurance Corporation of Pakistan										189(127)	199(169)	203(172)	212(178)	212(168)	208(148)	188(123)	188(107)	200(134)	204(84)	209(66)	206(52)	219(138)	219(129)	203(120)	204(140)	206(103)				
Sterling Life Ltd	122(85)	111(72)	99(59)	122(107)	127(120)	136(138)	146(123)	149(111)	141(98)	165(147)	189(189)	199(191)	214(202)	223(194)	234(165)	213(150)	211(126)	226(159)	201(107)	227(79)	226(67)	239(166)	239(155)	213(147)	217(163)	215(122)				
Strand Friendly Society									152(128)	142(128)	157(148)	159(151)	176(216)	179(208)	180(187)	176(162)	177(141)	194(160)	192(117)	201(90)	202(80)	217(168)	218(149)							
Suffolk Life Annuities Ltd	49(111)	51(114)	49(112)	50(54)	64(58)	79(75)	86(86)	88(141)	90(148)	120(180)	138(154)	149(146)	174(177)	192(201)	196(174)	187(145)	185(116)	202(147)	205(106)	213(81)	203(48)	218(136)	220(124)	209(121)	214(146)	212(107)				
Sun Alliance Linked Life Insurance Ltd														113(102)	109(110)	108(181)	106(206)	105(199)	107(208)	107(213)	104(213)	79(194)	251(204)	233(185)	232(199)	101(66)				
Sun Alliance Pensions Ltd														66(59)	69(55)	68(55)	62(96)	58(55)	58(193)	59(209)	61(209)	65(65)	62(82)	68(62)	69(58)	112(65)				
Sun Life Assurance Co of Canada												50(30)	42(24)	45(16)	34(7)	32(6)	29(3)	36(11)	31(3)	27(2)	28(2)	38(16)	40(10)	50(15)	61(22)	56(2)				
Sun Life Assurance Co of Canada - Irish Business												135(117)	138(113)	141(105)	144(89)	141(85)	141(57)	152(92)	141(39)	130(23)	133(20)	160(89)	159(64)	159(65)	173(91)					
Sun Life Assurance Co of Canada (UK) Ltd	51(59)	59(120)	54(118)	35(27)	36(31)	33(36)	33(56)	33(65)	30(165)	32(34)	36(44)	53(43)	52(47)	49(44)	49(39)	50(40)	49(33)	52(47)	47(35)	48(156)	47(152)	66(51)	68(57)	76(142)	77(53)	81(34)				
Sun Life Pensions Management Ltd					20(12)	22(14)	24(15)	29(20)	34(176)	31(17)	27(12)	22(13)	29(19)	29(15)	29(11)	29(9)	32(10)	30(14)	33(12)	35(24)	35(24)	31(15)	33(15)	37(16)	33(9)	45(10)				
Sun Life Unit Assurance Ltd					21(10)	21(11)	23(10)	24(9)	31(14)	27(11)	26(11)	26(15)	25(13)	28(11)	30(15)	30(16)	33(22)	32(16)	44(20)	57(192)	59(194)	50(37)	72(164)	83(208)	72(29)	93(42)				
Swiss Life (UK) Group plc																				140(164)	138(151)	143(116)	191(128)	183(159)	181(116)	182(85)				
Swiss Life Insurance and Pension Co																						247(201)	134(218)	123(196)	121(206)	108(188)				
Swiss Re Life and Health Ltd				70(62)	67(49)	69(77)	63(62)	60(55)	51(51)	61(50)	77(87)	78(90)	79(89)																	
Swiss Reinsurance Co (UK) Ltd														132(129)	132(202)	127(174)	129(180)	129(109)	125(130)	134(128)	139(111)	145(104)	144(91)	140(85)	149(106)	151(102)				
Teachers Assurance Co Ltd													114(106)	115(98)	112(88)	115(87)	114(89)	125(110)	118(165)	110(120)	120(150)	124(123)	121(193)	118(66)	134(175)	142(149)				
Teachers Provident Society Ltd	74(101)	70(94)	63(87)	86(120)	90(130)	93(152)	93(156)	90(154)	73(150)	90(100)	104(111)	108(118)	147(128)	149(131)	149(108)	148(108)	146(82)	180(186)	163(154)	164(137)	154(125)	171(190)	158(180)							
Threadneedle Pensions Ltd	54(28)	57(19)	51(17)	53(31)	53(32)	62(39)	65(34)	66(31)	67(41)	80(46)	91(74)	93(82)	113(96)	117(93)	116(79)	118(80)	117(62)	106(65)	109(132)	82(158)	83(174)	51(28)	59(27)	63(31)	51(20)	51(16)				
TPFL Ltd							166(108)	176(112)	187(112)	202(161)	201(185)	217(194)	238(213)																	
Transatlantic Life Assurance Co Ltd	114(62)	122(47)	112(36)	136(87)	148(99)	159(110)	170(100)	173(88)	166(75)	185(123)	209(173)	208(175)	220(186)	226(176)	229(152)	208(137)	206(118)	219(145)	194(98)	214(74)	211(69)	221(142)	221(154)	210(151)	203(145)	199(119)				
Transport Friendly Society Ltd	99(79)	98(67)	89(51)	109(82)	116(91)	125(103)	133(91)	136(78)	123(63)	139(105)	147(133)	150(141)	156(145)	158(136)	165(138)	153(115)	157(139)	178(130)	170(101)	170(77)										
TSB Life Ltd														38(14)	40(9)	43(13)	39(9)	37(17)	41(11)	34(5)	44(15)	34(12)	35(12)	19(1)	32(6)	55(25)				
TSB Pensions Ltd														54(34)	58(28)	63(34)	59(26)	64(39)	82(44)	102(52)	221(176)	146(98)	176(96)	151(61)	188(119)	201(92)				
Tunbridge Wells Equitable Friendly Society Ltd	91(103)	105(96)	130(89)	96(126)	100(139)	110(157)	112(153)	106(151)	104(149)	108(92)	123(121)	127(128)	130(148)	136(221)	135(210)	140(188)	144(174)	150(168)	149(158)	151(136)	149(120)	184(131)	185(171)							
Tunstall Assurance Friendly Society Ltd									142(95)	161(120)	178(166)	183(170)	190(189)	189(188)																
UBS Global Asset Management Life Ltd	58(30)	71(111)	151(134)	37(17)	34(20)	34(24)	51(57)	76(180)	203(196)	70(189)	64(65)	70(72)	116(230)																	
UIA (Insurance) Ltd							135(90)	137(82)	130(106)	149(160)	162(160)	161(159)	165(157)	168(154)	160(115)	152(109)	155(103)	163(124)	153(81)	144(89)	136(45)	150(107)	146(99)	147(106)	148(122)	144(130)				
UK Life Assurance Co Ltd																						174(121)	174(118)	167(115)	166(120)	163(135)				
UK Provident Pensions Ltd																						216(129)	164(93)	157(92)	156(96)	153(82)				
United Friendly Insurance plc											53(51)	57(53)	54(52)	46(29)	44(29)	41(28)	37(24)	47(86)	38(63)	36(145)	37(193)	60(229)	51(232)	56(216)	56(217)	44(208)				
United Friendly Life Assurance Ltd											127(107)	131(116)	133(119)	138(117)	143(101)	143(101)	152(94)	159(112)	162(113)	169(102)	196(89)	198(124)	209(127)	191(108)	207(138)					
United Kingdom Civil Service Benefit Society Ltd									111(120)	123(94)	128(117)	133(126)	131(133)	137(141)	137(206)	135(178)	132(172)	138(127)	121(155)	117(132)	115(122)	120(99)	118(100)							
United Kingdom Temperance and General Provident Institution																								31(227)	29(224)	23(220)				
University Life Assurance Society					117(84)	126(100)	132(78)	133(62)	121(52)	135(87)	151(120)	155(132)	162(130)	163(121)	158(97)	126(75)	118(43)	114(62)	124(75)	114(37)	107(26)	135(199)	119(188)	117(107)	119(205)	105(186)				
UNUM Ltd	81(119)	85(118)	129(110)	102(138)	96(152)	96(164)	92(165)	102(165)	93(157)	124(196)	141(221)	146(228)	146(237)	151(236)	161(230)	144(207)	159(207)	143(206)	147(195)	158(194)	152(180)	161(219)	140(214)	125(141)	127(115)	132(132)				
Wesleyan Assurance Society	37(25)	35(17)	32(9)	45(34)	49(39)	54(40)	50(31)	47(25)	40(19)	50(40)	58(63)	62(75)	58(72)	62(82)	75(100)	70(105)	66(191)	79(218)	64(205)	64(207)	60(197)	83(221)	76(227)	70(206)	75(207)	62(202)				
Wessex Life Assurance Co Ltd														239(198)	235(172)	214(154)	209(129)	212(162)	211(104)	211(73)	212(63)	231(157)	231(142)	220(131)	224(151)	222(108)				
Wiltshire Friendly Society Ltd	115(66)	128(55)	117(45)	141(95)	149(103)	160(119)	172(107)	178(95)	170(82)	190(134)	210(180)	212(182)	221(193)	221(180)	213(146)															
Windsor Life Assurance Co Ltd	14(21)	12(95)	12(124)	13(15)	30(19)	29(22)	32(17)	34(16)	33(22)	34(19)	35(24)	34(22)	36(33)	52(55)	51(51)	56(69)	76(181)	70(77)	74(178)	142(186)	156(179)	154(213)	143(219)	152(202)	144(197)	138(173)				
Winterthur Life UK Ltd	27(123)	30(127)	34(135)	36(57)	62(57)	57(50)	56(36)	48(30)	43(24)	51(42)	62(59)	64(69)	60(64)	69(79)																
WLUK Ltd											74(76)	71(76)	81(91)	88(97)	91(207)	98(110)	104(187)	115(189)	114(183)	111(172)	108(158)	115(117)	111(101)	101(87)	105(103)	98(89)				
XL RE Ltd	62(124)	61(124)	60(122)	65(136)	68(85)	65(63)	67(55)	69(70)	59(129)	88(190)	124(217)	122																		
XSMA Ltd							163(110)	167(98)	156(77)	170(141)	188(172)	195(174)	205(176)	207(170)	203(176)															
Yorkshire Insurance Co Ltd							175(106)	180(93)	172(81)	193(132)	213(179)	215(181)	224(188)	225(174)	223(139)	206(138)	201(115)	215(148)	215(92)	220(62)	223(57)	237(153)	235(143)	222(135)	219(154)	217(116)				
Zurich Assurance (2004) plc							110(70)	194(153)	195(155)	210(186)	163(140)	162(140)	200(173)																	
Zurich Assurance Ltd	7(8)	6(121)	6(145)	5(6)	5(5)	6(8)	22(182)	21(183)	19(173)	23(43)	24(45)	24(55)	18(41)	22(249)	22(250)	19(231)	19(230)	13(228)	9(213)	8(31)										

Source: the author.

Where:

LegandGen Pens is included in the SynThesys life but there no data provided.

Barclays Life terminated its operations in 1989 and did not provide t returns in 1990.

Markel Int Ins terminated its operations in 1986 and did not provide returns in 1987.

Old Mutual Life did not provide returns in 1994.

Phoenix Pens Ltd terminated its operations in 2006.

Pru Retire Income terminated its operations in 1999.

Scot Mut Pens terminated its operations in 1989.

SL Liverpool plc did not provide t returns in 1990.

Stand LifePensFd terminated its operations in 1987 and did not provide returns in 1988 and 1987.

Table 35: Value Creation (Capital Gain in Parenthesis) for all the UK Life Insurers over the Period 1985-2010 £(m)

Year (Number of Firm)/Firm Name	Number of year	Full Creation	Semi Value Creation	Value Destroying	Tobin's Q	2010(143)	2009(148)	2008(155)	2007(157)	2006(164)	2005(176)	2004(192)	2003(203)	2002(211)	2001(215)	2000(228)	1999(233)	1998(243)	1997(250)	1996(251)	1995(232)	1994(232)	1993(242)	1992(240)	1991(246)	1990(244)	1989(248)	1988(252)	1987(234)	1986(233)	1985(229)
Abbey Life Assurance Co Ltd	26	69%	31%	0%	1.081	2143(974)	1771(528)	807(-432)	3426(2216)	3526(2238)	3361(1926)	1851(374)	1467(-28)	447(-990)	2768(1252)	5307(3566)	6344(4557)	4669(2871)	3313(1660)	2808(1213)	2608(1093)	2005(566)	2664(1286)	1300(-59)	817(-499)	708(-561)	1671(471)	1178(0.04)	1038(-155)	1280(41)	1088(-146)
Abbey Life Pension and Annuities Ltd	12	0%	50%	50%	0.555															-12(-12)	-12(-13)	-13(-13)	-13(-13)	-46(-47)	-46(-46)	-187(-126)	207(-95)	216(-75)	218(-56)	222(-40)	221(-26)
Aberdeen Asset Management Life and Pensions Ltd	13	23%	8%	69%	0.920	-306(-332)	-350(-387)	-388(-397)	-94(-94)	-146(-146)	-345(-386)	-212(-547)	-308(-1070)	-1004(-1920)	376(-448)	907(323)	309(200)	89(53)													
Aberdeen Asset Management Pooled Pensions Ltd	17	0%	47%	53%	0.724		-69(-69)	-542(-542)	-545(-545)	-568(-568)	-586(-586)	-711(-711)	-775(-775)	-910(-910)	-802(-802)	637(-664)	1062(-195)	864(-373)	634(-501)	905(-816)	2082(-471)	1984(-582)	2630(0)								
ACE Europe Life Ltd	4	25%	25%	50%	0.967	-0.01(-0.02)	0.06(0.05)	-0.43(-0.46)	0.01(0)																						
AEGON Insurance Co (UK) Ltd	13	15%	0%	85%	0.858														-0.08(-0.12)	-0.07(-0.12)	-0.05(-0.12)	-0.07(-0.13)	-0.07(-0.11)	-0.08(-0.1)	-0.09(-0.1)	-0.09(-0.09)	-0.07(-0.07)	-0.04(-0.04)	-0.01(-0.01)	7(3)	5(2)
Aetna Life Insurance Co Ltd	8	38%	63%	0%	0.951																			18(-26)	1(-48)	7(-51)	88(10)	58(-7)	65(-4)	59(2)	5(0.4)
Aetna Pensions Ltd	6	83%	17%	0%	1.051																					5(-1)	10(3)	10(0.2)	13(1)	19(4)	18(2)
Ageas Protect Ltd	3	0%	33%	67%	0.969	-0.49(-1)	-0.2(-0.27)	0.12(0)																							
ALAC (UK) Ltd	13	54%	46%	0%	1.020														66(36)	57(25)	63(25)	43(1)	57(17)	28(-15)	6(-25)	9(-19)	35(8)	23(-2)	20(-1)	22(8)	17(-1)
Alba Life Ltd	21	52%	48%	0%	1.002						564(316)	480(197)	764(215)	974(267)	1608(624)	2165(1032)	5028(2214)	4171(1644)	2937(745)	1890(130)	1671(0.2)	1214(-390)	429(-261)	290(-391)	252(-371)	204(-307)	374(-219)	357(-203)	351(-178)	417(-50)	364(-25)
Albany Life Assurance Co Ltd	14	100%	0%	0%	1.237													1043(771)	948(671)	787(524)	686(428)	510(263)	804(527)	454(189)	328(81)	320(89)	653(430)	446(232)	407(198)	459(270)	235(72)
All Counties Insurance Co Ltd	18	0%	44%	56%	1.767									2(-2)	2(-2)	-2(-2)	-2(-2)	-1(-4)	-1(-4)	2(-4)	1(-4)	1(-3)	-1(-3)	0.1(-4)	0.5(-4)	1(-3)	1(-2)	3(-1)	2(-1)	2(-0.3)	2(-0.3)
Alliance and Leicester Life Assurance Co Ltd	8	63%	38%	0%	1.065									46(-10)	98(-12)	193(68)	157(61)	109(33)	52(8)	34(-2)	11(0)										
Allianz Insurance plc	20	70%	30%	0%	1.068							261(106)	214(54)	137(-14)	259(112)	359(212)	442(274)	319(154)	247(75)	195(18)	173(-3)	116(-53)	161(11)	100(-66)	71(-81)	80(-57)	172(44)	140(19)	113(32)	139(64)	85(11)
Allied Dunbar Assurance plc	20	95%	5%	0%	1.219							11959(6034)	10590(4701)	8035(2288)	12922(7425)	16230(10998)	17328(12269)	12812(7971)	10696(6001)	8872(4332)	8129(3728)	6272(2088)	7531(3691)	4483(927)	3332(85)	2544(-370)	4677(2034)	3067(674)	2814(595)	2912(810)	2050(90)
Allied Dunbar Provident plc	5	0%	100%	0%	0.931																						4(-2)	4(-1)	5(-0.2)	4(-0.3)	4(-0.4)
Ambassador Life Assurance Co Ltd	13	0%	85%	15%	0.909														-3(-5)	-3(-7)	1(-10)	4(-16)	10(-11)	-1(-18)	9(-18)	17(-13)	38(-4)	33(-6)	45(-2)	50(-1)	47(-1)
American Life Insurance Co UK Branch	26	0%	73%	27%	0.902	-1196(-1196)	-1452(-1527)	-1996(-2568)	704(-946)	572(-639)	257(-583)	148(-590)	64(-592)	235(-617)	378(-358)	517(-222)	399(-164)	340(-136)	106(-121)	71(-89)	17(-66)	-74(-74)	-66(-66)	7(-119)	3(-106)	-18(-83)	43(-25)	-5(-33)	-8(-31)	8(-10)	8(-8)
Ancient Order of Foresters Friendly Society Ltd (The)	15	0%	80%	20%	0.912	-3(-14)	-3(-15)	-4(-16)	6(-6)	7(-5)	5(-7)	5(-5)	7(-5)	8(-6)	15(-7)	16(-6)	16(-6)	16(-5)	15(-3)	16(-2)											
Assicurazioni Generali	9	0%	100%	0%	0.914																		180(-27)	107(-55)	62(-60)	35(-49)	27(-24)	9(-11)	4(-10)	3(-4)	5(-2)
Assurant Life Ltd	13	0%	77%	23%	0.928	-1(-3)	1(-3)	3(-0.46)	0.48(-1)	-0.14(-1)	0.04(-1)	0(-1)	0.1(-0.28)	0.24(-0.13)	0.28(-0.09)	0.24(-0.04)	0.19(-0.04)	0.05(-0.01)													
Australian Mutual Provident Society	12	75%	25%	0%	1.051															1829(344)	1839(351)	1660(167)	1894(412)	1542(25)	1448(-39)	1366(-51)	1510(185)	249(18)	239(18)	224(25)	189(-3)
Aviva Annuity UK Ltd	14	64%	36%	0%	1.037	7739(-2437)	6728(-2328)	6314(-2219)	6349(-1149)	6740(-40)	7377(1114)	6046(450)	5794(608)	6108(1306)	5429(969)	6795(1585)	6416(1551)	6762(2219)	5005(801)													
Aviva Insurance Ltd	20	20%	60%	20%	2.562							1(0.9)	0.9(0.9)	1(1)	1.1(1.1)	0.7(-0.2)	0.4(-0.2)	0.5(-0.1)	0.6(-0.1)	0.4(-0.1)	-0.1(-0.3)	-0.1(-0.3)	-0.1(-0.4)	-0.1(-0.4)	0(-0.4)	0.3(-0.4)	0.4(-0.4)	0.6(-0.3)	0.7(-0.3)	0.8(-0.2)	0.9(-0.1)
Aviva Insurance UK Ltd	12	8%	92%	0%	0.879														37(-14)	37(-13)	10(-12)	9(-14)	17(-6)	13(-10)	11(-12)	10(-11)	14(-5)	15(-3)	16(0.03)	15(-0.2)	
Aviva International Insurance Ltd	2	0%	100%	0%	0.936																									1490(-277)	1481(-171)
Aviva Investors Pensions Ltd	26	88%	4%	8%	1.194	51(-5)	-45(-45)	-77(-215)	718(471)	1136(820)	1333(1024)	1898(813)	1652(580)	840(177)	1519(901)	1668(1364)	3620(2456)	2524(1521)	2001(1083)	1555(733)	1407(660)	1041(355)	1230(621)	738(229)	499(50)	429(21)	695(352)	456(133)	374(53)	457(143)	352(15)
Aviva Life and Pensions UK Ltd	14	79%	21%	0%	1.082	27185(-270)	26525(-2567)	15037(-5069)	25055(4598)	26297(5802)	24469(4454)	11550(1623)	11727(1042)	12694(1492)	16399(4912)	17219(5759)	18074(6857)	16328(5548)	12910(2494)													
Avon Insurance plc	7	57%	43%	0%	0.978																				65(-21)	68(-11)	72(-3)	73(4)	70(5)	61(0.5)	56(0.5)
AXA Annuity Co Ltd	1	0%	100%	0%	1.000				13(-0.2)																						
AXA Equity and Law Life Assurance Society plc	16	56%	44%	0%	1.014											3644(1891)	3085(1430)	2261(909)	4238(717)	3246(-70)	2729(-376)	2030(-811)	2155(-507)	1086(-1322)	257(-1567)	175(-1473)	3483(1400)	2567(644)	2323(443)	2336(564)	1630(32)
AXA Wealth Ltd	26	73%	12%	15%	0.986	-100(-122)	-122(-122)	-123(-123)	-122(-122)	2209(650)	1781(390)	1215(23)	878(-211)	305(-543)	984(105)	889(512)	1096(733)	826(473)	760(413)	532(250)	446(187)	293(69)	364(169)	200(38)	119(-1)	85(2)	121(66)	65(28)	56(22)	70(18)	55(1)
BandCE Insurance Ltd	16	13%	88%	0%	0.941	28(-14)	27(-11)	10(-21)	16(-10)	20(-3)	23(0.3)	18(-1)	12(-1)	9(-0.04)	9(-1)	2(-5)	2(-0.1)	1.7(0.2)	0.6(-0.3)	0.7(-0.03)	0.8(0)										
BA (GI) Ltd	21	38%	62%	0%	0.968						2432(556)	2573(612)	2992(717)	3264(926)	3710(1417)	3722(1342)	3078(703)	2698(321)	2101(-332)	1868(-578)	1321(-1075)	1186(-1099)	1072(-1018)	875(-938)	796(-804)	781(-606)	799(-447)	765(-343)	764(-249)	770(-169)	751(-106)
Baillie Gifford Life Ltd	13	54%	31%	15%	1.037	1922(1403)	1283(865)	-313(-769)	1093(640)	1629(1088)	1548(1079)	592(-13)	47(-294)	-462(-730)	89(-135)	99(-101)	527(167)	136(22)													
Barclays Life Assurance Co Ltd	24	71%	29%	0%	1.062	2137(878)	1977(616)	1498(162)	2680(1360)	2846(1416)	2501(1006)	1825(249)	1509(-182)	109(-106)	213(-18)	308(74)	325(110)	204(42)	151(15)	119(-0.3)	87(-4)	72(-6)	65(3)	34(2)	7(1)			6(3)	2(1)	2(2)	63(-4)
BLAC Ltd	18	83%	17%	0%	1.159									1608(443)	2666(1489)	3603(2447)	4019(2891)	3093(2003)	2396(1346)	1789(806)	1541(622)	1035(163)	1343(598)	608(-51)	313(-245)	216(-256)	745(336)	536(176)	472(140)	456(175)	294(50)
Black Sea and Baltic General Insurance Co Ltd	12	0%	100%	0%	0.840															2(-0.4)	2(-1)	2(-1)	2(-1)	2(-1)	2(-1)	1(-1)	2(-1)	2(-0.4)	2(-0.3)	2(-0.2)	
BlackRock Asset Management Pensions Ltd	16	63%	13%	25%	1.004	7186(2419)	3415(-1882)	-1888(-7588)	14947(8202)	13240(6893)	11561(4231)	133(-6356)	-4720(-10644)	-11937(-17248)	-2304(-7083)	5536(1038)	5823(3760)	1813(991)	574(343)	195(106)	96(36)										
BlackRock Pensions Ltd	22	86%	9%	5%	1.133	731(652)	455(415)	99(69)	749(722)	606(566)	710(634)	574(221)	308(-36)	-206(-478)	146(150)	824(610)	961(758)	614(411)	639(453)	257(128)	197(114)	59(11)	36(15)	-16(9)	3(-1)	2(0.1)	1(0.03)				
Bradford Insurance Co Ltd	20	0%	70%	30%	0.738							-0.3(-1)	-0.3(-1)	-0.3(-1)	-0.2(-1)	-0.1(-1)	-0.02(-1)	0.1(-1)	0.1(-1)	0.2(-1)	0.3(-1)	0.2(-1)	1(-1)	0.5(-1)	0.4(-1)	1(-1)	1(-0.4)	1(-0.3)	1(-0.1)	2(-0.1)	2(-0.2)
Britannia Life Association of Scotland Ltd	9	0%	100%	0%	0.838																		168(-314)	132(-295)	199(-274)	229(-209)	254(-156)	262(-118)	267(-84)	266(-56)	245(-34)
Britannia Life Ltd (pre1994)	9	100%	0%	0%	1.107																		343(207)	168(68)	118(30)	83(9)	114(51)	85(28)	67(22)	56(19)	32(3)
Britannia Life Managed Pension Funds Ltd	9	22%	44%	33%	0.861																		0.5(0.5)	-1(-1)	-12(-12)	-11(-16)	7(-11)	20(-17)	19(-22)	35(3)	23(-0.5)
Britannic Unit Linked Assurance Ltd	21	76%	10%	14%	1.109						45(-155)	-255(-352)	-225(-567)	-398(-1077)	283(-620)	1014(6)	812(221)	235(148)	204(127)	142(73)	126(66)	85(31)	95(55)	51(22)	27(5)	21(2)	42(22)	32(12)	31(7)	22(10)	7(2)
British and European Reinsurance Co Ltd	15	20%	73%	7%	0.949												3(-3)	29(16)	20(8)	8(-16)	13(-12)	15(-10)	25(-5)	23(-9)	20(-12)	16(-9)	24(-0.5)	27(-3)	29(-0.1)	30(1)	26(-2)
British Airways Benefit Fund	6	100%	0%	0%	1.199										1(1)	2(1)	2(1)	2(1)	1(1)	1(0.1)											
British Equitable Assurance Co Ltd	17	41%	59%	0%	1.030										0.02(0.01)	0.3(-0.2)	0.3(-0.2)	0.3(-0.2)	0.4(-0.1)	0.4(-0.1)	0.5(-0.1)	1(-0.04)	1(0.1)	1(0.2)	1(0.2)	1(0.02)	1(0.3)	1(0.3)	1(-0.1)	1(-0.1)	1(-0.01)
British Friendly Society Ltd	15	27%	60%	13%	1.653	31(-14)	33(-14)	38(-17)	46(-2)	46(-1)	44(-2)	42(-6)	40(-7)	2(-10)	2(-4)	3(1)	4(4)	4(4)	2(1)	2(-1)											
British Life Office Ltd	19	89%	11%	0%	1.178								140(39)	92(5)	155(77)	229(152)	256(181)	134(61)	110(41)	83(20)	82(24)	58(8)	80(38)	39(7)	17(-4)	12(-2)	13(5)	6(3)	6(3)	5(2)	3(1)
British National Life Assurance Co Ltd	9	78%	22%	0%	1.033																		123(64)	39(5)	12(-14)	6(-16)	31(12)	23(4)	26(6)	31(12)	13(3)
BUPA Health Assurance Ltd	17	0%	59%	41%	0.916	-3(-12)	-2(-11)	2(-10)	1(-8)	-2(-11)	6(-4)	5(-3)	2(-3)	-6(-10)	1(-2)	1(-1)	-1(-4)	6(-1)	6(-1)	0.2(-1)	1(-0.1)	1(-0.04)									
Caledonian Insurance Co Ltd	13	15%	85%	0%	0.894												194(75)	185(47)	119(-8)	97(-49)	91(-54)	69(-67)	96(-28)	57(-80)	53(-63)	53(-53)	70(-36)	63(-24)	62(-21)		
Canada Life Assurance Co	14	100%	0%	0%	1.436													1047(840)	780(603)	758(615)	671(547)	612(551)	571(515)	443(395)	340(295)	318(274)	348(272)	244(200)	213(166)	164(112)	92(35)
Canada Life Irish Operations Ltd	11	82%	18%	0%	1.082																325(135)	233(45)	300(120)	186(7)	136(-31)	101(-26)	189(83)	129(35)	121(35)	122(47)	77(13)
Canada Life Ltd	26	62%	38%	0%	1.043	2556(-2369)	2156(-2624)	1745(-2854)	3732(-677)	4369(103)	3401(348)	2213(-269)	1879(-496)	1463(-785)	2227(140)	3027(1029)	3160(1195)	1115(627)	926(420)	658(160)	416(149)	315(59)	321(86)	198(-20)	140(-55)	156(-16)	269(129)	188(70)	133(38)	126(41)	81(4)
Canterbury Life Assurance Co Ltd	16	31%	63%	6%	0.982											21(10)	23(13)	13(5)	9(1)	4(-2)	4(-3)	1(-8)	7(-2)	7(-10)	8(-11)	10(-7)	12(-0.1)	5(-2)	5(-1)	6(1)	4(-1)
CCL Assurance Ltd	7	29%	43%	29%	0.894																				-29(-89)	-4(-65)	50(-17)	24(-28)	22(-25)	50(9)	32(3)
Century Life Assurance	9	67%	33%	0%	1.077								7(3)	23(-1)	53(9)	106(50)	95(40)	76(26)	50(20)	13(-0.2)	10(0)										
Century Life plc	21	62%	38%	0%	1.054						1145(212)	1014(67)	944(-42)	799(-186)	1148(119)	1330(229)	1049(443)	1049(420)	1041(368)	951(187)	956(135)	808(24)	886(106)	868(52)	544(-35)	99(-20)	52(-0.4)	64(-5)	74(-23)	89(3)	50(-4)
CGNU Life Assurance Ltd	24	25%	75%	0%	0.952			3658(-77)	4812(1286)	3686(69)	3848(-261)	3271(-453)	3043(-761)	3591(-168)	4596(1210)	4966(1849)	4069(924)	3388(378)	2559(-175)	1908(-508)	1470(-683)	986(-755)	870(-712)	507(-935)	401(-801)	431(-605)	502(-445)	539(-335)	549(-237)	544(-158)	509(-98)
Cirencester Friendly Society Ltd	15	73%	27%	0%	1.130	10(-2)	8(-3)	9(-2)	11(2)	12(2)	11(2)	10(2)	9(1)	2(1)	3(2)	7(5)	9(7)	8(5)	3(-0.1)	3(1)											
City of London Insurance Co Ltd	20	0%	30%	70%	0.605							-0.3(-1)	-0.3(-1)	-0.2(-1)	-0.2(-1)	-0.2(-1)	-0.1(-0.5)	-0.2(-0.5)	-0.1(-0.4)	-0.1(-0.3)	-0.1(-0.3)	-0.1(-0.2)	-0.1(-0.2)	-0.05(-0.2)	-0.03(-0.2)	0.3(-0.2)	0.3(-0.2)	0.3(-0.1)	0.3(-0.1)	0.4(-0.1)	0.4(-0.04)
City of Westminster Assurance Co Ltd	21	38%	62%	0%	0.955						473(68)	381(-32)	353(-74)	282(-150)	454(18)	600(153)	693(192)	617(125)	535(50)	44(-34)	49(-35)	48(-41)	51(-26)	50(-41)	54(-33)	60(-23)	85(7)	80(5)	70(-4)	76(-3)	74(-6)
City of Westminster Assurance Society Ltd	9	67%	33%	0%	0.986																		18(0.2)	15(-4)	15(-4)	14(-5)	22(4)	21(2)	23(2)	23(2)	17(0.1)
Civil Servants Annuities Assurance Society	4	100%	0%	0%	1.150											8(3)	9(3)	8(3)	6(1)												
Clerical Medical and General Life Assurance Society	11	100%	0%	0%	1.154																		3322(1321)	2999(1169)	3086(1432)	2314(860)	1934(671)	1759(670)	1994(1021)	1731(868)	1317(528)	1334(643)	992(63)
Clerical Medical Investment Group Ltd	15	80%	20%	0%	1.049	3534(473)	3178(-230)	3092(-9)	4174(519)	5730(776)	7730(1292)	8038(1075)	8067(972)	6990(119)	8749(2205)	8048(2417)	6817(1728)	5945(1797)	4327(606)	3484(0)												
Clerical Medical Managed Fund Ltd	26	88%	12%	0%	1.166	1364(669)	985(163)	1832(-1066)	4407(1643)	4611(1876)	3737(1781)	2459(652)	1936(333)	1105(-221)	1964(1061)	2533(1909)	2615(2071)	1704(1192)	1357(896)	1076(626)	1019(623)	713(378)	925(619)	417(164)	237(25)	128(-37)	377(231)	198(62)	188(26)	258(109)	161(12)
Colonial Mutual Life (Unit Assurances) Ltd	12	67%	33%	0%	1.011															53(18)	45(11)	29(-3)	42(12)	14(-13)	9(-15)	11(-10)	30(11)	20(1)	18(1)	15(3)	10(0.03)
Colonial Mutual Life Assurance Society Ltd	12	92%	8%	0%	1.334															1204(645)	1354(802)	973(435)	1067(563)	925(404)	924(399)	817(239)	1732(1211)	1423(890)	766(91)	639(10)	552(-19)
Combined Insurance Co of America (UK Branch)	26	62%	23%	15%	1.012	1(1)	2(1)	2(2)	1(1)	2(1)	4(4)	2(2)	14(7)	8(1)	7(0.4)	-7(-13)	-5(-12)	4(-2)	1(-5)	-7(-7)	-4(-5)	1(-9)	20(8)	16(-3)	12(-12)	30(-6)	28(4)	20(4)	24(9)	25(11)	25(13)
Commercial Union Assurance (Unit Trusts) Ltd	2	50%	50%	0%	0.992																									11(-1)	14(0.3)
Commercial Union Life Assurance Co Ltd	24	58%	42%	0%	1.031			4942(524)	6069(1844)	5239(794)	5782(690)	6047(555)	5971(272)	6686(1021)	7598(2366)	7143(2771)	5467(1867)	4483(1307)	3754(715)	2941(78)	2659(26)	2361(-27)	2179(-57)	1765(-344)	1236(-606)	1259(-471)	1324(-341)	1363(-156)	1439(-0.1)	0.2(-0.1)	0.3(-0.1)
Communication Workers Friendly Society Ltd	23	39%	57%	4%	0.964	-2(-49)	0.1(-45)	6(-40)	30(-17)	37(-7)	40(-1)	35(-3)	32(-4)	25(-10)	26(-8)	47(15)	45(15)	37(9)	35(8)	28(3)	26(3)	18(-3)	14(-3)	12(-3)	13(-1)	15(1)	14(2)	13(1)				
Compass Friendly Society Ltd	15	0%	47%	53%	0.763	0.1(-0.04)	0.04(-0.1)	0(-0.1)	0.1(0)	0(-0.1)	0(-0.1)	0(-0.1)	0(-0.1)	0(-0.1)	0(-0.1)	0(-0.1)	0(-0.1)	0(-0.1)	0(0)	0(0)											
Confederation Life Insurance Co	9	0%	0%	100%	0.866																		-190(-190)	-843(-906)	-668(-718)	-430(-469)	-223(-258)	-147(-168)	-89(-104)	-51(-62)	-30(-38)
Confederation Life Insurance Co (UK) Ltd	15	100%	0%	0%	1.207												647(282)	858(459)	508(233)	387(133)	376(127)	312(62)	428(193)	196(91)	152(49)	139(31)	267(160)	169(83)	146(69)	109(66)	61(15)
Consolidated Life Assurance Co Ltd	12	0%	92%	8%	0.924															-7(-68)	19(-71)	4(-80)	25(-44)	34(-44)	23(-41)	25(-22)	19(-11)	8(-5)	2(-2)	2(-2)	2(-0.5)
Co-operative Insurance Society Ltd	26	62%	38%	0%	1.067	4631(996)	3564(-230)	4307(611)	5456(1347)	7558(2064)	8852(3128)	8850(2148)	8657(1853)	8366(1651)	10145(3498)	11681(5218)	10189(4082)	8729(3009)	7087(1628)	5909(695)	5421(450)	4648(7)	3671(-656)	3198(-669)	2765(-644)	2556(-498)	2446(-419)	2266(-361)	2153(-262)	2113(-128)	2029(-18)
Countrywide Assured plc	23	39%	35%	26%	0.962	207(-32)	124(-129)	-37(-310)	532(49)	381(67)	151(-5)	92(-72)	70(-96)	15(-152)	128(-23)	202(62)	192(80)	133(34)	111(20)	55(3)	90.003)	-3(-7)	-2(-2)	-5(-9)	-5(-9)	-6(-6)	17(0.1)	0.1(-0.002)				
Criterion Insurance Co Ltd	5	0%	100%	0%	1.860																						1(-0.1)	0.3(-0.1)	0.4(-0.1)	0.2(-0.1)	0.2(-0.1)
Crown Life Assurance Co Ltd	10	100%	0%	0%	1.155																		76(57)	110(90)	62(30)	44(5)	45(4)	186(130)	140(60)	138(26)	162(67)	94(17)
Crown Life Insurance Co	15	47%	53%	0%	1.982												23(1)	24(1)	20(-5)	18(-10)	20(-9)	21(-10)	26(-6)	31(-2)	28(-5)	30(-2)	34(2)	38(6)	41(9)	46(9)	48(10)
Crown Life Pensions Ltd	10	60%	40%	0%	1.018																	94(19)	162(76)	72(-21)	146(-84)	136(-70)	289(109)	167(17)	113(-4)	114(18)	77(4)
Cuna Mutual Insurance Society	21	0%	76%	24%	0.805						0.03(-2)	0.03(-2)	0.02(-2)	-0.04(-2)	-0.2(-2)	0.1(-2)	-0.2(-2)	-0.2(-2)	-0.4(-2)	0.3(-1)	0.4(-1)	0.4(-1)	0.4(-1)	0.5(-1)	0.5(-1)	1(-0.4)	1(-0.2)	0.3(-0.2)	0.3(-0.1)	0.2(-0.1)	0.2(-0.04)
Customs Annuity and Benevolent Fund Inc	19	79%	21%	0%	1.121								8(3)	9(3)	12(5)	12(5)	12(5)	11(4)	10(2)	10(1)	10(1)	10(-0.2)	12(2)	11(1)	11(-0.3)	10(-1)	12(3)	12(1)	12(2)	11(0.4)	10(-0.4)
Dentists and General Mutual Benefit Society Ltd	15	27%	67%	7%	0.948	6(-4)	4(-5)	3(-6)	7(-2)	7(-1)	8(-1)	6(-2)	5(-3)	1(-3)	1(-1)	4(1)	0.4(-2)	4(2)	2(1)	2(0.1)											
Dentists Provident Society Ltd	15	100%	0%	0%	1.276	70(37)	60(29)	46(15)	83(52)	77(46)	70(38)	53(22)	43(13)	9(1)	30(21)	29(18)	35(21)	34(21)	27(13)	17(4)											

Direct Line Life Insurance Co Ltd	16	0%	56%	44%	0.923	-6(-18)	-3(-15)	-0.5(-13)	1(-11)	2(-9)	5(-6)	6(-4)	-0.2(-9)	4(-2)	2(-2)	-1(-4)	1(-1)	0.2(-1)	-0.2(-1)	-0.2(-1)	2(-0.5)										
Domestic and General Life Assurance Co Ltd	14	93%	7%	0%	1.248				2(1)	3(1)	3(1)	3(1)	2(1)	3(1)	4(2)	4(2)	3(2)	2(1)	2(0.2)	1(0.01)	1(-0.02)	1(0.01)									
Eagle Star Insurance Co Ltd	26	0%	23%	77%	0.292	-2(-3)	-2(-3)	-2(-3)	-2(-3)	-2(-2)	-2(-2)	-2(-2)	-251(-251)	-254(-255)	-259(-259)	-262(-262)	-263(-263)	-361(-361)	-373(-373)	-432(-432)	-532(-532)	-533(-534)	-531(-531)	-588(-588)	-665(-665)	3084(-1672)	3236(-1103)	2823(-899)	2977(-656)	2779(-416)	2494(-276)
Ecclesiastical Insurance Office plc	18	33%	67%	0%	1.016								105(43)	109(49)	103(40)	92(27)	90(19)	79(6)	71(-3)	71(-5)	66(-9)	63(-9)	49(-22)	46(-21)	44(-17)	50(-9)	48(-8)	46(-9)	42(-9)	37(-6)	
Ecclesiastical Life Ltd	26	4%	96%	0%	0.840	16(16)	100(-41)	86(-56)	113(-25)	120(-20)	113(-21)	114(-23)	98(-45)	1(-52)	15(-42)	23(-39)	29(-40)	33(-40)	30(-44)	32(-45)	38(-43)	41(-45)	49(-35)	41(-41)	31(-48)	20(-47)	28(-32)	27(-14)	24(-3)	19(-3)	16(-2)
Edinburgh Assurance Co Ltd	12	0%	33%	67%	0.714															-33(-60)	-47(-69)	-68(-86)	-48(-71)	-76(-108)	-77(-162)	-65(-184)	14(-130)	-7(-144)	39(-150)	111(-58)	138(-51)
Equitable Life Assurance Society (The)	26	77%	12%	12%	1.084	-35(-35)	-310(-310)	-19(-19)	227(227)	470(470)	4593(2554)	4752(2459)	5221(2401)	7423(3449)	-11575(4716)	20769(9094)	17998(6666)	16343(5804)	13101(3555)	10012(1436)	8600(924)	6890(73)	7281(1348)	4666(-433)	3991(-266)	3192(-295)	3689(779)	2851(429)	2445(349)	2070(278)	1613(122)
Equity and Law (Managed Funds) Ltd	7	100%	0%	0%	1.125																				340(85)	254(44)	434(246)	303(113)	380(72)	563(167)	399(24)	
Esano London Friendly Society	3	33%	67%	0%	0.982								1(0.1)	1(-0.1)	0.5(-0.3)																
Eurolife Assurance Co Ltd	20	50%	35%	15%	1.096							29(29)	34(34)	95(95)	125(125)	374(245)	307(173)	235(121)	169(64)	99(4)	21(3)	-3(-10)	-1(-10)	-1(-10)	4(-10)	9(-7)	9(-4)	5(-4)	7(-3)	6(-2)	6(-2)	
Exeter Friendly Society Ltd	3	100%	0%	0%	1.009	3(0.4)	3(0.1)	3(0.4)																							
FandC Managed Pension Funds Ltd	26	77%	19%	4%	1.134	20(20)	6(-20)	-51(-160)	258(139)	316(169)	243(118)	110(-16)	84(-87)	34(-263)	514(164)	978(602)	1177(848)	751(532)	581(379)	427(234)	363(187)	234(71)	293(150)	138(38)	48(1)	31(-6)	70(35)	40(12)	28(6)	26(11)	13(1)
Family Assurance Friendly Society Ltd	23	74%	26%	0%	1.087	347(113)	347(83)	230(-49)	491(201)	549(248)	569(232)	499(120)	628(105)	587(64)	747(273)	1009(523)	1174(642)	931(397)	774(224)	621(93)	557(54)	403(-54)	401(69)	241(-76)	155(-107)	127(-99)	221(27)	165(-10)			
Fidelity Life Assurance Ltd	20	100%	0%	0%	1.767								2(2)	2(2)	3(3)	4(3)	4(4)	4(4)	4(3)	3(2)	4(2)	5(2)	4(2)	3(2)	3(1)	3(1)	4(2)	3(1)	3(1)	3(1)	3(0.3)
FIL Life Insurance Ltd	13	77%	8%	15%	1.096	286(252)	81(52)	229(207)	638(506)	509(427)	524(441)	137(65)	28(-31)	-171(-214)	-11(-37)	25(12)	28(22)	1(1)													
Financial Assurance Co Ltd	7	0%	14%	86%	0.771	-170(-251)	-129(-224)	-93(-187)	-137(-231)	-146(-239)	-52(-137)	87(-1)																			
First National Assurance Ltd	14	0%	7%	93%	0.820															-0.3(-0.3)	-0.3(-0.3)	-0.3(-0.3)	-0.2(-0.2)	-0.2(-0.2)	-0.2(-0.2)	-0.2(-0.2)	-0.1(-0.1)	-0.1(-0.1)	-0.04(-0.1)	-0.02(-0.03)	-0.002(-0.01)	0.01(0)
Fleming Life Ltd	14	25%	50%	25%	1.911											153(27)	157(40)	98(29)	52(18)	15(-1)	0.1(-0.2)	0.04(0)	-0.1(-0.1)	-0.1(-0.1)	-0.1(-0.1)	0.1(-0.1)	0.2(-0.05)	0.1(-0.03)	0.1(-0.01)	0.1(-0.01)	0.04(-0.001)	
Forester Life Ltd	16	88%	13%	0%	1.111	238(31)	199(15)	151(-14)	188(41)	181(51)	160(50)	135(29)	144(35)	148(35)	165(50)	187(73)	182(69)	171(58)	137(24)	104(-8)	132(23)										
Friends Life Assurance Society Ltd	26	38%	62%	0%	1.982	1772(-418)	2011(-352)	3766(-166)	4706(488)	4896(331)	6275(1395)	6214(1110)	6286(919)	6799(1226)	7741(2089)	7699(2098)	7226(1744)	6411(1020)	4892(-462)	4233(-1026)	4294(-1019)	4086(-1107)	4076(-938)	3388(-1529)	2859(-1620)	2228(-1539)	2238(-1142)	2259(-868)	2273(-617)	2149(-416)	2052(-258)
Friends Life Co Ltd	14	7%	64%	29%	1.744	9661(-3650)	9044(-5744)	6866(-8131)	13621(-1229)	2259(-1489)	3122(-1218)	3249(-1255)	3449(-1141)	3974(-718)	4532(212)	-17(-39)	-16(-36)	-1(-11)	-10(-17)												
Friends Provident (London and Manchester) Assurance Ltd	15	93%	7%	0%	1.178												1184(766)	1029(587)	912(443)	918(373)	924(366)	850(291)	892(323)	712(140)	665(102)	625(88)	762(207)	647(77)	606(33)	630(76)	510(-22)
Friends Provident Life and Pensions Ltd	10	0%	100%	0%	0.917	1880(-2409)	2103(-2882)	4157(-2999)	6355(-1496)	7644(-985)	9340(-133)	9265(-954)	9551(-1409)	9587(-1594)	11097(-491)																
Friends Provident Life Assurance Ltd	26	35%	65%	0%	0.955	718(-516)	739(-578)	103(-709)	683(-76)	1005(158)	868(43)	520(-219)	341(-327)	171(-473)	926(-88)	1034(295)	1183(447)	814(68)	558(-248)	337(-460)	360(-444)	296(-571)	581(-369)	309(-583)	489(-332)	327(-395)	795(161)	617(47)	678(369)	415(123)	221(-7)
Friends Provident Life Office	16	25%	75%	0%	0.972											10636(2965)	7471(1160)	7676(2762)	4869(236)	3816(-630)	3849(-373)	3614(-448)	3244(-629)	2521(-1232)	2301(-1198)	2113(-1108)	2828(-705)	2575(-731)	1458(-522)	1410(-309)	1229(-202)
Friends Provident Linked Life Assurance Ltd	14	71%	21%	7%	1.105													584(450)	438(319)	283(181)	199(111)	103(27)	154(96)	45(-0.2)	4(-35)	-7(-43)	82(46)	36(4)	29(-2)	37(22)	17(5)	
Friends Provident Managed Pension Funds Ltd	14	100%	0%	0%	1.226													1016(709)	765(532)	808(464)	657(344)	467(188)	562(336)	320(123)	200(24)	202(3)	398(229)	270(115)	255(84)	312(120)	210(23)	
Friends Provident Pensions Ltd	26	42%	54%	4%	0.999	1792(-1676)	1000(-2343)	-516(-3654)	3982(1068)	3902(1033)	3088(590)	1709(-459)	997(-929)	148(-1525)	1039(-382)	1688(513)	1959(905)	1001(585)	800(368)	552(177)	486(137)	318(0.4)	458(178)	205(-40)	102(-106)	66(-121)	128(-33)	106(-24)	104(-9)	93(-4)	74(-7)
Friends Provident Reinsurance Services Ltd	6	100%	0%	0%	13.291		14(14)	163(157)	168(164)	203(198)	343(329)	460(441)																			
GE Frankona Reassurance Ltd	15	27%	73%	0%	0.986						146(-28)	88(-43)	61(-48)	77(-25)	68(-29)	87(-12)	59(-19)	89(20)	72(10)	71(7)	103(13)	68(-15)	1(-0.2)	0.5(-0.1)	0.3(0)						
GE Keynes Holdings Ltd	19	37%	53%	11%	1.007								424(424)	131(131)	196(196)	298(220)	415(205)	566(173)	439(46)	114(-56)	-9(-89)	-35(-92)	24(-60)	46(-63)	18(-63)	15(-43)	16(-29)	13(-19)	10(-13)	10(-8)	10(-5)
General Accident Pensions Management	12	83%	0%	17%	1.162															-0.01(-0.01)	-0.01(-0.01)	120(48)	162(78)	111(30)	90(14)	76(7)	150(70)	135(40)	130(36)	170(39)	136(9)	
General Reinsurance Life UK Ltd	13	77%	23%	0%	1.026			6(-6)	6(-5)	13(0.3)	19(1)	18(1)	30(6)	28(5)	28(7)	22(5)	23(9)	16(3)	13(1)	3(0)											
General Reinsurance UK Ltd	2	50%	50%	0%	1.028															4(1)	3(-0.3)										
Gisborne Life Assurance Co Ltd	15	60%	40%	0%	1.046												788(418)	659(291)	537(171)	444(82)	368(23)	315(-13)	324(22)	195(-78)	172(-65)	112(-85)	148(-16)	145(1)	138(-4)	164(21)	161(14)
GL and P plc	13	85%	15%	0%	1.090														1031(721)	835(541)	544(266)	455(219)	370(179)	92(-69)	91(-32)	102(9)	89(29)	41(4)	58(36)	24(10)	11(1)	
Global General and Reinsurance Co Ltd	20	0%	0%	100%	0.360							-0.3(-0.3)	-1(-1)	-1(-1)	-2(-3)	-3(-3)	-3(-3)	-3(-3)	-3(-3)	-3(-3)	-4(-4)	-5(-5)	-7(-9)	-7(-9)	-7(-9)	-7(-9)	-4(-16)	-1(-17)	-2(-17)	-1(-17)	-1(-17)	
Gresham Life Assurance Society Ltd	7	29%	71%	0%	0.977																				166(-59)	182(-33)	200(-8)	211(8)	226(14)	203(-2)	189(-3)	
Gresham Unit Assurance Ltd	7	86%	14%	0%	1.116																				25(7)	14(-3)	61(43)	44(20)	40(17)	53(29)	29(8)	
Growth and Secured Life Assurance Society Ltd	15	27%	53%	20%	0.840															-0.2(-1)	-0.1(-1)	-0.1(-1)	0.1(-1)	0.2(-1)	1(-1)	2(-0.4)	3(-1)	3(-1)	3(0.04)	3(0.2)	3(0.01)	3(-0.1)	
Guardian Assurance plc	26	27%	73%	0%	0.953	606(-1305)	580(-1283)	900(-944)	1403(-582)	1788(-385)	2282(-75)	2359(-163)	3395(-204)	3598(-247)	4187(287)	4826(870)	4821(816)	4859(973)	4012(162)	3415(-333)	3339(-317)	2969(-530)	3306(7)	2416(-817)	2314(-719)	2188(-639)	2688(-118)	2496(-197)	2277(-315)	2089(-530)	2649(207)
Guardian Eastern Insurance Co Ltd	15	0%	20%	80%	0.588												-1(-1)	-0.5(-1)	-0.5(-1)	-0.5(-1)	-1(-1)	-0.5(-1)	-0.4(-1)	-0.5(-1)	-0.5(-1)	-0.4(-0.4)	-0.3(-0.3)	-0.4(-0.4)	2(-0.4)	2(-0.4)	2(-0.4)	
Guardian Linked Life Assurance Ltd	26	81%	19%	0%	1.153	256(155)	244(112)	179(27)	447(287)	470(285)	480(260)	383(130)	365(88)	280(-18)	528(229)	812(512)	944(646)	760(469)	618(315)	510(202)	466(152)	340(23)	475(173)	242(-43)	139(-127)	142(-130)	510(208)	348(22)	257(-46)	331(83)	183(19)
Guardian Pensions Management Ltd	26	69%	12%	19%	1.111	-23(-25)	-24(-25)	-30(-30)	-15(-15)	-8(-8)	1(-0.4)	4(4)	107(70)	92(35)	216(154)	339(270)	454(369)	355(266)	282(185)	230(139)	302(151)	237(80)	335(175)	219(31)	207(-61)	225(-55)	576(316)	368(100)	284(19)	348(102)	234(39)
Halifax Life Ltd	16	56%	19%	25%	1.005	-267(-275)	-620(-666)	-1256(-1287)	327(317)	292(292)	2464(591)	932(-647)	247(-1095)	-581(-1729)	472(-498)	622(334)	627(436)	343(187)	180(71)	70(11)	25(5)										
Hamilton Life Assurance Co Ltd	24	50%	42%	8%	1.084			-8(-8)	24(24)	38(38)	37(37)	27(22)	32(30)	23(23)	69(60)	87(60)	80(54)	75(50)	54(26)	29(3)	-5(-8)	4(-15)	15(-7)	14(-8)	11(-8)	18(-3)	7(-3)	4(-1)	3(-1)	1(-0.5)	1(-0.3)	
Hannover Life Reassurance (UK) Ltd	26	0%	77%	23%	0.897	33(-41)	19(-39)	23(-27)	12(-26)	15(-17)	24(-4)	15(-8)	27(-10)	26(-6)	17(-10)	12(-8)	6(-10)	9(-2)	0.4(-7)	-3(-9)	-4(-9)	-5(-9)	-2(-7)	-1(-8)	-2(-8)	1(-6)	2(-4)	3(-2)	4(-1)	3(-0.5)	1(-0.1)
Hannover Standard Life	3	0%	0%	100%	0.623								-5(-8)	-5(-8)	-4(-7)	-4(-6)															
Health Shield Friendly Society Ltd	15	67%	27%	7%	1.166	7(3)	4(-0.2)	-1(-5)	14(10)	13(9)	7(3)	4(-0.3)	2(-2)	2(-2)	5(2)	9(5)	9(5)	9(5)	8(5)	5(2)											
Hearts of Oak Insurance Co Ltd	11	100%	0%	0%	0.157					177(51)	196(59)	167(29)	160(19)	153(8)	189(42)	230(89)	256(118)	221(80)	198(45)	164(10)											
Hermes Assured Ltd	10	90%	0%	10%	1.130					9108(5768)	7656(4228)	2751(1198)	1830(550)	-232(-812)	566(10)	1292(681)	1622(1046)	843(404)	573(193)												
Hill Samuel Life Assurance Ltd (from1995)	13	77%	23%	0%	1.087														1159(616)	955(377)	836(193)	366(35)	376(45)	153(-205)	363(-88)	159(-107)	378(119)	323(47)	666(403)	422(164)	195(23)	
Hill Samuel Life Assurance Ltd (pre 1995)	10	90%	10%	0%	1.118																	477(138)	609(254)	393(39)	390(36)	298(-56)	543(182)	502(156)	419(81)	610(279)	412(128)	
Hiscox Insurance Co Ltd	15	0%	100%	0%	0.793												10(-5)	9(-7)	9(-8)	9(-10)	10(-10)	7(-12)	10(-9)	8(-11)	9(-10)	10(-10)	14(-6)	14(-6)	17(-5)	16(-3)	20(-2)	
Hodge Life Assurance Co Ltd	26	46%	54%	0%	1.140	94(73)	86(67)	86(66)	90(69)	88(63)	82(55)	68(40)	54(29)	37(14)	32(9)	30(5)	22(-6)	20(-9)	19(-11)	-15(-16)	15(-16)	14(-16)	18(-11)	9(-19)	8(-19)	8(-16)	14(-9)	12(-5)	7(-4)	5(-2)	4(0.4)
Homeowners Friendly Society Ltd	23	0%	100%	0%	0.852	131(-132)	27(-141)	16(-164)	114(-80)	139(-81)	160(-92)	145(-137)	146(-158)	63(-190)	129(-140)	186(-93)	227(-66)	196(-102)	188(-132)	197(-158)	224(-158)	229(-189)	282(-135)	239(-154)	237(-136)	240(-88)	214(-37)	180(-19)			
HSBC Life (UK) Ltd	23	83%	17%	0%	1.180	1046(801)	834(569)	738(233)	2018(1391)	1841(1338)	1624(1184)	1114(704)	961(553)	646(249)	1235(867)	1551(1267)	1783(1499)	1349(1067)	1100(771)	534(245)	350(97)	262(45)	210(64)	12(-87)	63(-10)	16(-35)	33(9)	1(-0.4)			
Ideal Benefit Society (The)	8	88%	13%	0%	1.164								26(9)	36(11)	46(19)	43(10)	44(8)	41(5)	38(2)	36(-0.4)											
Imperial Life (UK) Ltd	4	50%	0%	50%	0.979																							-2(-2)	-3(-3)	33(11)	15(2)	
Independent Order of Foresters	10	0%	100%	0%	0.861																	91(-67)	142(-11)	76(-71)	57(-80)	56(-69)	71(-44)	74(-33)	76(-24)	77(-17)	75(-7)	
Independent Order of Odd Fellows Manchester Unity Friendly Society	8	63%	38%	0%	1.018								33(-3)	44(-5)	49(-0.2)	54(5)	56(7)	35(3)	26(1)	25(0.4)											
IntegraLife UK Ltd	26	42%	58%	0%	0.969	1257(131)	986(-25)	688(-184)	813(196)	465(102)	220(55)	74(6)	47(-7)	28(-7)	21(1)	26(9)	23(3)	24(1)	22(-4)	19(-10)	17(-15)	16(-18)	22(-14)	17(-24)	20(-28)	27(-21)	27(-14)	36(-5)	53(7)	47(3)	35(-3)	
Invesco Life Ltd	1	0%	100%	0%	1.000											1(0)															
Invesco Perpetual Life Ltd	12	83%	17%	0%	1.133	187(115)	154(77)	65(2)	263(203)	244(194)	169(118)	82(47)	38(10)	2(-20)	10(-6)	28(18)	10(5)														
Investment Solutions Ltd	14	86%	0%	14%	1.042	38(23)	50(22)	-43(-72)	51(21)	86(56)	81(61)	35(20)	8(1)	-2(-6)	4(1)	2(1)	2(0.4)	1(0.2)	1(0.01)												
Irish Life Assurance plc	9	56%	44%	0%	1.018																		223(94)	110(2)	75(-15)	76(-1)	101(30)	55(-7)	46(-5)	55(8)	38(2)	
Irish Progressive Life Assurance Co Ltd	13	69%	23%	8%	1.052													447(295)	332(197)	164(47)	118(4)	74(-38)	124(14)	-8(-120)	53(-75)	69(-65)	229(98)	192(75)	127(13)	121(29)	
JPMorgan Life Ltd	14	57%	14%	29%	1.004	276(182)	57(-146)	-503(-768)	584(442)	668(469)	363(238)	-17(-125)	-109(-292)	-484(-837)	107(-156)	323(91)	506(348)	96(24)	20(4)												
Just Retirement Ltd	6	33%	67%	0%	1.025	419(298)	130(23)	24(-65)	19(-38)	20(-4)	8(0)																				
Kensington Friendly Collecting Society Ltd	14	64%	36%	0%	1.043	2(0.2)	2(-0.001)	2(-0.1)	2(1)	3(1)	2(0.4)	2(-0.1)	1(-0.4)	1(-1)	2(0.5)	3(1)	3(1)	2(0.5)	2(0.3)												
Kingston Unity Friendly Society	4	0%	100%	0%	0.786								5(-4)	4(-4)	6(-3)	9(-1)															
Lancashire and Yorkshire Assurance Society	7	0%	100%	0%	0.920																	11(-14)	32(-5)	33(-16)	25(-24)	27(-16)	36(-0.1)	28(-2)			
LAS Investment Assurance Ltd	9	22%	44%	33%	0.915																		23(-11)	-30(-62)	-53(-80)	-45(-69)	44(14)	17(-24)	7(-31)	45(22)	6(-8)	
LAS Pensions Management Ltd	9	67%	33%	0%	1.064																		66(21)	47(-3)	39(-9)	45(-9)	90(36)	66(18)	59(11)	61(18)	42(4)	
Leeds Life Assurance Ltd	1	0%	100%	0%	0.993																	7(-0.3)									
Legal and General (Unit Assurance) Ltd	6	83%	17%	0%	1.123																					258(-10)	649(356)	484(143)	530(162)	647(263)	434(61)	
Legal and General (Unit Pensions) Ltd	6	33%	67%	0%	0.995																					49(-101)	193(76)	73(-17)	60(-17)	62(13)	39(-0.2)	
Legal and General Assurance (Pensions Management) Ltd	26	85%	15%	0%	1.115	89378(12367)	78649(518)	54749(-18851)	95870(25742)	72569(23277)	62426(18284)	41760(3158)	29798(-2840)	19669(-11527)	31201(4226)	39080(15827)	40187(20403)	25521(11191)	15566(6626)	9770(3625)	6870(2802)	4364(1132)	4577(2160)	2247(562)	1688(83)	1220(8)	1692(914)	986(384)	919(147)	1591(249)	1704(-28)
Legal and General Assurance Society Ltd	26	81%	19%	0%	1.093	15097(4187)	14366(3226)	10629(-211)	17108(6243)	16419(5761)	26302(9576)	22009(6747)	20242(5895)	18188(4765)	20567(8078)	21170(9441)	20157(8977)	18577(7948)	13644(3441)	10587(957)	9802(943)	8358(80)	8862(1228)	6219(-694)	5615(-593)	4399(-262)	4265(47)	4123(313)	3740(195)	3370(51)	2866(-297)
Liberty Life Assurance Co Ltd	10	100%	0%	0%	1.186																	166(89)	171(78)	99(12)	80(14)	84(32)	79(43)	59(29)	111(79)	114(57)	67(16)	
Liberty Re Ltd	4	75%	25%	0%	1.085											0.4(0.4)	9(-37)	55(11)	46(2)												
Life Insurance Corporation of India	26	0%	100%	0%	0.703	7(-29)	8(-27)	7(-28)	8(-26)	9(-25)	9(-25)	10(-23)	11(-23)	12(-24)	11(-25)	12(-25)	9(-28)	10(-28)	10(-29)	11(-28)	11(-27)	12(-26)	14(-24)	15(-23)	15(-20)	17(-16)	19(-13)	22(-9)	23(-6)	24(-4)	23(-3)	
Lincoln Assurance Ltd (pre 1996)	12	83%	17%	0%	1.096																				715(270)	686(262)	395(99)	373(198)	204(46)	149(4)	129(-7)	267(142)	190(63)	170(40)	186(58)	99(-25)
Lindsey House Friendly Society	3	0%	67%	33%	0.822								0.1(-2)	1(-4)	1(-1)																
Liverpool Victoria Friendly Society Ltd	23	0%	100%	0%	0.799	1303(-1348)	1145(-1327)	995(-1380)	362(-1244)	565(-1253)	733(-1301)	1015(-1220)	1112(-1198)	1219(-1169)	1138(-1138)	1148(-1101)	1056(-1076)	1036(-1034)	1157(-1000)	1104(-942)	1053(-867)	1030(-784)	904(-722)	774(-660)	789(-549)	860(-370)	928(-216)	953(-105)			
Liverpool Victoria Life Co Ltd	26	42%	46%	12%	0.966	-69(-69)	-215(-215)	-254(-254)	570(86)	656(102)	745(146)	541(-67)	481(-137)	460(-160)	657(27)	94(31)	92(34)	98(39)	62(7)	47(-2)	36(-8)	35(-5)	33(-2)	21(-10)	20(-7)	21(-2)	25(6)	19(4)	14(-0.02)	13(1)	10(-1)	
Lloyds Bowmaker Assurance Ltd	10	0%	80%	20%	0.809																	1(-1)	1(-2)	2(-4)	3(-4)	4(-3)	5(-2)	5(-2)	5(-1)	5(-1)	4(-0.4)	
London and Edinburgh Life Assurance Co Ltd	13	0%	77%	23%	0.906												10(-26)	12(-20)	5(-18)	0.3(-16)	5(-15)	4(-16)	0.1(-12)	3(-9)	4(-7)	7(-2)	4(-1)	1(-0.1)	0.3(0)			
London Aberdeen and Northern Mutual Assurance Society Ltd	22	36%	64%	0%	1.009					6(-2)	10(-2)	10(-3)	12(-4)	14(-4)	25(5)	45(18)	56(27)	44(16)	36(11)	25(6)	22(4)	19(-1)	15(2)	9(-4)	5(-7)	6(-7)	11(-1)	7(-3)	9(-3)	10(-0.1)	7(-0.4)	
London General Life Co Ltd	20	85%	10%	5%	1.259	-0.4(-1)	0.1(-0.2)	0.4(-0.1)	1(0.2)	1(1)	1(1)	0.5(0.3)	0.5(0.3)	1(1)	2(2)	2(2)	2(2)	1(1)	2(2)	3(3)	73(70)	49(46)	59(57)	21(20)	4(3)							
London Life Association Ltd	4	100%	0%	0%	1.065																							1025(189)	1054(240)	865(87)	719(3)	
London Life Linked Assurances Ltd	21	90%	10%	0%	1.206						82(45)	73(27)	77(18)	72(1)	145(66)	214(132)	255(170)	221(126)	202(95)	181(58)	193(54)	181(24)	195(57)	131(8)	110(-4)	99(-6)	152(50)	127(21)	121(14)	113(28)	68(6)	
London Life Ltd	26	54%	46%	0%	1.984	51(-455)	13(-595)	68(-633)	301(-443)	837(-465)	1065(-348)	1083(-498)	1164(-599)	1406(-485)	1947(-66)	2243(201)	2387(339)	2267(110)	2015(22)	110(20)	120(29)	95(19)	111(44)	60(6)	42(-4)	28(-6)	115(54)	129(35)	197(38)	246(66)	216(11)	

Lucida plc	3	100%	0%	0%	1.055	147(47)	113(24)	79(42)																							
M and G Life Assurance Co Ltd	16	100%	0%	0%	1.505													1115(965)	1063(874)	891(671)	1123(874)	947(676)	887(610)	794(523)	748(520)	301(45)	477(228)	333(83)	758(540)	542(351)	846(688)	407(246)	191(37)
M and G Pensions and Annuity Co Ltd	16	100%	0%	0%	1.332													1288(1021)	1640(949)	1328(646)	1404(852)	1082(625)	983(533)	879(459)	833(451)	455(99)	523(201)	337(48)	611(354)	445(219)	670(462)	314(122)	187(14)
Managed Pension Funds Ltd	8	100%	0%	0%	1.174	6978(4333)	4906(2582)	3638(189)	10618(7189)	9826(6633)	8999(5746)	4760(2530)	3039(1315)																		
Manchester Unity Life Insurance Collecting Society	11	0%	100%	0%	0.879															9(-4)	9(-5)	9(-5)	10(-4)	9(-4)	12(-4)	11(-4)	10(-3)	9(-2)	8(-1)	7(-0.3)			
Manufacturers Life Insurance Co Ltd	10	100%	0%	0%	1.146																			168(74)	301(189)	206(96)	183(78)	209(111)	220(107)	186(67)	189(37)	198(56)	160(24)
Marine and General Mutual Life Assurance Society	26	54%	46%	0%	1.025	421(83)	362(51)	337(40)	556(232)	593(233)	672(268)	601(170)	570(131)	502(57)	626(182)	681(259)	596(218)	567(200)	395(35)	297(-53)	246(-90)	157(-164)	230(-111)	149(-227)	172(-252)	250(-192)	379(-60)	379(-42)	380(-17)	363(-3)	336(-20)	
Markel International Insurance Co Ltd	21	5%	38%	57%	0.833				-0.03(-0.03)	-0.03(-0.03)	-0.03(-0.03)	-0.02(-0.02)	-0.02(-0.02)	-0.02(-0.02)	-0.02(0)	-0.02(-0.02)	-0.02(-0.02)	-0.02(-0.02)	-0.02(-0.02)	-0.02(-0.02)	-0.02(-0.02)	-0.1(-0.1)	1(-0.01)	0.5(0.04)	0.3(-0.04)	0.04(-0.03)	0.02(-0.03)	0.02(0)	0.04(-0.001)	0.01(0)			0.01(-0.002)
Marks and Spencer Life Assurance Ltd	16	63%	38%	0%	1.112	62(9)	44(-10)	24(-28)	77(27)	74(26)	77(24)	53(-2)	40(-9)	20(-21)	32(-1)	31(6)	25(9)	19(10)	12(8)	6(5)	7(5)											
Medical Sickness Annuity and Life Assurance Society Ltd	12	25%	75%	0%	1.006																	380(112)	369(117)	261(30)	198(-15)	159(-41)	156(-29)	160(-7)	146(-9)	131(-10)	118(-11)	113(-5)	95(-11)
Mercantile and General Reinsurance Co Ltd (The)	13	0%	38%	62%	0.826														-44(-513)	-97(-575)	-105(-599)	-248(-739)	-148(-554)	-130(-518)	-148(-514)	-5(-405)	99(-287)	118(-217)	142(-154)	178(-103)	175(-68)	
Merchant Investors Assurance Co Ltd	26	81%	19%	0%	1.200	762(430)	677(345)	501(164)	965(643)	957(639)	870(543)	620(297)	522(203)	355(42)	660(349)	923(614)	987(687)	634(337)	565(267)	463(175)	432(154)	347(81)	462(213)	186(-52)	146(-85)	145(-62)	290(110)	173(19)	128(-12)	173(46)	117(-9)	
MetLife Assurance Ltd	4	75%	0%	25%	0.778	277(23)	202(21)	84(9)	-123(-152)																							
MetLife Ltd	26	0%	19%	81%	0.789	-6(-6)	-3(-7)	-2(-8)	-2(-6)	-2(-6)	-2(-6)	-0.2(-4)	-0.3(-4)	-1(-4)	-2(-4)	-4(-5)	-3(-3)	-5(-5)	-4(-4)	-4(-4)	-4(-4)	-4(-4)	-4(-4)	-4(-4)	-5(-5)	-5(-7)	-3(-5)	1(-4)	1(-3)	0.4(-2)	0.3(-1)	2(-1)
Metropolitan Police Friendly Society Ltd	23	48%	52%	0%	1.013	26(11)	24(9)	19(4)	32(17)	19(3)	12(-4)	15(-2)	16(-1)	16(-0.2)	21(4)	23(6)	22(5)	22(5)	20(5)	14(-2)	10(-5)	9(-5)	10(-3)	7(-5)	8(-5)	7(-6)	14(1)	10(-2)				
Monarch Assurance plc	15	100%	0%	0%	1.334	95(48)	95(49)	91(44)	97(51)	97(50)	90(44)	91(44)	97(51)	62(14)	64(16)	61(14)	62(17)	51(8)	56(13)	49(6)												
Munich Reinsurance Co United Kingdom Life Branch	19	0%	100%	0%	1.899								150(-80)	97(-48)	99(-42)	90(-61)	89(-96)	59(-59)	28(-52)	28(-45)	13(-39)	1(-47)	15(-43)	11(-39)	14(-30)	11(-24)	4(-18)	4(-13)	5(-8)	5(-7)	10(-5)	
National Deposit Friendly Society Ltd	15	87%	13%	0%	1.083	74(16)	76(9)	67(-7)	102(28)	106(31)	106(29)	90(14)	78(7)	72(-1)	82(8)	92(17)	98(22)	91(15)	86(9)	79(1)												
National Employers' Life Assurance Co Ltd	7	0%	100%	0%	1.929																						128(-62)	135(-51)	167(-17)	173(-11)	177(-12)	186(-9)	162(-12)
National Farmers Union Mutual Insurance Society Ltd	26	85%	15%	0%	1.162	2610(455)	2445(299)	2563(426)	3045(1036)	2962(1017)	2977(1082)	2556(723)	2591(776)	2543(785)	2789(1049)	3463(1820)	3352(1793)	2920(1528)	2524(1276)	1648(473)	1556(482)	1309(326)	1267(372)	775(-41)	569(-164)	541(-122)	560(-48)	575(15)	544(24)	496(5)	449(5)	
National Financial Management Corporation plc	6	83%	17%	0%	1.144																						27(-88)	218(114)	111(26)	253(186)	111(59)	45(7)	
National Mutual Life Association of Australasia Ltd	3	33%	67%	0%	1.135																									478(214)	372(-6)	328(-5)	
National Mutual Life Assurance Society	18	56%	44%	0%	1.022									1854(241)	1935(328)	2196(696)	2123(733)	1761(465)	1245(63)	958(-83)	809(-86)	511(-81)	478(-46)	372(-92)	336(-63)	348(-9)	353(22)	333(35)	312(45)	247(5)	202(-11)	
National Mutual Pensions Ltd	11	91%	0%	9%	1.201																-0.01(-0.01)	130(9)	134(69)	47(27)	25(13)	19(11)	27(22)	15(11)	13(11)	16(14)	21(1)	
National Provident Institution	15	93%	7%	0%	1.102												9695(5903)	7269(3595)	5086(1636)	4353(1174)	3742(825)	3084(428)	3323(853)	2661(219)	2098(37)	1829(16)	1861(221)	1552(94)	1442(98)	1266(67)	1032(-17)	
National Provident Life Ltd	11	27%	64%	9%	0.932	-90(-1301)	897(-1165)	1234(-791)	1763(-531)	2452(-199)	3150(193)	3158(-198)	3547(-356)	4971(-120)	6078(213)	8182(773)																
National Westminster Life Assurance Ltd	18	56%	11%	33%	1.019	-112(-112)	-227(-227)	-524(-524)	88(88)	73(73)	-9(-9)	-298(-309)	-421(-421)	167(-1589)	1941(279)	3271(1844)	3776(2523)	2311(1111)	1060(498)	642(229)	434(163)	79(-65)	168(41)									
Nationwide Life Ltd	16	81%	19%	0%	1.112	21(21)	53(52)	198(83)	282(136)	347(182)	354(164)	292(71)	279(33)	207(-3)	229(17)	291(77)	390(226)	258(150)	155(85)	22(-4)	6(-0.2)											
NEL Britannia Assurance Co Ltd	7	29%	43%	29%	0.952																						-19(-28)	-14(-27)	33(18)	8(-5)	0.1(-11)	21(11)	5(-0.01)
NEL Pensions Ltd	7	0%	100%	0%	0.875																						230(-172)	246(-144)	300(-76)	288(-73)	295(-51)	296(-31)	277(-26)
NM Life Ltd	22	36%	36%	27%	0.935					441(-1)	504(74)	544(216)	504(224)	404(168)	283(68)	304(22)	148(-20)	92(-8)	-10(-37)	-19(-41)	-27(-46)	-15(-40)	-7(-48)	-2(-45)	6(-35)	8(-25)	24(-0.4)	33(14)	15(1)	8(-2)	7(-2)	
NM Pensions Ltd	5	0%	100%	0%	0.914					1577(-357)	1576(-448)	1190(-816)	1547(-375)	1379(-524)																		
Northern Assurance Co Ltd	14	36%	64%	0%	0.986													1110(622)	870(387)	618(194)	532(107)	354(-64)	493(112)	206(-139)	74(-267)	32(-302)	250(-102)	157(-172)	197(-127)	218(-35)	157(-45)	
Norwich Union Asset Management Ltd	8	100%	0%	0%	1.078																			301(96)	262(23)	270(4)	545(239)	411(63)	429(13)	520(109)	204(15)	
Norwich Union Life (RBS) Ltd	16	88%	13%	0%	1.270											402(402)	524(524)	402(402)	368(368)	270(270)	302(302)	198(187)	1182(640)	1770(191)	1939(-32)	1785(-140)	2813(1040)	2014(607)	1515(461)	1363(469)	903(115)	
Norwich Union Life Insurance Society	12	25%	75%	0%	0.987															13916(-401)	12735(-602)	11151(-1651)	14052(1866)	9799(-1525)	9121(-1078)	8418(-216)	8964(1354)	6803(261)	5852(-142)	4661(-889)	4081(-576)	
Norwich Union Linked Life Assurance Ltd	20	70%	30%	0%	1.076								7909(-267)	5949(-1384)	4082(-2486)	6668(680)	8355(3274)	7525(3578)	5120(2242)	3900(1249)	2928(428)	389(96)	277(18)	337(119)	192(10)	157(-15)	156(-4)	221(66)	219(64)	240(83)	262(99)	176(-9)	
Nottingham Oddfellows Assurance Friendly Society Ltd	13	0%	100%	0%	0.952			4(-2)	5(-0.04)	5(-0.3)	5(-1)	4(-1)	3(-1)	3(-1)	3(-0.4)	3(-0.3)	3(-0.4)	3(-0.4)	3(-0.3)	3(-0.3)												
NPI Annuities Ltd	14	57%	43%	0%	1.005													531(93)	342(-59)	267(-126)	271(-97)	227(-150)	404(47)	47(3)	37(-13)	40(-19)	96(38)	71(10)	62(7)	67(20)	47(5)	
NPI Ltd	11	0%	91%	9%	0.812	288(-664)	106(-930)	-261(-1321)	735(-390)	1100(-525)	757(-654)	478(-1173)	387(-1547)	26(-1821)	666(-1018)	1215(-320)																
NRG London Reinsurance Co Ltd	14	0%	71%	29%	0.865													-0.1(-0.1)	0.1(-0.1)	0.1(-0.1)	-0.1(-0.1)	-0.2(-0.2)	-0.2(-0.2)	3(-8)	8(-8)	15(-8)	10(-6)	10(-4)	10(-3)	10(-2)	10(-1)	
NRG Victory Reinsurance Ltd	9	11%	89%	0%	0.939																		100(-27)	62(-60)	30(-70)	33(-54)	37(-26)	38(-19)	49(-5)	59(0.2)	66(-5)	
Old Mutual Life Assurance Co Ltd	14	50%	50%	0%	1.038												610(296)	635(260)	479(103)	426(41)	376(-28)		554(176)	295(-67)	233(-103)	167(-93)	206(21)	149(-4)	117(-8)	131(23)	90(-0.2)	
Omnilife Insurance Co Ltd	18	0%	50%	50%	0.916	0.01(-1)	0.1(-1)	1(-0.1)	-1(-2)	-1(-2)	-0.3(-1)	-1(-1)	-0.4(-1)	0.004(-0.3)	0.3(-0.01)	0.2(-0.1)	-0.2(-0.5)	-0.4(-1)	0.05(-0.2)	-0.01(-0.2)	-0.01(-0.1)	0.1(-0.03)	0.05(-0.01)								
Original Holloway Friendly Society Ltd (The)	15	27%	73%	0%	0.953	0.3(-5)	1(-4)	1(-4)	2(-2)	3(-2)	3(-2)	4(-1)	6(-1)	1(-1)	2(-1)	3(0.1)	3(1)	3(0.5)	2(0.1)	3(-0.1)												
PA (GI) Ltd	20	15%	85%	0%	0.935							127(-201)	158(-167)	258(-107)	511(-67)	837(204)	696(65)	621(-66)	516(-197)	507(-208)	450(-230)	390(-249)	411(-143)	270(-260)	300(-195)	347(-121)	434(-26)	428(-29)	473(19)	456(-4)	451(-48)	
Pacific Life Re Ltd	26	0%	46%	54%	0.809	9(-28)	10(-22)	12(-21)	-28(-28)	-25(-30)	-22(-26)	-24(-25)	-27(-27)	-30(-31)	-21(-26)	-22(-31)	-33(-36)	-28(-43)	-19(-48)	-10(-46)	-3(-39)	-6(-40)	5(-30)	8(-34)	3(-29)	17(-28)	22(-19)	21(-10)	16(-7)	17(-4)	15(-3)	
Partnership Life Assurance Co Ltd	6	33%	50%	17%	0.959	44(-12)	39(9)	4(-23)	3(-7)	4(-3)	6(0.4)																					
Paternoster UK Ltd	5	0%	100%	0%	0.928	373(-374)	434(-281)	259(-454)	376(-26)	38(-1)																						
Pearl Assurance (Unit Funds) Ltd	21	95%	5%	0%	1.330						149(149)	135(135)	148(128)	140(97)	300(250)	441(391)	591(521)	532(436)	471(354)	414(254)	422(242)	331(148)	406(245)	221(69)	157(2)	154(-24)	397(202)	280(64)	260(46)	237(96)	109(19)	
Pearl Assurance (Unit Linked Pensions) Ltd	21	95%	5%	0%	1.156						200(82)	158(32)	140(4)	104(-34)	197(64)	270(145)	298(178)	231(117)	184(82)	133(45)	123(46)	92(25)	102(48)	53(14)	32(2)	26(1)	37(15)	24(5)	20(5)	17(6)	9(2)	
Pearl Assurance Ltd	26	92%	8%	0%	1.285	4104(1575)	3290(1237)	3549(1332)	4620(2274)	7629(3500)	9230(4565)	9940(4925)	10177(4815)	11614(5963)	13526(7843)	12721(7583)	11833(6661)	10556(5626)	9063(4186)	7469(2654)	5841(2049)	6457(1779)	5824(1334)	4864(646)	4081(369)	5668(312)	3408(298)	3061(155)	2874(78)	2655(-12)	2433(-94)	
Pegasus Assurance Ltd	10	20%	30%	50%	0.946													1(-0.2)	0.2(-0.2)	0.2(-0.1)	1(-0.3)	-0.3(-1)	0.5(0.3)	-1(-1)	-1(-1)	0.3(-1)	0.5(0.05)					
Pension Annuity Friendly Society Ltd (The)	11	100%	0%	0%	1.612						19(4)	17(4)	14(4)	12(5)	9(5)	9(6)	7(6)	7(6)	2(1)	1(0.1)	0.5(0.05)											
Pension Insurance Corporation Ltd	3	100%	0%	0%	1.041	463(162)	346(81)	256(70)																								
Pensions Management (SWF) Ltd	20	100%	0%	0%	1.402	720(720)	633(633)	474(474)	1123(1080)	1087(1080)	1146(1097)	758(758)	722(722)	487(487)	1295(1219)	2175(1998)	2523(2380)	2195(1983)	2614(2016)	3361(2012)	3793(2091)	3292(1420)	4844(2598)	3443(1154)	2681(545)	2232(526)	3242(1688)	2195(647)	2088(610)	2161(752)	1441(120)	
PFM Assurance Ltd	10	70%	30%	0%	1.069																		1(-1)	1(0.2)	1(-0.1)	1(-0.02)	1(0.2)	1(1)	1(1)	11(1)	13(6)	6(1)	
Pharmaceutical and General Provident Society Ltd	15	67%	33%	0%	1.035	6(0.5)	5(-1)	2(-5)	10(4)	10(3)	8(1)	5(-2)	3(-3)	1(-6)	7(0.3)	9(1)	15(8)	11(5)	9(3)	6(0.3)												
Phoenix and London Assurance Ltd	26	96%	4%	0%	1.188	2080(612)	2192(608)	2849(1239)	2721(1081)	3252(1607)	3899(2183)	5612(2577)	5592(2372)	5904(2464)	6103(2443)	7064(3274)	6969(3082)	7352(3440)	6153(2259)	4571(866)	4282(698)	4035(567)	4299(843)	3415(41)	2958(25)	2664(66)	2484(136)	2179(59)	2022(97)	1732(27)	1404(-73)	
Phoenix Life and Pensions Ltd	21	43%	57%	0%	0.995						2604(319)	3797(116)	3876(-216)	4986(446)	5743(916)	7038(2298)	6349(1840)	5667(1414)	4351(175)	3517(-705)	3157(-953)	3482(21)	3356(-409)	2478(-956)	2248(-879)	2355(-607)	2514(-332)	2428(-306)	2274(-380)	2263(-281)	2098(-241)	
Phoenix Life Assurance Ltd	15	73%	27%	0%	1.070				418(134)	398(125)	343(90)	155(-83)	122(-140)	55(-254)	544(208)	850(520)	935(621)	639(372)	432(182)	306(134)	277(160)	44(-25)	43(16)									
Phoenix Life Ltd	26	58%	42%	0%	1.008	6561(-1104)	7135(-1777)	3579(-2915)	6978(-454)	10080(282)	2619(67)	1235(-488)	1130(-792)	810(-1308)	2293(-176)	3131(707)	3509(1133)	2512(251)	471(171)	431(102)	454(84)	408(5)	510(110)	333(-60)	281(-119)	260(-115)	499(132)	434(40)	473(47)	484(163)	226(4)	
Phoenix Pensions Ltd	10	60%	40%	0%	0.997	908(-145)	784(-246)	773(-221)	986(77)		349(36)	317(1)	236(5)	180(14)	63(-0.2)	16(2)																
Pinnacle Insurance plc	26	15%	50%	35%	0.870	-23(-23)	-49(-49)	23(-158)	187(-93)	106(-67)	154(26)	142(34)	26(-34)	29(-31)	36(-14)	40(-6)	19(-6)	20(-0.2)	11(-2)	4(-2)	-1(-2)	-1(-2)	1(-1)	-1(-1)	-1(-1)	-1(-1)	-1(-1)	-1(-1)	-0.3(-0.4)	0.1(-0.4)	0.4(-0.2)	1(0.2)	1(0.1)
Pioneer Friendly Society Ltd	12	8%	67%	25%	0.942				2(-2)	1(-2)	2(-1)	1(-1)	-0.1(-1)	-0.4(-1)	-0.05(-1)	0.3(-0.3)	0.5(-0.1)	1(0.2)	0.4(-0.01)	0.2(-0.2)												
POIS Assurance Ltd	14	64%	36%	0%	1.033									56(8)	71(19)	81(25)	88(26)	86(22)	77(12)	77(10)	53(-13)	51(-3)	47(-15)	46(-15)	54(-7)	70(7)	67(4)					
Police Mutual Assurance Society Ltd	23	39%	57%	4%	0.982	-24(-258)	12(-241)	41(-237)	234(-76)	265(-83)	311(-63)	244(-131)	244(-136)	273(-107)	389(11)	578(213)	753(387)	542(189)	442(101)	317(2)	298(14)	217(-39)	301(69)	207(-5)	148(-39)	134(-38)	212(50)	144(-7)				
PPP Lifetime Care plc	15	73%	27%	0%	1.037					56(18)	75(31)	64(20)	54(12)	41(9)	35(9)	40(16)	32(9)	36(18)	20(5)	8(-1)	3(0.3)	1(-1)	1(-0.3)	2(0)								
Premium Life Assurance Co Ltd	12	75%	25%	0%	1.036															38(8)	24(3)	24(5)	18(0.2)	5(-12)	7(-8)	17(3)	24(11)	18(6)	29(16)	17(6)	8(-1)	
Professional Life Assurance Co Ltd	15	80%	20%	0%	1.173												187(160)	88(65)	64(45)	46(31)	39(26)	21(10)	27(17)	6(2)	3(-0.3)	0.1(-3)	9(7)	4(2)	8(6)	4(2)	0.3(-1)	
Property Growth Assurance Co Ltd	4	75%	25%	0%	1.135																							10(10)	14(14)	16(16)	170(-6)	
Prosperity Life Assurance Ltd	9	33%	67%	0%	0.997																				52(20)	27(-12)	18(-24)	18(-20)	48(13)	29(-1)	25(-1)	34(10)	17(-0.2)
Proteus Insurance Co Ltd	14	0%	36%	64%	0.642													-0.004(-0.004)	-0.004(-0.004)	-0.01(-0.01)	-0.01(-0.01)	-0.01(-0.01)	-0.01(-0.01)	-0.004(-0.01)	0(-0.01)	-0.002(-0.01)	0.002(-0.01)	0.003(-0.01)	0.01(0)	0.02(-0.01)	0.03(-0.004)	
Provident Mutual Life Assurance Ltd	11	64%	36%	0%	1.049																		2906(468)	2342(-12)	2995(753)	1965(-164)	1585(-398)	1546(-278)	2519(837)	1985(516)	1756(410)	1581(349)	1171(48)
Prudential (AN) Ltd	25	92%	8%	0%	2.486		9(9)	10(9)	10(9)	10(10)	223(136)	187(86)	187(74)	157(33)	276(144)	363(226)	414(268)	357(201)	321(160)	286(125)	278(113)	214(52)	239(87)	148(6)	110(-28)	105(-26)	184(64)	131(20)	115(20)	109(33)	66(7)	
Prudential Annuities Ltd	19	84%	16%	0%	1.066	4669(-966)	4727(-1226)	4450(-1578)	5989(221)	7128(1229)	8316(2249)	7794(1605)	7509(1348)	7250(1337)	6880(1104)	6724(1299)	5225(1248)	6045(2149)	4345(955)	3074(261)	2026(276)	2026(4)	2754(916)	1613(148)								
Prudential Assurance Co Ltd (The)	26	100%	0%	0%	1.216	41013(17116)	40296(16944)	40788(16803)	44188(21991)	43805(21780)	46642(23159)	44230(20353)	44141(19503)	42830(17701)	44999(22293)	42987(20540)	39474(17543)	34811(14011)	30494(10555)	20633(6572)	18812(6084)	20815(6080)	19065(5360)	16157(3515)	15226(2987)	13632(2632)	13563(3032)	11122(1384)	10178(1099)	9601(690)	8482(68)	
Prudential Holborn Life Ltd	25	92%	8%	0%	1.265		471(-61)	370(-192)	859(313)	895(396)	797(336)	498(229)	293(176)	205(123)	295(233)	386(316)	438(359)	354(278)	316(248)	251(198)	225(185)	167(128)	384(270)	226(116)	191(58)	219(44)	522(308)	442(161)	562(169)	645(249)	424(49)	
Prudential Pensions Ltd	26	73%	27%	0%	1.130	2112(-110)	1501(-456)	657(-1166)	2211(624)	2726(1354)	3113(1337)	1932(707)	1580(455)	983(134)	1502(726)	2278(1416)	2604(1731)	1843(1142)	1508(923)	1192(689)	1171(619)	884(368)	1144(636)	627(122)	396(-65)	343(-125)	906(455)	528(137)	469(-5)	563(47)	349(-234)	
Prudential Retirement Income Ltd	25	80%	20%	0%	1.304	6265(-1622)	5218(-2049)	5917(-2962)	5686(-831)	5782(4)	4385(626)	3000(152)	1553(52)	1198(41)	516(-17)	195(6)		30(30)	79(79)	270(270)	261(261)	167(167)	264(264)	175(18)	674(6)	880(26)	1930(978)	1425(487)	1299(378)	1687(454)	1356(81)	
Railway Enginemens Assurance Society Ltd	23	0%	100%	0%	0.833	5(-7)	4(-7)	4(-7)	6(-4)	6(-3)	6(-4)	4(-4)	4(-5)	2(-6)	3(-4)	4(-4)	4(-4)	4(-4)	3(-5)	3(-5)	3(-5)	3(-5)	3(-4)	3(-4)	3(-4)	4(-3)	5(-1)	6(-1)				
Rational Shelley Friendly Society Ltd	7	100%	0%	0%	1.207							11(2)	13(3)	14(3)	15(4)	16(4)	16(4)	14(2)														
Reassure UK Life Assurance Co Ltd	20	55%	40%	5%	1.049							46(46)	90(77)	104(76)	280(180)	374(248)	404(230)	370(203)	227(87)	129(-4)	94(-13)	19(-59)	31(-39)	-1(-67)	1(-61)	13(-45)	35(-20)	43(-10)	56(7)	56(8)	54(12)	
Rechabite Friendly Society Ltd	15	0%	100%	0%	0.905	21(-1)	14(-3)	7(-5)	8(-1)	5(-2)	5(-2)	3(-3)	4(-3)	3(-4)	4(-4)	6(-2)	6(-1)	7(-0.4)	6(-0.4)	6(-1)												
Red Rose Friendly Society Ltd	12	17%	83%	0%	0.967	2(-0.3)	1(-1)	1(-1)	1(-0.3)	1(-0.3)	2(-0.2)	1(-0.5)	1(-1)	1(-0.4)	2(-0.1)	2(1)	2(0.1)															
Refuge Assurance Ltd	16	31%	69%	0%	1.003											2175(1189)	2145(1127)	1888(813)	1781(665)	1287(156)	961(-154)	834(-281)	646(-465)	449(-650)	466(-569)	520(-441)	582(-331)	601(-255)	588(-186)	595(-129)	591(-81)	
Refuge Investments Ltd	16	88%	13%	0%	1.173											448(289)	489(335)	360(229)	293(179)	219(119)	236(100)	156(29)	195(80)	106(5)	62(-16)	54(-6)	102(49)	60(12)	62(6)	56(17)	26(3)	
Reliance Mutual Insurance Society Ltd	26	42%	58%	0%	0.994	519(21)	453(-51)	352(-157)	628(140)	497(147)	502(149)	372(45)	54(-13)	36(-30)	66(-0.1)	99(34)	126(63)	82(14)	78(14)	54(-20)	51(-22)	44(-27)	64(-8)	37(-33)	51(-37)	56(-28)	64(2)	50(-6)	55(-2)	66(1)	68(-4)	
RGA Reinsurance UK Ltd	11	9%	91%	0%	0.923	9(-8)	7(-7)	13(-6)	10(-7)	11(-6)	13(-3)	8(-3)	8(-2)	4(-1)	9(-1)	5(0.2)																
RM Life Assurance Ltd	20	70%	30%	0%	1.173					16(16)	166(112)	153(75)	154(60)	87(-1)	242(140)	421(304)	555(417)	402(214)	365(148)	341(109)	304(97)	189(-22)	86(12)	7(0.5)	4(-1)	2(-1)	2(0.3)	1(-0.3)	0.4(-0.3)			
Rothesay Life Ltd	3	33%	67%	0%	1.998	133(34)	89(-5)	36(-18)																								
Royal and Sun Alliance Life Holdings	4	100%	0%	0%	1.040																								152(22)	140(16)	181(63)	60(12)
Royal Artillery Widows Insurance Society	14	100%	0%	0%	1.420	2(1)	2(1)	2(1)	3(2)	3(2)	3(2)	3(1)	3(1)	3(1)	4(2)	4(2)	4(1)	4(2)	3(1)													
Royal Life (Unit Linked Assurance)	13	77%	23%	0%	1.062														189(112)	146(72)	136(61)	100(26)	141(65)	75(-2)	41(-35)	27(-49)	132(51)	106(5)	122(11)	147(52)	73(4)	
Royal Life (Unit Linked Pension Fund)	13	62%	38%	0%	1.070														441(234)	348(154)	323(133)	217(44)	278(114)	142(-11)	84(-55)	116(-82)	317(118)	208(37)	166(-1)	189(38)	107(-21)	
Royal Liver Assurance Ltd	23	4%	96%	0%	0.864	648(-147)	711(-174)	992(-15)	1083(12)	996(-156)	970(-217)	766(-423)	764(-417)	611(-559)	605(-536)	459(-516)	356(-504)	368(-484)	316(-460)	289(-436)	295(-404)	291(-369)	278(-341)	277(-310)	264(-258)	302(-175)	354(-101)	363(-50)			
Royal London Mutual Insurance Society Ltd (The)	26	62%	38%	0%	1.040	5616(-3818)	5569(-3670)	5200(-3990)	6936(-904)	7736(-195)	8444(72)	7355(-940)	7329(-1703)	7913(-1103)	9522(552)	3315(1506)	2851(1087)	3734(1937)	2664(858)	1838(63)	1661(-51)	1527(-84)	2001(504)	1417(24)	1284(9)	1353(188)	1491(398)	1285(241)	1162(148)	1071(104)	943(28)	

Royal London Pooled Pensions Co Ltd	26	88%	12%	0%	1.208	650(-88)	606(-132)	499(-178)	475(16)	358(75)	216(113)	144(85)	470(136)	110(43)	160(91)	216(146)	231(161)	187(114)	155(84)	131(63)	120(54)	92(30)	110(52)	73(17)	55(5)	45(2)	92(40)	75(14)	73(10)	91(26)	69(4)	
Royal National Pension Fund for Nurses	16	94%	6%	0%	1.087											957(429)	861(358)	888(417)	656(220)	564(160)	506(111)	416(54)	367(45)	307(10)	271(8)	238(10)	235(28)	201(15)	187(6)	166(2)	138(-6)		
Royal Scottish Assurance plc	20	90%	10%	0%	1.189	252(203)	269(186)	204(76)	538(385)	559(401)	544(362)	463(261)	409(219)	379(141)	779(476)	1098(737)	973(569)	645(282)	622(333)	349(138)	232(76)	166(36)	126(47)	21(-12)	8(-1)							
Save and Prosper Insurance Ltd	26	100%	0%	0%	1.697	149(149)	146(146)	127(127)	229(229)	262(262)	270(270)	225(225)	224(214)	196(176)	312(282)	447(394)	549(476)	511(403)	541(409)	498(315)	523(317)	448(233)	441(275)	465(202)	395(94)	528(215)	632(312)	695(353)	576(214)	651(250)	504(45)	
Save and Prosper Pensions Ltd	26	96%	4%	0%	1.185	361(171)	324(115)	268(32)	679(402)	817(481)	952(473)	779(270)	746(201)	644(76)	901(316)	1138(543)	1273(666)	1092(462)	1077(445)	804(188)	774(189)	610(79)	629(152)	482(33)	342(-61)	395(34)	417(101)	423(143)	328(73)	326(86)	246(20)	
Schoolteachers Friendly Society	8	50%	13%	38%	1.100								-0.5(-1)	-0.2(-0.5)	1(-1)	1(0.4)	0.2(-0.002)	6(3)	2(2)	1(0.2)												
Schroder Pension Management Ltd	5	80%	0%	20%	1.015	1051(839)	320(156)	-542(-673)	235(145)	106(53)																						
SCOR Global Life Reinsurance UK Ltd	14	0%	57%	43%	0.902			0.4(-8)	0.3(-6)	-2(-6)	3(-3)	2(-2)	2(-3)	4(-2)	1(-3)	-1(-2)	-3(-3)	-0.3(-3)	-1(-4)	0.3(-0.4)	0.1(-0.3)											
Scottish Amicable Life Assurance Society	12	0%	100%	0%	0.908															3994(-940)	3407(-1277)	2798(-1582)	3303(-701)	1683(-1945)	1277(-1923)	1430(-1386)	1803(-736)	1696(-618)	1602(-430)	1563(-167)	1325(-151)	
Scottish Amicable Life plc	5	60%	40%	0%	1.017										415(-753)	1452(364)	1076(531)	563(75)	358(-92)													
Scottish Equitable (Managed Funds) Ltd	25	80%	16%	4%	1.299		670(513)	563(401)	878(746)	873(782)	766(719)	2176(-85)	1095(-876)	295(-2090)	2479(821)	4630(3174)	5679(4421)	3904(2808)	2949(2024)	2046(1231)	1721(1037)	1106(535)	1419(971)	522(127)	302(-4)	197(-34)	601(423)	274(119)	235(81)	349(230)	135(69)	
Scottish Equitable Life Assurance Society	8	0%	100%	0%	0.881																			1234(-832)	961(-916)	815(-864)	1264(-328)	989(-517)	1000(-372)	1025(-249)	1058(-148)	
Scottish Equitable plc	18	83%	17%	0%	1.106	15333(194)	11649(-2258)	7215(-5780)	14639(2733)	14315(3176)	13088(2505)	5244(1522)	5461(1743)	5168(1518)	5803(2291)	6379(3104)	5328(2336)	5611(2895)	3829(1254)	2695(306)	2453(261)	1886(-59)	2490(785)									
Scottish Friendly Assurance Society Ltd	23	43%	57%	0%	1.016	140(-191)	119(-208)	81(-250)	270(-47)	139(-35)	142(-19)	128(-12)	123(-1)	113(3)	138(43)	139(60)	130(62)	102(41)	81(25)	79(18)	69(9)	68(14)	57(4)	47(-4)	43(-5)	39(-6)	40(-3)	41(-2)				
Scottish Legal Life Assurance Society Ltd	19	0%	63%	37%	0.779					7(-21)	21(-19)	14(-36)	7(-58)	-4(-89)	21(-61)	39(-40)	34(-51)	21(-59)	4(-62)	-4(-65)	-4(-64)	-7(-65)	-6(-62)	-8(-66)	-8(-63)	1(-68)	48(-5)	42(-11)					
Scottish Life Assurance Co	16	19%	81%	0%	0.935											4400(1622)	4022(1386)	3432(996)	2262(-25)	1522(-622)	1395(-623)	844(-1031)	1056(-853)	629(-892)	461(-801)	401(-606)	535(-429)	517(-321)	543(-222)	524(-142)	468(-89)	
Scottish Life Investment Assurance Co Ltd	6	83%	17%	0%	1.092																					6(-19)	63(43)	26(10)	17(3)	37(27)	11(4)	
Scottish Mutual Assurance Ltd	24	50%	46%	4%	1.004			-823(-1107)	468(-648)	1568(-336)	3025(70)	2956(-1151)	4709(-149)	4899(-244)	6470(1598)	6799(2683)	4903(1652)	3963(1375)	2742(363)	2161(71)	1781(-25)	1459(-133)	1492(89)	868(-388)	682(-354)	679(-273)	952(45)	832(-17)	832(22)	778(152)	502(14)	
Scottish Mutual Pension Funds Investment Ltd	10	90%	10%	0%	1.188																	62(31)	80(49)	51(22)	34(11)	6(4)	95(43)	72(22)	62(18)	85(26)	85(-1)	
Scottish Mutual Pensions Ltd	18	28%	61%	11%	1.936						-2(-2)	41(-17)	33(-21)	-8(-53)	13(-21)	17(-15)	30(-11)			91(48)	100(48)	67(20)	85(45)	44(14)	22(-1)	7(-2)			0.03(-0.05)	0.1(-0.03)	0.1(-0.01)	0.01(-0.01)	
Scottish Provident Assurance Ltd	10	80%	20%	0%	1.077																		409(222)	204(18)	108(-79)	97(-91)	471(265)	329(118)	289(78)	263(182)	163(32)	
Scottish Provident Institution	17	76%	24%	0%	1.112										5987(2961)	5899(2932)	5510(2577)	5220(2322)	3926(1120)	3102(332)	3017(300)	2199(102)	2452(461)	1817(-51)	1441(-91)	1380(-11)	1424(113)	1321(93)	1262(94)	1192(97)	1010(-14)	
Scottish Provident Ltd	8	0%	88%	13%	0.723			-193(-2750)	329(-2918)	973(-3391)	1661(-3515)	2100(-3323)	3627(-1892)	3622(-1953)	5210(-460)																	
Scottish Provident Managed Pension Funds Ltd	10	70%	20%	10%	1.082																	18(14)	34(31)	4(-0.4)	-0.4(-6)	1(-7)	52(37)	53(14)	104(20)	191(54)	253(4)	
Scottish Widows Administration Services Ltd	19	79%	21%	0%	1.083								685(-972)	196(-1553)	2180(132)	4440(2010)	5974(3256)	4320(1580)	1895(1050)	1388(591)	1224(506)	800(165)	1083(520)	561(85)	276(-70)	153(-77)	206(69)	78(2)	128(78)	46(17)	24(3)	
Scottish Widows Annuities Ltd	11	36%	64%	0%	0.948	1835(-1160)	1707(-1220)	1437(-1376)	1982(-628)	2113(-239)	2364(179)	2021(35)	1576(-11)	1403(49)	1061(-37)	1017(10)																
Scottish Widows' Fund and Life Assurance Society	18	72%	11%	17%	0.894									-181(-181)	-184(-184)	-186(-186)	11660(3707)	12294(5000)	9774(2953)	7459(1120)	7008(1051)	5772(444)	6553(1641)	4688(209)	4107(169)	3783(342)	3491(432)	3088(373)	2662(182)	2276(-65)	2054(-106)	
Scottish Widows plc	11	9%	91%	0%	0.865	2487(-5546)	2839(-5970)	1955(-5667)	4198(-4317)	5739(-4305)	8513(-3520)	8163(-4516)	7872(-3284)	7543(-3323)	10240(-192)	11173(1638)																
Scottish Widows Unit Funds Ltd	26	81%	19%	0%	1.136	4358(775)	3121(-320)	1743(-2750)	7845(3761)	7627(3981)	5976(2865)	3217(727)	1497(228)	632(-305)	1079(439)	1484(1001)	1706(1290)	1234(843)	989(616)	766(408)	729(375)	495(139)	742(399)	393(67)	273(-30)	249(-23)	630(385)	315(89)	290(86)	296(160)	133(33)	
Security Assurance Ltd	12	0%	17%	83%	0.892														-1(-1)	-1(-1)	-1(-1)	-1(-1)	-1(-1)	-0.5(-1)	-0.3(-0.4)	-0.1(-0.2)	-0.03(-0.1)	-0.01(-0.03)	0.01(-0.004)	0.002(0)		
Shepherds Friendly Society Ltd (The)	15	0%	0%	100%	0.929	-7(-8)	-8(-8)	-7(-8)	-6(-6)	-4(-5)	-3(-4)	-2(-3)	-2(-2)	-2(-2)	1(-2)	-1(-1)	-1(-1)	-1(-1)	-0.4(-1)	-0.2(-0.3)												
Skandia Life Assurance Co Ltd	26	77%	15%	8%	1.117	3936(2385)	2925(1164)	649(-1207)	5995(4200)	5956(4341)	4455(3031)	2170(921)	1189(103)	-204(-1200)	1553(651)	2840(2058)	3100(2543)	1510(1023)	1197(756)	915(526)	814(484)	450(156)	619(407)	150(-14)	26(-111)	-1(-112)	252(155)	99(18)	74(-3)	175(117)	58(20)	
Skandia MultiFUNDS Assurance Ltd	9	78%	11%	11%	1.037	390(310)	42(-4)	268(-295)	67(47)	95(84)	50(45)	15(12)	3(2)	0.4(0.1)																		
SL Liverpool plc	19	74%	26%	0%	1.122							441(212)	512(203)	404(111)	601(297)	713(445)	725(496)	565(357)	442(246)	334(145)	298(127)	202(25)	304(129)	185(24)	60(10)		70(-2)	33(-33)	42(-24)	63(-5)	63(-8)	
SLFC Assurance (UK) Ltd	24	38%	63%	0%	0.972	1312(215)	1131(-65)	594(-557)	1848(675)	1911(642)	1752(399)	1234(-162)	870(-398)	183(-895)	920(91)	1628(841)	2247(1270)	2158(658)	1914(286)	739(-141)	707(-184)	484(-377)	627(-201)	344(-461)	228(-537)	188(-533)	489(-215)	348(-311)	335(-312)		
St Andrews Life Assurance plc	15	13%	73%	13%	0.964	997(-1089)	1162(-1601)	41(-2538)	3392(338)	2865(435)	-2(-2)	-6(-6)	42(-12)	58(-9)	56(-8)	36(-2)	14(-2)	8(-1)	6(-0.3)	3(0)												
St George Assurance	9	100%	0%	0%	1.346																		47(32)	35(18)	29(13)	28(11)	43(26)	37(19)	38(18)	33(13)	24(5)	
St James Place UK plc	19	95%	5%	0%	1.178	4556(2798)	3247(1742)	1568(273)	4299(3203)	3833(2922)	2873(2098)	1564(882)	1020(408)	183(-366)	1005(531)	1450(1078)	1405(1109)	783(547)	557(367)	341(188)	271(146)	136(39)	144(91)	17(0.2)								
Standard Life Assurance Co 2006 (The)	21	43%	57%	0%	1.000						40279(15251)	32895(9373)	31872(6117)	25696(1311)	30245(7212)	28542(11129)	25259(8372)	21446(5037)	16481(441)	13186(-2276)	11855(-3002)	10301(-3482)	10274(-2716)	7554(-4277)	6509(-3809)	5434(-3442)	7286(-911)	5601(-1320)	4548(-1670)	4343(-1639)	3928(-1381)	
Standard Life Assurance Ltd	5	0%	100%	0%	0.919	16198(-5074)	17585(-4721)	19669(-4597)	28582(-2258)	33701(-248)																						
Standard Life Investment Funds Ltd	26	77%	12%	12%	1.114	5292(-3872)	1475(-7115)	4112(-12268)	9679(2369)	9514(3175)	1253(939)	331(111)	-149(-311)	-522(-601)	234(234)	7886(5883)	7341(5597)	5217(3703)	4085(2726)	3433(2188)	2934(1774)	2283(1155)	2153(1237)	1136(381)	942(295)	543(-44)	1256(753)	779(317)	620(178)	715(354)	327(114)	
Standard Life Pension Funds Ltd	23	43%	9%	48%	0.921	-3(-3)	-4(-5)	-4(-5)	-4(-4)	-4(-7)	-4(-6)	-5(-5)	-4(-7)	-4(-5)	-4(-4)	9(-4)	8(-3)	10(1)	20(3)	17(2)	15(2)	20(1)	26(11)	18(6)	16(4)	11(1)				-0.5(-0.5)	176(34)	
State Life Insurance Corporation of Pakistan	17	88%	12%	0%	1.161									0.2(0.2)	1(0.5)	1(0.5)	1(1)	1(1)	1(-0.05)	1(0.4)	1(0.2)	2(1)	2(0.3)	1(-0.3)	2(0.1)	2(1)	2(0.4)	2(1)	2(1)	2(0.2)		
Sterling Life Ltd	26	0%	73%	27%	0.888	-1(-8)	4(-8)	5(-7)	7(-5)	10(-4)	9(-3)	9(-2)	8(-1)	6(-1)	4(-1)	3(-1)	2(-0.5)	1(-0.4)	0.1(-0.4)	-0.3(-0.4)	-0.3(-0.3)	-0.3(-0.3)	-1(-1)	2(-1)	-0.2(-1)	-0.1(-1)	0.004(-0.4)	0.04(-0.4)	0.4(-0.3)	0.4(-0.2)	0.4(-0.1)	
Strand Friendly Society	15	20%	80%	0%	0.955									8(-9)	26(0.01)	27(5)	25(6)	15(-2)	14(-2)	10(-2)	9(-2)	7(-2)	7(-1)	5(-3)	3(-3)	3(-2)	3(-1)	2(-0.3)				
Suffolk Life Annuities Ltd	26	50%	50%	0%	1.010	718(-160)	620(-319)	388(-524)	1047(183)	850(203)	537(113)	329(12)	225(-21)	116(-61)	89(-24)	73(3)	44(9)	16(1)	6(-1)	3(-1)	2(-0.2)	2(-0.1)	2(-0.1)	1(-1)	1(-1)	2(1)	3(1)	2(1)	1(0.4)	1(0.1)	1(0.01)	
Sun Alliance Linked Life Insurance Ltd	13	23%	54%	23%	0.836														287(89)	239(11)	238(-10)	172(-96)	262(-20)	131(-156)	98(-183)	100(-198)	337(-10)	-11(-12)	-8(-9)	-9(-9)	94(4)	
Sun Alliance Pensions Ltd	13	77%	23%	0%	1.041														951(391)	723(201)	663(161)	496(9)	684(179)	442(-68)	329(-150)	270(-151)	486(86)	374(16)	300(27)	315(56)	75(5)	
Sun Life Assurance Co of Canada	15	100%	0%	0%	1.801												2390(2188)	2313(2119)	1875(1709)	1905(1734)	2018(1870)	1957(1834)	1392(1270)	1130(1003)	971(836)	867(732)	818(675)	644(480)	522(347)	404(217)	305(128)	
Sun Life Assurance Co of Canada - Irish Business	14	100%	0%	0%	2.470												102(101)	93(93)	85(84)	65(64)	65(64)	60(59)	60(58)	46(44)	47(46)	40(39)	39(38)	35(33)	27(26)	17(15)		
Sun Life Assurance Co of Canada (UK) Ltd	26	77%	23%	0%	1.098	680(3)	411(-499)	333(-722)	2998(787)	3344(957)	3343(796)	2803(93)	2905(15)	3095(-202)	4067(705)	4038(1253)	2164(1298)	1753(913)	1453(648)	1131(365)	1027(307)	852(169)	881(250)	622(58)	450(-34)	372(-32)	480(140)	334(47)	258(-0.2)	264(64)	174(22)	
Sun Life Pensions Management Ltd	22	95%	5%	0%	1.192					6521(3662)	5788(2962)	3950(1297)	3201(666)	1939(-419)	4161(1940)	5730(3703)	6043(4194)	4201(2480)	2970(1750)	2360(1225)	2216(1139)	1639(670)	2014(1172)	1034(284)	728(45)	653(30)	1267(700)	836(363)	726(303)	780(403)	416(78)	
Sun Life Unit Assurance Ltd	22	82%	18%	0%	1.184					6429(3998)	5810(3510)	4489(2333)	3873(1802)	8000(1054)	4641(2688)	5804(3875)	5728(3870)	4836(3158)	3274(2069)	2291(1074)	2096(862)	1579(365)	1900(939)	709(163)	358(-80)	281(-96)	604(244)	317(-1)	229(-51)	301(155)	134(15)	
Swiss Life (UK) Group plc	7	57%	43%	0%	1.003																				36(-39)	33(-31)	62(8)	12(1)	10(-1)	13(5)	8(2)	
Swiss Life Insurance and Pension Co	5	0%	80%	20%	0.890																						-16(-16)	64(-25)	70(-18)	79(-18)	82(-14)	
Swiss Re Life and Health Ltd	10	100%	0%	0%	1.078				507(118)	809(373)	772(99)	778(69)	823(50)	746(29)	950(291)	992(292)	995(359)	799(276)														
Swiss Reinsurance Co (UK) Ltd	13	54%	46%	0%	1.020														117(19)	84(-9)	106(-6)	83(-27)	133(31)	64(-5)	44(-15)	33(-9)	55(21)	49(11)	52(13)	39(9)	24(0.2)	
Teachers Assurance Co Ltd	14	57%	43%	0%	1.054														269(135)	250(109)	208(68)	193(55)	144(15)	143(25)	81(-27)	88(-11)	63(-30)	99(6)	80(-7)	100(24)	57(-1)	35(-1)	
Teachers Provident Society Ltd	23	35%	65%	0%	1.985	201(-56)	194(-70)	181(-83)	246(-17)	262(-7)	251(-20)	209(-67)	219(-66)	213(-81)	309(9)	371(70)	395(98)	83(34)	63(17)	52(11)	44(8)	52(24)	18(-9)	19(-17)	18(-20)	26(-14)	31(-9)	35(-4)				
Threadneedle Pensions Ltd	26	88%	12%	0%	1.214	622(260)	445(187)	357(133)	916(654)	1212(833)	1043(674)	761(397)	674(284)	293(63)	476(331)	600(473)	601(475)	314(211)	239(149)	192(107)	166(93)	126(50)	241(134)	128(-7)	188(-35)	164(-59)	604(352)	412(173)	366(137)	465(244)	343(52)	
TPFL Ltd	7	0%	43%	57%	0.868																											
Transatlantic Life Assurance Co Ltd	26	62%	23%	15%	1.264	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	0.5(0.5)	0.2(0.2)	0.3(0.3)	0.2(0.2)	0.003(0.003)	-0.1(-0.1)	-0.1(-0.1)	-0.1(-0.1)	4(-0.3)	1(-1)	1(-1)	2(0.2)	2(-0.4)	1(-1)	3(0.2)	3(-0.05)	
Transport Friendly Society Ltd	20	70%	30%	0%	1.081	17(-4)	15(-5)	16(-4)	24(4)	26(4)	26(4)	24(3)	25(3)	26(4)	30(7)	40(13)	43(17)	41(16)	40(12)	27(0.01)	30(3)	24(-2)	19(3)	15(-0.5)	14(-1)							
TSB Life Ltd	13	100%	0%	0%	1.294														2279(1865)	1689(1274)	1395(963)	1206(783)	1352(928)	757(359)	741(404)	416(73)	1179(817)	804(417)	1541(1179)	800(484)	321(33)	
TSB Pensions Ltd	13	92%	8%	0%	1.165														1221(852)	923(587)	708(406)	559(299)	597(374)	207(37)	115(1)	0.1(-62)	53(25)	22(10)	38(30)	8(5)	2(1)	
Tunbridge Wells Equitable Friendly Society Ltd	23	22%	74%	4%	0.951	35(-71)	9(-114)	-14(-147)	106(-29)	109(-32)	117(-29)	109(-42)	104(-50)	77(-63)	157(18)	167(32)	173(48)	127(13)	98(-8)	79(-14)	69(-15)	54(-22)	61(-2)	35(-19)	26(-19)	27(-11)	24(3)	16(-2)				
Tunstall Assurance Friendly Society Ltd	6	50%	50%	0%	1.012									5(-1)	7(1)	8(1)	8(1)	8(-0.003)	8(-0.2)													
UBS Global Asset Management Life Ltd	13	54%	31%	15%	1.020	422(217)	169(-273)	-859(-1767)	2779(1686)	3572(2031)	3220(1675)	1241(88)	416(-469)	-368(-1180)	649(-52)	1296(613)	1111(627)	241(-22)														
UIA (Insurance) Ltd	20	80%	20%	0%	1.067							19(3)	19(1)	17(-2)	16(-2)	21(2)	24(4)	27(5)	26(3)	32(6)	34(6)	32(2)	40(9)	34(1)	31(-2)	35(1)	50(14)	45(8)	41(4)	40(4)	35(-0.2)	
UK Life Assurance Co Ltd	5	80%	20%	0%	1.054																						29(7)	22(2)	20(1)	21(4)	17(-0.3)	
UK Provident Pensions Ltd	5	100%	0%	0%	8.479																						3(3)	30(11)	28(9)	31(11)	24(2)	
United Friendly Insurance plc	16	56%	44%	0%	1.118											1836(1022)	1878(1055)	1698(796)	1834(919)	1484(585)	1410(503)	1221(333)	932(69)	825(11)	722(-28)	607(-93)	514(-140)	465(-140)	432(-151)	423(-103)	420(-65)	
United Friendly Life Assurance Ltd	15	80%	20%	0%	1.134											123(89)	145(109)	102(64)	93(44)	69(24)	60(22)	43(9)	48(21)	20(-1)	14(-5)	6(-3)	13(6)	5(1)	6(4)	2(1)		
United Kingdom Civil Service Benefit Society Ltd	15	53%	47%	0%	1.039									47(-5)	76(17)	110(46)	127(56)	110(30)	95(8)	77(-10)	79(-9)	74(-17)	97(6)	73(-17)	72(-16)	73(-11)	109(24)	90(7)				
United Kingdom Temperance and General Provident Institution	3	0%	100%	0%	0.933																								956(-320)	1061(-218)	1150(-155)	
University Life Assurance Society	22	82%	18%	0%	5.059					24(24)	25(25)	26(26)	26(26)	28(28)	35(35)	32(32)	31(31)	33(33)	33(33)	34(34)	107(106)	125(112)	180(157)	69(4)	79(11)	96(25)	71(-14)	86(-6)	103(4)	85(-17)	89(-11)	
UNUM Ltd	26	4%	92%	4%	0.876	111(-376)	72(-404)	-11(-479)	78(-353)	149(-300)	220(-191)	221(-172)	134(-181)	109(-131)	76(-137)	59(-126)	46(-120)	87(-68)	56(-88)	32(-102)	55(-88)	21(-110)	81(-34)	39(-71)	21(-82)	26(-67)	39(-47)	55(-24)	70(-0.1)	66(6)	50(-0.3)	
Wesleyan Assurance Society	26	62%	38%	0%	1.085	1506(357)	1410(310)	1375(308)	1673(638)	1659(640)	1562(663)	1364(478)	1411(503)	1387(477)	1448(530)	1532(630)	1440(552)	1289(430)	1051(219)	598(24)	561(10)	473(-53)	415(-77)	333(-122)	286(-132)	274(-103)	299(-54)	284(-51)	291(-33)	279(-18)	244(-29)	
Wessex Life Assurance Co Ltd	13	0%	69%	31%	0.856															-1(-1)	-0.5(-1)	-0.4(-0.5)	-0.3(-1)	0.1(-1)	0.2(-1)	1(-1)	1(-0.3)	1(-0.2)	0.4(-0.1)	0.3(-0.03)	0.2(-0.01)	0.1(0)	
Wiltshire Friendly Society Ltd	15	7%	80%	13%	1.908	0.5(0.05)	-0.1(-1)	-0.1(-0.5)	0.2(-0.2)	0.3(-0.2)	0.3(-0.1)	0.04(-0.1)	0.1(-0.1)	0.1(-0.1)	0.1(-0.1)	0.1(-0.1)	0.1(-0.1)	0.1(-0.1)	0.1(-0.04)	0.3(-0.03)												
Windsor Life Assurance Co Ltd	26	58%	42%	0%	1.078	5711(512)	5356(-104)	4579(-1012)	7752(2019)	3978(2060)	3784(1844)	2952(1141)	2647(819)	2101(298)	3383(1565)	4197(2359)	4491(2610)	3371(1422)	1283(431)	1085(237)	896(115)	378(-37)	504(89)	272(-50)	33(-70)	23(-66)	48(-30)	50(-25)	37(-25)	46(-8)	41(-6)	
Winterthur Life UK Ltd	14	79%	21%	0%	1.089	2403(-543)	1841(-1082)	1085(-1808)	2803(142)	873(205)	1266(394)	1190(321)	1194(286)	1204(249)	1431(468)	1361(731)	1302(664)	1198(520)	916(232)													
WLUK Ltd	18	63%	38%	0%	1.022											1014(437)	1105(534)	769(266)	553(109)	351(-12)	302(6)	188(-43)	180(-10)	104(-57)	86(-57)	91(-39)	131(8)	127(6)	132(12)	123(10)	104(1)	
XL RE Ltd	12	33%	67%	0%	0.936	380(-577)	360(-654)	215(-938)	581(-221)	757(21)	930(229)	701(98)	563(9)	483(-9)	374(-52)	164(-44)	198(0)															
XSMA Ltd	9	56%	44%	0%	1.006							2(-0.3)	2(-0.5)	2(0.2)	3(-0.4)	3(0.4)	3(0.3)	3(1)	2(0.4)	1(-1)												
Yorkshire Insurance Co Ltd	20	15%	35%	50%	0.756							-0.01(-0.1)	-0.02(-0.1)	-0.01(-0.05)	-0.02(-0.05)	-0.04(-0.05)	-0.04(0)	0.01(0.01)	0.01(0.01)	0.02(0.01)	-0.04(-0.1)	-0.03(-0.1)	-0.01(-0.1)	-0.01(-0.1)	0.01(-0.1)	0.1(-0.1)	0.1(-0.1)	0.2(-0.1)	0.2(-0.1)	0.3(-0.05)	0.3(-0.03)	
Zurich Assurance (2004) plc	7	57%	0%	43%	0.974							112(35)	-21(-63)	92(-115)	-21(-42)	21(7)	23(17)	4(1)														
Zurich Assurance Ltd	20	45%	55%	0%	1.002	14505(2090)	12476(-547)	10299(-3202)	20102(5817)	23322(6201)	21972(4408)	4654(-728)	5117(-574)	5394(-303)	5786(467)	6303(1234)	5886(990)	5729(1061)	3992(-630)	3183(-1360)	3167(-1321)	2851(-1593)	3962(-389)	3562(-280)	3440(24)							

Source: the author.