

The History of Insurance: Risk, Uncertainty and Entrepreneurship

Pietro Masci

University of Rome

1. Introduction

The goals of presenting a short review of the history of insurance are to provide a historical perspective on this industry; explain how it has developed with an emphasis on its recent history; and show the relationship between insurance – pooling and transfer of risks- and entrepreneurship - broadly defined as the capability to introduce new combinations of productive factors.

The analysis offered here is based on the distinction between risk and uncertainty as indicated by Knight (2002, or.pub.1921) arguing that risk involves situations where a decision maker face unknown outcomes but known ex-ante probability distributions, while uncertainty is characterized by situations in which the probability distribution of a random outcome is unknown. Consequently, while risk can be covered by insurance, uncertainty normally is not.

Against this background, the history of insurance focuses on the development of insurance in developed and emerging markets with a particular attention to Latin America. The historical review is instrumental to investigate on two main aspects: whether insurance and entrepreneurship interact; and whether the widespread availability of insurance leads to a reduction of uncertainty and support the deployment of entrepreneurship.

The considerations related to these two aspects constitute the basis to further study and test if the development of insurance markets supports economic activity and entrepreneurship and in turn contributes to increases in economic growth as measured by the domestic product per capita. Following this logic, the research questions that need to be empirically tested and answered are: Do insurance markets favor entrepreneurship? And what is the direction of causality, e.g., which comes first, insurance or entrepreneurship?

The framework of this analysis follows the view that the emergence of market institutions such as insurance derives as an unintended consequence from a human activity such as entrepreneurship (see High 2009, 5). Further, following Boettke and Coyne (2003), I consider whether insurance markets lead to productive entrepreneurship and economic growth.

The history of insurance outlined here draws heavily on the work of Manes (1942) and Pearson (1997a, 1997b, 2004) and on documentation that Jenkins and Yoneyama (2000) present in their eight-volume study. It also refers to and draws from, among others, Franklin (2001), Bernstein (1998), Trenerry (1926), de Roover (1945), Ferguson (2009), Prudential Insurance Company of America (1915, reprinted 2009) and finally Klein (1995) for the role of regulation in the insurance business.

The general economic history of emerging markets, particularly those of Latin America, is vast. Bulmer-Thomas (2003) covers the economic history of Latin America from the period when its nations achieved independence in the 1820s to the present; stresses the differences among the Latin American countries while also recognizing external influences to which they

Pietro Masci is a Professor at the Link Campus University of Rome, Italy.

have been subject. In this respect, political, social, cultural and economic development in Latin America is influenced by the Spanish and Portuguese systems, which in turn were influenced by French law, and by the North America system, particularly in the 20th century.

Various contributions provide the background for understanding economic growth, and the development of reforms and institutions in Latin America. Haber (2000) reviews historical cases of institutional change and economic growth in Latin America in the nineteenth and twentieth centuries. Other relevant work includes that of Kuczynski and Williamson (2003) about the nature of the economic policy agenda that the region should be pursuing after the better part of a decade - the 1990s - was punctuated by crises, and during which it achieved disappointingly slow growth with no improvement in its highly skewed income distribution and in living standards. Teichman (2000) examines the politics of market reform in Chile, Argentina, and Mexico, analyzing the implications for democratic practices in each case. Gwynne and Kay (2004) explain Latin America's economic, political, social, and cultural transformations; their associations with globalization and the search for modernity; and how these transformations are affecting the people of the region. Arias (2011 2-6) spells out cultural obstacles to the development of Latin American countries.

While the Spanish and Portuguese influence was more systemic, one can find a British influence in the development of insurance markets in Latin American countries (Jones 1984) and obviously in Caribbean countries. However, insurance topics have not been fully tackled (Baughman 1965); in particular, little academic work has been done on the development of the insurance industry in Latin America with some notable exception, e.g., Consorte (2005), who has written an important history of insurance in Mexico since 1789; Jones (1984) who writes of the development of fire insurance in Argentina and the role of British insurers. Relatively more expanded is the development of social insurance programs, see Mendelsohn (1954), and Mesa-Lago (1978) for which there is also a strong influence of Spain and also of the fascist ideology (Paxton 2004).

A number of studies, mostly from practitioners, have been undertaken to provide a Latin American historical perspective on entrepreneurship (e.g., Tiffin 2004).

Jara and others (2009), Porzecanski (2009), and Rojas-Suarez (2010) show that the impact of the global crisis on Latin America has in some respects been less severe than in previous crises. This reflects in part the development of domestic financial markets and particularly bond markets, which has provided incentive to retain local savings and attract external financial inflows.

The findings and considerations on insurance derive from the Western experience with reference to the specificities of Latin American countries. In this respect, it is safe to state that throughout the centuries, three countries have shaped the development of insurance, i.e., Italy in the Middle Ages and in the Renaissance; United Kingdom in the 16th through the 19th century and then the United States. The historical review shows to a great extent that insurance is connected to entrepreneurship and how individuals imbued with the spirit of innovation and entrepreneurship have tried to overcome uncertainty and in the process have shaped the development of insurance, financial sector and financial intermediation. These findings constitute the background to test the research question, i.e., do insurance markets favor entrepreneurship? And what is the direction of causality, e.g., which comes first, insurance or entrepreneurship?

This section covers the stages of the history of insurance including the role of insurance in the global financial crisis 2007–8; presents several considerations stemming from the historical review with respect to the factors and motivations for the development of insurance; articulates the relationships among insurance, economic growth, and entrepreneurship, the importance of insurance as an institution, the specificities of Latin American countries and the role of public policy.

2. The Stages of the Development of Insurance

The history of insurance has developed in parallel with that of entrepreneurship to conquer uncertainty and it is part of a continuous journey into the so called **KuU** (Known, unknown and Unknowable, see Diebold, Doherty, Herring 2010, 18). The history of insurance can be divided into seven periods.

The first period, a sort of prehistory of insurance, stretched from ancient times until the fourteenth century (i.e., toward the end of the medieval period), and was characterized by various primitive forms of protection against uncertainty. The second period lasted from the middle of the fourteenth century until the end of the seventeenth century and was marked by the birth of the insurance policy. The third period, which included the eighteenth century and first half of the nineteenth century, saw the expansion of the forms of insurance and the emergence of insurance companies to better support economic activity. The fourth period was highlighted by the development of professional financial management, the establishment of the first insurance groups, and the beginning of government intervention in the form of social insurance. The fifth period - between World War I (WWI) and World War II (WWII) - was an era of business combinations and mergers in any business field. The sixth period - from the end of World War II until the end of the twentieth century - witnessed growing importance of regulation and supervision; greater intervention of government with social insurance programs; innovations in the last two decades of the twentieth century following a revival of the private sector's doctrines and the downfall of the welfare state; increased globalization of financial services; expansion of the insurance of new risks; better access to financial services for the lower-income segments of the population; and closer relationships between insurance, banking, and capital markets. This period consolidated insurance as a crucial market institution. Finally, at the turn of the century, the beginning of the seventh and current period saw the terrorist attacks on the United States on September 11, 2001, followed by devastating natural catastrophes (e.g., earthquakes and hurricanes) that led to a growing role for government to protect against particular types of risks (e.g., terrorism, natural catastrophes). The 2007–8 global financial crisis deserves particular attention because it gives evidence of the limits of rational expectations, Efficient Market Hypothesis (EMH) and risk-modeling techniques, not able to fully define the risk profiles of events as well as human and social behavior and thus convert uncertainty into risk. The crisis confirms the essentiality of effective financial and insurance markets to allow economic actors to operate. The crisis also underscores how incorrect construction of risk profiles, shortcomings of regulation and supervision, and situations of uncertainty not transformed into risk (e.g., human and social behavior, terrorism, catastrophes) may stop the functioning of financial and insurance markets, reduce productive activity and lead to more direct or indirect intervention by government in the financial and insurance markets.

I. The Prehistory of Insurance: Origins and Early Development

The fundamental idea of insurance is very ancient, and it is connected with economic activities and initiatives and the need to control uncertainty, which must have been much more pressing in the past than it is today. As Ferguson (2009, 185) indicates, pre-modern agricultural societies relied much more than later ones on efforts to propitiate the gods (or God), who were thought to determine famine, plagues, and invasions and explain uncertainties.

The first known records of insurance date from several thousand years before the Common (or Christian) Era. Chinese merchants (i.e., the entrepreneurs of that time) devised a system to protect themselves from losses of shipped cargo resulting from storms, pirates, or anything else that could go wrong at sea (Vaughan, 1997). They spread their cargoes among several ships - a diversification of risk- believing that whatever could sink, or destroy one ship on one day would probably not destroy a whole fleet sailing on several days.

The roots of insurance can also be traced to Babylon, where traders were encouraged to assume the risks of the caravan trade (i.e., transportation risks) through loans that were repaid (with interest) only after the goods had arrived safely (Franklin, 2001, 259; Buckham, Wahl and Rose, 2010, 2). We find a record of a mutual association for sharing risks from the time of the Babylonian king Hammurabi (ca. 2250 B.C.). This practice, known as bottomry, was given legal force in the Code of Hammurabi (ca. 2100 B.C.), which contains the most definite early evidence of a type of insurance (Van Niekerk 2009). According to the Code of Hammurabi, bottomry, in its simplest form, entailed a loan made by A to B on the security of B's ship (i.e., the bottom of the ship) on the condition that if the voyage was completed successfully, B would repay the loan with a premium at a rate stipulated in the contract; but if the ship was lost, A would forfeit both the loan and the premium and would be left with the empty bottom of the ship. The premium charged by A had to be sufficient not merely to cover the estimated risk of loss but also to provide interest on the money advanced. Bottomry was dealing with events for which a probability of occurrence was difficult to identify and quantify. A bottomry would be taken, but the repayment would be contingent on the ship successfully completing the voyage without being stolen or lost. With bottomry, people who traveled in caravans organized themselves for mutual assistance against looting and pillaging, and they agreed that all would jointly cover the losses of each one. Merchants contribute a fraction of their wealth to the risk capital (equity) of a venture. If the ship went down, the loan would be spread among a number of investors, which constituted a form of risk diversification. The important feature of bottomry is the bundle of loan and insurance, i.e., the so called maritime loan so that bottomry cannot be considered a standalone insurance contract. The bundle of insurance and loan, typical of the maritime loan, does not contribute to diversification as peril risk (loss of the ship), market risk and business risk require a great deal of managerial attention from investors and lenders. At the same time, borrowers could insure their venture only in combination with a loan. This ancient instrument shows the links between finance and insurance, i.e., bundling of insurance with loan, which constitutes nowadays a recurrent theme in insurance contracts and particularly in micro insurance, e.g., micro insurance is often sold to low segments of population together with loans and this circumstance is not fully understood and accepted. Similar but more sophisticated varieties of bottomry still exist, e.g., the so-called cat bonds for natural disasters, for which the amount of the loan would be lost in case of the occurrence of the event of natural disaster and the probability whose occurrence is not well quantified.

Along with Babylon, early forms of insurance are found in various other ancient civilizations. The Phoenicians applied a comparable system of bottomry to their seaborne commerce. In old Egypt, legacies for survivors (often inspired by religious motives) were organized on a cooperative basis. In Greece, owners of slaves insured against their departure in such a manner that they made periodic payments to a particular wealthy man, who in turn undertook to pay a certain lump sum if the contingency actually arose.

Codified Roman law gave no recognition of insurance as separate from a loan, i.e., maritime loan. However, contingencies arising from death were provided for as far back as two thousand years ago. In fact, Romans used burial societies as a form of life insurance that provided funeral expenses for members and payments to the survivors with each member paying an admission fee and monthly premiums, and the society insured that each would have a decent burial (Pearce, Millett and Struck 2000; Buckham, Wahl and Rose 2010, 4-5).

Already in early times, individuals, - merchants and traders, who could be regarded as entrepreneurs - introduced various devices to protect themselves against the uncertainties that might prevent them from deploying and effectively implementing their initiatives. However, in ancient times an insurance contract does not exist. Also the coverage provided was not based on a complete knowledge and quantification of probabilities of occurrence of the events. Despite these shortcomings, the conceptual apparatus existed to define what insurance is and make it operational (Franklin 2001, 273).

II. The Birth of the Insurance Policy

In primitive social structures, the enlarged family was the natural place to reduce uncertainty and to build risk-sharing association. In the Middle Ages, this risk-sharing role was taken by the guild, which rose to such importance that it impressed its stamp upon every manifestation of medieval life.

With the growth of towns and trade in Europe, the medieval guilds, initially were formed as confraternities of workers, undertook to protect their members from loss by fire and shipwreck, to ransom them from captivity by pirates, and to provide decent support or burial in sickness, poverty, or death. The guild played a lasting and important part in the evolution of insurance, inasmuch as it was not an association based upon consanguinity but a brotherhood born from the need for mutual assistance among members practicing the same craft or trade, e.g., membership was defined by some verifiable characteristic such as birth (Dasgupta 2010). For instance, old Anglo-Saxon and Danish guilds in the tenth and eleventh centuries provided that losses suffered by a brother from shipwreck, fire, water, or the theft or burglary of cattle were to be compensated for jointly by the whole organization. Regular contributions were made for this purpose. Gradually, it became customary to include "social welfare" provisions for the benefit of the members, e.g., by operating a burial fund.

Proximity among members was one of the features of the guilds. Proximity allowed individuals to know one another's characteristics and dispositions as well. Therefore, there was little problem of adverse selection (i.e., when people who are bad risks are not distinguishable from the good risks). Proximity also allowed people to observe one another, and so they could see what they were about, and consequently moral hazard (i.e., the possibility that a party insulated from risk may behave differently than it would behave if it were fully exposed to the risks) was not a very significant problem. Similar forms of association (i.e., types of so-called of

mutual insurance, which reduce or eliminate adverse selection and moral hazard) are found today in micro insurance coverage, for instance among people living in the poor areas of big cities mostly of emerging market countries. In those areas, people pay premiums jointly and receive indemnities related to micro insurance coverage in favor of a group of people living in the area.

In the Middle Ages, Italy was the place where several forms of insurance developed, all directed to facilitate economic activity. The first authenticated record of a real marine insurance transaction - an insurance contract - dates from 1347 and is kept at the Genoa Records Office. Specimens of early insurance policies date from 1384 in Pisa and 1397 in Florence. A typical contract, such as that with the merchant Francesco Datini (ca. 1355–1410), stipulated that the insurers agreed to assume the “risks of god, of the sea, of men of war, of fire, of jettison, of detainment, by princes, by cities or by any other person, of reprisal, of arrest of whatever loss, peril, misfortune, impediment or sinister that might occur with the exception of packing and customs, until the insured goods were safely unloaded at their destination” (de Roover 1945, 188f; Franklin 2001). Worthy of note is a form of burglary insurance that existed in the early Middle Ages as a result of a decree by Pope Gregory IX in 1170. It operated on a limited scale, being confined to the small district of Rodez in southern France, where it survived until 1789 (Manes 1942). These contracts – and particularly the first contract stipulated in Genoa- are relevant in that we see a separation of insurance contracts from financing, i.e., insurance policies are not bundled with loans, or other kinds of contracts as it happens with bottomry.

By the middle of the fourteenth century, marine insurance was practically universal among the maritime nations of Europe (Winter 2010). Marine insurance was the mother not only of many other branches of insurance but also of insurance law, i.e., the concept of indemnity first developed in relation to sea risks. The first statutes for marine insurance originated in Barcelona in 1435. In 1549, Emperor Charles V - the Holy Roman emperor - included provisions for compulsory marine insurance. Italy and Spain led in marine insurance law in the fifteenth and sixteenth centuries, while in the countries of Northern Europe, marine insurance took root in the age of the great discoveries and the beginning of overseas trade. Accordingly, the initiative for insurance activities and legislation passed from Italy and Spain first to the Netherlands, then to France and to England in the seventeenth century, and finally to Germany and the United States in the nineteenth century.

All these various forms of insurance agreements were considered legal as the Middle Ages recognized the role of insurance (Brenner, 1996). However, toward the close of the Middle Ages, due to influences of religion (Franklin 2001, 240), legislation against gambling of all kinds became more severe, which gave rise to the tendency to consider every insurance deal a gamble. The general attitude about this was so strong that all forms of insurance began to be considered null and void unless the insured has the object of the insurance, which is a real, insurable interest. The rule of the insurable interest, in effect, constituted the beginning of the modern insurance policy. To underscore the importance of this rule, which still holds true, refer to the credit default swaps, substantially insurance contracts, which were at the center of the financial and economic crisis of 2007-8. They are against the long-standing rule of the insurable interest that prohibits disinterested parties from taking a policy. In fact, speculators, short sellers, or anyone could buy highly leveraged credit derivatives and credit default swaps and lead to a destruction of a company, while regulators and supervisors were not able to understand and supervise, or at least oversee the instruments of credit default swaps and credit derivatives (Lowenstein, 2010, p.158-9)

Modern scholars have examined the early development of insurance. Bernstein (1998, 95) notes that the profit on an investment in goods that must be shipped over a long distance depends on many factors and forecasting was a necessity for the insurer (e.g., using statistic and mathematical models to assess probabilities). However, history shows that the introduction and implementation of insurance policies do not wait for a mathematical and statistical model and an available and tested theory (Buckham, Wahl and Rose 2010, 5). Franklin (2003) argues that humans have coped with uncertainty without the benefits of advice of mathematicians before (and after) Pascal's discovery of the law of probabilities. Thus, many insurance contracts have been introduced without the full backing of statistics, probabilities, policy research, and a full quantitative understanding of the risks, but instead relying on the intuitive and practical assessment of risk and the operational capability of introducing, adopting, and implementing workable and effective instruments - such as insurance policies. This constitutes evidence that entrepreneurship also applies with respect to insurance, in the sense of individuals who undertake initiatives, e.g., to provide coverage, as they are alert (Kirzner 1985) to grab market opportunities for gain (High 2009, 25) and they sell protection against the risks faced by other people (Reinmuth and Lewis 1970). In turn, those entrepreneurs face business uncertainty, which is the basis of their revenues and possibly profit.

III. The Insurance Companies

In the fifteenth and sixteenth centuries, economic activity and insurance started to migrate from the Mediterranean to Northern Europe, where entrepreneurship, innovation, and economic activity were flourishing and where entrepreneurs found it relatively easy and cheap to obtain financing for a wide range of business projects - from domestic canals to shipbuilding to tulip horticulture. In northern Europe a system of support to the economic activities started to take shape and insurance companies emerged.

Insurance developed rapidly with the growth of Dutch and British commerce in the seventeenth and eighteenth centuries (Martin 2010). The first professional insurers were private individuals. Before the formation of corporations devoted solely to the business of writing insurance, a number of individuals signed the policies, each of whom wrote his name and the amount of risk he was assuming underneath the insurance proposal—hence the term “underwriter.” But at an early date, we find instances of insurance pools operated by groups of persons, loosely tied together as the emergency arose, like Lloyd's underwriters in London, or permanently united into joint-stock companies or mutual societies. The first life insurance was issued in January 1536 to William Gibbons of London, to whom was issued a one-year policy that allowed Gibbon's beneficiaries to obtain 400 pound sterling in the event of death in exchange of a premium of 32 pound sterling. It is important to note that the contract was underwritten without a clear knowledge of the probabilities, i.e., the mortality tables appeared more than 100 years later. Gibbons died and the underwriters had to pay the indemnities in a situation where the contract was more a gambling than insurance.

British merchants and ship-owners began meeting at a coffeehouse - near the London docks - that Edward Lloyd had opened and named Lloyd's (Brown 1987). They made agreements to share both the profits and possible losses of trading trips. Some individuals were more willing and had more funds than others to risk possibly hazardous trips. They would assess the risk and underwrite such trips. Although insurance was first devised for a ship's cargo, merchants also began to band together to share other kinds of risk, including that of fire. These

The History of Insurance: Risk, Uncertainty and Entrepreneurship

individuals were the forerunners - again insurance entrepreneurs - of the famous international insurance association Lloyd's of London, whose underwriters today insure almost anything from movie stars to the launch of a communications satellite. By the end of the eighteenth century, Lloyd's had grown into one of the first modern insurance companies, and thus an insurance market began to develop in London.

As the insurance business became increasingly complex, a more organized approach was needed. Thus, the first real insurance company was founded in 1667, the year after the Great Fire of London destroyed 13,000 homes and left 100,000 people homeless that provided a strong impetus for the fire insurance business in England (Pearson 2004). The first joint-stock insurance company to offer marine insurance was founded in 1668, with headquarters in Paris, but it was short-lived. The first English marine insurance joint-stock company began in 1720. The first life insurance companies originated in England toward the middle of the eighteenth century. The last third of the eighteenth century witnessed the emergence of livestock insurance, stimulated by the development of agriculture.

In 1745, two churches in Scotland started the first insurance fund based on actuarial and financial principles and calculations of life expectancy rather than mercantile gambling. More important, premiums were used to create this fund, which was profitably invested. Therefore, the beneficiaries of insurance (e.g., those whom Ferguson calls "widows and orphans", Ferguson 2009, 191-95) would be paid out of the return on investments. This is a first example of an insurance company that invests savings (i.e., premium received).

During this period, forms of insurance regulation emerged, e.g., the French Ordonnance marine regulation in 1681, which represented the first indirect comprehensive government intervention in the field (Manes 1942).

In the New World of North America (Wertheimer 2006), the first insurance company was founded in Charleston in 1735 as an association of storeowners who shared the risk that fire might destroy their wooden buildings (Cummins and Venard 2007). It lasted only five years. Benjamin Franklin founded the Philadelphia Contribution for the Insurance of Houses from Loss by Fire in 1752. Fire insurance corporations were formed in New York (1787) and in Philadelphia (1794). In 1759, the Presbyterian Synod of Philadelphia sponsored the first life insurance corporation in America, for the benefit of Presbyterian ministers and their dependents. Similar groups were formed and then split into various companies. Many - such as the Hartford Fire Insurance Company, Aetna Life and Casualty Company, and Travelers Insurance Company - came to be based in Hartford, giving it the informal title of insurance capital of the United States. As these companies grew in both finances and understanding of risk sharing, they began to offer more kinds of insurance in more areas of the country. Because underwriters could not travel around the country to meet with all the people who might be interested in buying insurance, they began appointing agents to offer insurance and accept premium contributions on their behalf. This was the birth of the insurance agency system, through which most people in the United States today buy their insurance (McCosker 1945).

In Latin America, Spain's domination imposed its model in many areas including insurance and facilities for commerce, e.g., shipping, warehousing, and communication, see Oszlak (1991). Similarly than in Europe, in Latin America, the path of development of the insurance starts with the creation of maritime insurance given the activities of companies that trade with the European continent.

Insurance as we understand it today started around the mid of the seventeenth century, when the theoretical bases for insurance began to be established and provide thoughtful support to the underlying realities that led to the development of insurance theory and operations (policies). Outstanding individuals made significant contributions to the progress of the theory of insurance (Borch 1964, Thoys 2010). Franklin (2003) and Ferguson (2009, 189–201) stress several conceptual breakthroughs particularly with respect to probability. Blaise Pascal represents the turning point in the development of the theory of probability, a concept he developed in 1640 working with another mathematician, Fermat, on the Theory of Probability, i.e., letters between the two show that Pascal and Fermat participated equally in the creation of the theory (Bell 1937, 86). Other key individuals, John Graunt (b. 1620, d. 1674), (Graunt 1975) founded the science of demography, the statistical study of human populations. He analyzed vital statistics, particularly the compilation of births and deaths in London from 1604 to 1661 that would lead to the tables of life expectancy and mortality that are the basis for life insurance. In 1693, following the work of Graunt, the astronomer Edmond Halley (1656-1742) constructed the first mortality tables, based on the statistical laws of mortality and compound interest, (Halley 1693, 596-610). These tables, corrected in 1756 by Joseph Dodson (1696-1772), made it possible to adjust the premium rate for insurance depending on the age of the insured person; previously, the rate had been the same for people of all ages. Edward Wigglesworth (Vinovskis, 1971) produced the first life expectancy table in the United States and is also regarded as one of the founders of actuarial science. Very relevant was the work of Jacob Bernoulli, who first described the Law of Large Numbers -one of the foundations of insurance - and then developed a rigorous mathematical proof published in *Ars Conjectandi* (The Art of Conjecturing) in 1713 that represents the first treatise on probability. This became generally known as Bernoulli's Theorem. Abraham de Moivre developed the normal distribution (Abraham de Moivre 1733), with De Moivre's chief works: *The Doctrine of Chances* (1718), the *Miscellanea Analytica* (1730), in which he investigated infinite series, and *A Treatise of Annuities on Lives* (1752), an application of probability to mortality statistics, and the creation of the theory of annuities (Stigler 1986). Later Gauss develops the normality curve (Gauss 1809). Daniel Bernoulli (Bernoulli, 1954 [1738]) articulated the theory of utility, with the St. Petersburg paradox as the base of the economic theory of risk aversion, risk premium and utility (Martin 2008). Thomas Bayes (Bayes, 1764, 370-418) puts the basis of inference and further development of statistics. These outstanding individuals started a large development of studies and researches that made the 17th the century of mathematical and probability discoveries.

In this period, key concepts of insurance emerge: the risk of misfortune to a thing can be sold independently from the thing itself; the premium of an insurance policy represents the quantification of the risk involved; profit can be made from estimating the risk correctly (Franklin 2001, 273-4); the premiums received are invested.

IV. Growth of Activities, Professional Management and Social Insurance

In the eighteenth century, a greater individualism was emerging. The pioneers in this field—Anne-Robert-Jacques Turgot (1727–81) and François Quesnay (1694–1774) - called the physiocrats (Muller 1978), in contradiction to the mercantilism of the time, gave a new and wider scope to individualism. The disappearance of guilds and similar medieval institutions led to a growing economic role for the individual that had been theretofore unknown. In this context, the individual's realization in spite of his or her vulnerability became a powerful driving force,

which encouraged individuals to find new forms of protection. The increased insured activities prompted the need of a more professional management approach. Towards the end of the 19th century, following the economic development related to the industrial revolution, a series of social and political problems emerged as a consequence of the greater role that workers play in the economy and led to the introduction of social programs.

i. Growth of Insurance Activities

In the eighteenth century, the range of insurance widened. In the 1830s, the practice of classifying risks started (Manes 1942). After 1840, with the decline of religious prejudices, life insurance entered a boom era. Accident insurance became popular in Europe in 1845; at the outset, it was limited to railroad accidents. In the second half of the nineteenth century, Cuthbert Heath (1859–1939) is credited with being the father of non-marine insurance at Lloyd's. He later cemented Lloyd's reputation in the United States by paying all claims resulting from the 1906 San Francisco earthquake and fire, irrespective of policy wordings. Liability insurance was introduced in 1876. Insurance against damages to plate glass and plumbing followed, and afterward all the other branches of insurance developed. To the existing insurance policies - created to cover the losses caused by the forces of nature, like death and fire - new types of coverage were added mainly to protect against losses resulting from the acts of people, like burglary and similar crimes. The Workmen's Compensation Act of 1897 in Britain required employers to insure their employees against industrial accidents. Public liability insurance, fostered by legislation, made its appearance in the 1880s, and it attained major importance with the advent of the automobile. Insurance policies providing for money requirements that resulted not from natural calamities, business conditions, or civic duties but solely from acts of human volition like negligence (e.g., public liability insurance) represented the last link of this chain.

With respect to insurance activities, the "independent" history of insurance in Latin America starts in the 19th century. According to Abreu and Fernandes (2010), the history of insurance companies in Brazil began in 1808 when two insurance companies were founded in the province of Bahia: Companhia de Seguros Boa Fé and Companhia de Seguros Conceito Público. However, the development of this business was very slow, due to the lack of economic opportunities and political stability and to an institutional framework very negligent and not adapted to the specificities of the country given that early legislation on insurance was borrowed from Portugal.

Towards the end of the 19th century, there was an expansion of insurance in Latin America with the opening to foreign companies through the agency system (appointment of local agents mostly located in Buenos Aires) rather than that of the branch system: British (e.g., London Insurance Corporation and the Lancashire Insurance Corporation), Swiss (Basle Insurance) and German (Gladbach Insurance). This was due to the buoyant market of Latin America (particularly for commodities and especially in Argentina), and to the trade between Latin American countries and Europe, e.g., Argentina was a rising field for British trade and investment (Jones 1984). The entry of foreign insurance companies in the Latin American market prompted the reaction of local insurance businesses like Estrella in Argentina. In the early years of the 20th century, following the independence of almost all the countries, Latin American governments started to adopt antagonistic legislation imposing on foreign insurance companies various limitations, e.g., buy local securities and put it in deposits inside the country. In fact, Estrella was stressing the fact that its funds were invested locally and contributed to the

local development. This argument was also against the practice of agency used by foreign insurance companies as opposed to the practice of the branch system. This stance was then the base for lobbying the Congress in favor of Argentinian based companies (Jones 1984, 117). In addition, given the interventionist attitude that was widespread in Latin America, e.g., in the area of trade policy and commerce, many Latin American Governments decided to directly control insurance companies, e.g., several of them were nationalized. For instance, in 1924 the National Insurance Bank was created in Costa Rica as a state monopoly to provide banking and insurance services and the public sector monopoly of insurance in Costa Rica that lasted until the early 2000. In Brazil, the objective of government intervention in the insurance market was to limit the adverse balance of payments impact of seeking reinsurance abroad. Decree Law 1186 of April 1939 gave the monopoly of reinsurance business, the task of redistributing business, which exceeded its retention limits, to insurance companies operating in Brazil and the monopoly of the placement of reinsurance abroad. Reinsurance with the Institute of Reinsurance (IRB) of risks exceeding retention limits was made compulsory and retention tables had to be approved by the Departamento Nacional de Seguros Privados e Capitalização-DNSPC. State-controlled social security institutes held 70% of IRB's capital and the residual 30% were held by the insurance companies. By the end of the nineteenth century, governments were assuming a greater role in the insurance business. This gave birth to what is then defined as social insurance.

Concerning the intervention of the state in the economy, it is worth noting that the Argentinean state was supposed to be modeled on a liberal track. The constitution of 1854 was shaped very much along the lines of that of the United States. However, the political reality changed and moved the largest Latin American economies toward state intervention and protectionist, which did not help the development of the region (Jones 1984, 120).

The growth of insurance activities and the emergence of new needs prompted greater professional management and social insurance programs.

ii. Professional Management Approach

The development of the insurance industry required a strong professional management from financial and operational points of view, i.e., insurance companies started to be organized in a financially sound manner to respond to the needs of a growing economy.

From a financial point of view, the New York Fire of 1835 called attention to the need for adequate reserves to meet unexpectedly large losses; in 1837, Massachusetts became the first state to require companies by law to maintain such reserves. The devastation caused by the Great Chicago Fire of 1871 emphasized the costly nature of fires in structurally dense modern cities and thus the importance of prevention as well as appropriate reserves. In the following years, the growth of the reinsurance business (Gastel 2004) became a critical factor in the progress of insurance. Reinsurance, whereby losses are distributed among many companies, started to become common in various lines of insurance and was devised to meet such situations as catastrophic fires and floods and expand the availability of insurance (Ericson and Doyle, 2004, 35-6).

From an operational point of view, various forms of association among insurers emerged and the transformation of the insurance companies were directed to meet growing needs of clients. This leads to the promotion of big insurance trusts, or groups, which are often international in character, in all great countries and in special fields of insurance (Manes 1942).

The History of Insurance: Risk, Uncertainty and Entrepreneurship

In this contest a rationalization of the insurance business takes place under the forms of brokerage system and branch-office system, specialization, standardization, and joint-stock companies.

The system of insurance brokerage firms and agencies - e.g., the canvassing system, born in America and also introduced in Latin America by foreign insurance companies (see above) - was developing, whereby the insurance agent called from house to house selling insurance.

The development of the branch-office system is a phenomenon that assumed two forms. The big companies (mostly European reinsurance companies) (1) founded one or several branch establishments, engaged in straight insurance business; or (2) called into existence a number of organizations, different in appearance but tied by personal bonds, for the operation of different branches of insurance.

In this period, insurance companies moved towards progressive specialization. By combining the sales of various products, and through the joint operation of different branches of insurance, a considerable reduction of overhead costs was achieved. Along these lines, one notes the progressive classification of customers according to their social status, and consequently insurance companies specialized in service to certain professional categories. Premium rates and other conditions varied from company to company, according to whether they catered to the upper classes, big landowners, or traders and professional people.

As insurance companies became more professionally managed, they strove to come to a standardization regarding, for example, provisions for the level of premiums, e.g., the developments in the operation of insurance led to the adoption of periodic premium payments (Manes 1942). However, the tendency toward progressive standardization, which was typical of big business, was less generally characteristic of insurance. This limited standardization made it very difficult, even for the expert, to compare the prices and services offered by various companies, e.g., for accident and health insurance. In some instances, however, the growing standardization of needs, and a certain leveling, brought about a greater uniformity in insurance. This led to the emergence of insurance companies catering to particular professional categories. For example, the members of a certain profession may be expected to have more or less the same needs, including their needs for insurance. This deficient standardization in insurance still exists, for instance, among the so-called mutuals, cooperatives, and community-based organizations that operate in the micro insurance field and try hard to standardize contracts to make their operations more efficient.

Joint-stock companies began to adopt some of the principles of mutual companies (e.g., paying dividends to policyholders, Manes 1942), while the latter strove to incorporate into their statutes some of the advantages offered by joint-stock companies (e.g., fixed premiums). In many countries, the differences between government insurance funds and private insurance companies became less pronounced, inasmuch as the former gradually adopted commercial forms of operation (e.g., this was the case for life insurance in Italy).

iii. Social Insurance

Towards the end of the 19th century, the increase of the working class and its rising political relevance created uniform needs of protection; hence the introduction of standard social insurance programs under the government's umbrella and the beginning of the so-called welfare

state as well as the expansion of insurance plans suitable for the small businessperson. In the nineteenth century, many “friendly” and “beneficence” societies were founded to insure the life and health of their members, and many fraternal orders were created to provide low-cost, members-only insurance, e.g., today, fraternal orders continue to provide insurance coverage, as do most labor organizations; many employers sponsor group insurance policies for their employees to include life insurance as well as sickness and accident benefits and old-age pensions (and the employees usually contribute a certain percentage of the premium).

In Germany, the Social Democrat, National Liberal, and Center parties were all involved in the early stages of social legislation, but it was Otto von Bismarck, the first chancellor of the German Empire, who established the first practical aspects of the welfare state. He implemented social legislation to preempt the programs championed by Karl Marx and Friedrich Engels (Eghigian, 2000). Bismarck’s idea was to introduce the minimum aspects of these programs that were acceptable to the German government without any of their overtly socialistic aspects and to focus on programs designed to increase productivity, as well as gain the political attention of German workers. These initiatives included health insurance, accident insurance (workmen’s compensation), disability insurance and old-age retirement pensions. On the basis of Bismarck’s message, the Reichstag considered three bills designed to deal with health insurance (1883) and accident insurance (1884). Retirement pensions and disability insurance were dealt with later (1888). These initiatives were also politically motivated to win voters and were not undertaken for altruistic motives (Ferguson 2009, 203). Bismarck’s social insurance legislation set the stage for broad state intervention in providing social insurance.

The German health insurance program was enacted in 1883 to provide health care for the largest segment of the nation’s workers. The health service was established on a local basis, with the cost divided between employers and employees. Employers contributed one-third, while workers contributed the remaining two-thirds. The minimum payments for medical treatment and sick pay for up to 13 weeks were legally fixed. The individual local health bureaus were administered by a committee elected by the members of each bureau. This had the unintended consequence of establishing a majority representation for the workers, on account of their large financial contribution.

The Reichstag of the Kingdom of Prussia passed accident insurance legislation in 1884. The program’s entire expense was to be underwritten by employers, which also administered the program. Accident insurance became effective in the 14th week, to take over where the health insurance program left off. It paid for medical expenses and provided a pension of up to two-thirds of earned wages if the worker had been fully disabled. The program was expanded in 1886 to include agricultural workers.

The Old-Age Retirement Pension Program, enacted in 1888, was financed by a tax on workers and designed to provide a pension annuity for workers who reached the age of 70 years. At that time, life expectancy for the average Prussian was 45 years. From the start, the program covered industrial and agricultural workers as well as artisans and servants. Also, unlike the other two programs (health and accident insurance), the principle that the government should contribute a portion of the underwriting cost, with the other two portions prorated accordingly, was established. The disability insurance program was intended to be used by those who had been permanently disabled and was directly supervised by the state or province.

The History of Insurance: Risk, Uncertainty and Entrepreneurship

While Germany started the intervention of the government in social legislation, it was Japan that created a first-class, vast welfare state (Shibata 2008).

The introduction of social programs in Latin America is influenced by the colonial Spanish and Portuguese systems, in turn influenced by the French System. On the other hand, one can easily find a strong English influence in the development of insurance markets in Caribbean counties. One should also note that in turn the Spanish and Portuguese insurance systems were heavily influence by the French approach.

Cutler and Johnson (2001) intend to explain why countries have adopted national Old-Age Insurance and Health Insurance programs considering that several theories attached factors that could lead to adoption (e.g., strain from expanding capitalism; need for political legitimacy; increased wealth; and the outcome of leviathan government). They find weak evidence that these theories explain the adoption of Old-Age and Health Insurance and conclude that social insurance can be politically expedient for many different reasons.

In this phase of development, more clearly than in the past, economic activity and insurance business evolve in parallel. The experiences of the 18th and 19th centuries, particularly in the United Kingdom, have provided an opportunity for economic historians to examine the relations among financial services, insurance, economic activity and growth (Rubinstein 1993; Cain and Hopkins 1993; Lee 1986, 1990; Barras 1986, 1990) (see also section on insurance and economic growth). Enormous amounts of capital would not be invested without the possibility of eliminating at least some of the inherent risks by means of insurance. Therefore, it may well be said that large-scale industry, finance capitalism, and insurance have been mutually self-supporting in their way forward and the availability of insurance policies made investments possible. During the nineteenth century, the growth of the leading European insurance companies, and even more of American firms, kept pace with the intensive expansion of the banking field. Enormous increases in amounts insured, a remarkable growth of capital assets, and an expansion of foreign and overseas business were typical of this evolution, especially during the last third of the 19th century (for data, Manes 1942, 43).

The expansion and the broadening of scope of insurance - the rise of comprehensive insurance plans- made possible the growth of large-scale operations in industry and transportation. Progressive improvements in communication technology have also greatly contributed to the advancement of insurance. In this context, joint-stock companies supplanted private insurers, so the individual insurer tended to disappear.

However, innovation and creative destruction of the pioneers of entrepreneurship and of insurance encountered difficulties and failures (e.g., the first life insurance company founded in Central Europe in 1828 was obligated to place its four hundred shares on the international market and was further compelled to guarantee its clients a 50 percent participation in the profits, computed every seven years). This provides some evidence that it takes time before a practice such as insurance becomes largely spread and accepted (High 2009).

As insurance became more institutionalized, there was a trade-off between the benefit of reducing uncertainty and promoting economic initiatives, and the tendency of people to become less active and entrepreneurial and instead rely on the government: "There is nothing to gain by idleness. . . . Men must be active persevering and energetic" (Hunt 1853, 775; see also Ilmakunnas and Kanninen, 2001). I would argue that as uncertainty is increasingly discovered

and understood, new forms of uncertainties surface, so that people start to get used to the reality that insurance is a market institution that can facilitate business.

V. Combinations and Internationalization

The years of hyperinflation, from 1919 to 1923, were disastrous for the insurance business (Evans 2004), which cannot function properly if the reference currency is not playing its role as a standard of value, and a means of conserving value. Monetary devaluations hit both insurer and insured not only when the risk actually matures but also both before and after devaluation, and thus they have a very detrimental effect upon all kinds of capital accumulation, reserves, etc. Despite this negative impact, the effects of World War I on the role of insurance were not destructive. In fact, the mortality experience due to the war proved to be less significant than most companies had feared (Butt 1984) and the companies offset the losses against the raise of income. On the other hand, the war proved to be of propaganda for life, individual, social, and disability insurance, and a forceful impetus for marine insurance. In spite of the war's enormous number of casualties, not one life insurance company suspended payments during the war.

This situation prompted a series of combinations of insurance companies as well as the realization of insurance as a field of research. However, there was hardly another time in the history of insurance that was marked by the formation of so many new concerns in Europe as the period from 1919 to 1923. In Germany alone, about 250 new companies were established during these five years.

Horizontal integration through the formation of trusts and mergers of existing or newly formed companies, stimulated by the increasing demand for capital and the need to reduce overheads, was a main feature of this period. A related development was that of vertical integration, such as that of direct insurance with reinsurance, insurance with banking and other operations, shipbuilding with marine insurance, information services with credit insurance, property protection with burglary insurance, and health services with life insurance (Barr and others 2006; Lipton 2006; Bouwens 2007; Cheffins 2007). In most countries, the control of the nation's entire economic machinery was gradually passing into the hands of a few big financiers and industrialists, who rose to a level of power and prestige that would have been unthinkable under any other economic regime (for instance, the Rothschild businesses included bullion brokering and refining, commercial bills, commodity trading, foreign exchange trading and arbitrage, insurance, personal banking to wealthy individuals, and rail financing in France, Austria, and Germany, see Barr and others 2006).

Combinations and mergers were aimed at a rationalization of insurance operations and produced: (1) an ever-increasing tendency toward specialization of risks and the parallel gradual substitution of the collective experience of insurance companies for individual judgment; (2) a corresponding tendency toward integration and the accumulation of several branches of insurance within one company; (3) a rising popularity of group policies. In other words, insurance continued to undergo in an international context, the same rationalization process as other economic activities.

Since the late nineteenth century, the government has continued to enter the field of insurance, especially with respect to safeguarding workers against sickness and disability (either temporary or permanent), destitute old age, and unemployment. This was driven by political motivations and with the goal of reducing uncertainty. During World War II, the U.S.

government provided life insurance for members of the armed forces; since then, it has also begun to provide other forms of insurance, such as pensions for veterans and government employees. The U.S. government has also experimented with various types of crop insurance, a landmark in this field being the Federal Crop Insurance Act of 1938 (Kramer 1983).

The progress made in the practice of insurance during the second half of the twentieth century was accompanied by advances in studies of insurance. In fact, the insurance business becomes increasingly based upon scientific principles and draws from almost every branch of technology and science. With members in more than 40 countries, the German Insurance Association (Gesamtverband der Deutschen Versicherungswirtschaft) promoted the science of insurance since 1900. In one or two decades, the members of this association around the world introduced the German system into their own universities. This was also happening in Japan (Pearson 1997a and 1997b).

The main features of this period were business combinations, mergers, in an effort to achieve a greater rationalization and an international dimension, together with the continuous growth of insurance companies –particularly after World War I. The rationalization was occurring in presence of a greater intervention of Government.

VI. Government Intervention

World War I, the Great Depression of the 1920s and 1930s led Government to issue large amount of securities that were mostly purchased by insurance companies. The intervention of Government in the economy increased and so Government Debt. From World War II through the early 1980s, government intervention was pervasive in many fields, following Keynesian policies (Pugh and Garratt 1996). Towards the end of the century, the revival of private sector doctrines, the fall of communism and globalization opened a new era of opportunities.

Government direct intervention took mostly the form of reinsurance and social insurance, while indirect intervention involved regulation and supervision. Direct intervention was more characteristic of continental European and emerging market countries, while Anglo-Saxon countries preferred to focus on indirect intervention such as regulation and supervision of the industry. Governments also intervene through the tax code by providing tax deductions for certain types of policies.

A particular form of intervention started in Europe (see previous section IV) and was the so-called social insurance including pension, which were very popular and increasingly favorable for workers particularly in Europe and Latin America. Latin America countries have always been inclined to introduce social schemes to protect the poor segments of the population. Those schemes were enacted mostly for political reasons following the European models, e.g., Spain, Portugal, France and Italy (e.g., particularly the influence of fascism, Paxton, 2004) without considering the economic and financial impacts in a region vulnerable to economic and financial crises. Examples of social insurance programs introduced in Latin American countries: compulsory maternity insurance to provide an income throughout the confinement period of working mothers and regulating night and hazardous work was in effect by the 1950s in the majority of the Latin American countries. Throughout the period 1920-1970, the intervention of Latin American governments in the economy followed the policy recommendations of CEPAL - Comisión Económica para América Latina - with programs of import substitution and public welfare (Reid 2007, 118-120). Government intervention was motivated by the attempt to speed

industrialization, and also by populism, and reached their peak and extreme forms in the 1950s and 1960s. Protectionism, heavy government's interventions and the dependence on foreign savings as well as the export sector, made the region always very volatile, i.e., a crisis-prone region with the poor suffer significantly more during crises (Braun and di Gresia 2003).

It should be pointed out that the political theory of the state and the role of government in Latin America derived from the view of colonial countries, i.e., Spain and Portugal and Continental Europe in general, which regarded government as a good, natural and necessary for the welfare of society (Wiarda and Kline 2011, 59-61). This is in contrast with the Anglo-Saxon and American view that Government is a necessary evil and should be limited.

In the early 1980s, the private sector doctrines of Margaret Thatcher and Ronald Reagan led to a progressive dismantling of Government intervention (Svallfors and Taylor-Gooby 1999; Giddens 1998, 116; Cerny 2008) and thus of the welfare state and the creation of private alternatives that provided a new basis for the engaging capitalist society (Ericson and Doyle 2003, 6-7), together with growing capital markets. These policies initiated in Great Britain and in the United States and then introduced in other countries, including emerging countries. In financial markets, the 1980s witnessed a theoretical revolution (e.g., Markowitz 1959; Sharpe 1964; Litner 1965; Fama 1965) that spurred liberalization, deregulation, and free markets (Cassidy 2010, 86). Rational expectations and efficient markets' theories prompted innovation and the development of capabilities for modeling risk according to sophisticated mathematical models, under the assumption of a functioning market discipline and taking advantage of the tremendous improvements in computational technology.

Following the devastating financial and economic crises of the 1980s, the doctrines of privatization hit Latin America countries in the 1990s. Thus to restore credibility for the "lost decade" of the financial debt crisis of the 1980s, Governments in the region became the frontrunners in the privatization and liberalization programs and in the introduction of schemes of pension based on personal contributions and with reduced cost for the Government.

After World War II, many insurance firms expanded, mergers continued to occur, and multiple-line companies dominated the field. In 1999, the U.S. Congress repealed banking laws that had prohibited commercial banks from entering the insurance business, also considering that these restricted practices did not exist in other industrial countries.

The expansion of insurance products and the significant increase in the frequency and scale of insurer failures in the later 1980s (Grace and others 2003) raised serious concerns about the adequacy of regulatory oversight. The industry's cost pressures, greater financial risk, and expanding geographic scope forced governments to revamp their regulatory frameworks. These efforts are undertaken in a global context, with the setting of internationally accepted standards - including strengthening financial standards, expanding financial reporting, improving monitoring and auditing tools, accrediting insurance departments, modernizing governance, increasing transparency, and streamlining market regulation.

The International Association of Insurance Supervisors (IAIS) - established in 1994 and representing insurance regulators and supervisors in some 190 jurisdictions in nearly 140 countries, and thus constituting 97 percent of the world's insurance premiums - intervenes globally in the area of insurance supervision dictating international principles. The objectives of IAIS are to:

- Promote the development of well-regulated insurance markets;
- Favor improved supervision of the insurance industry on domestic and international levels to maintain efficient, fair, safe, and stable insurance markets for the benefit and protection of policyholders;
- Contribute to global financial stability.

At the end of the twenty-first century, insurance activity had increased rapidly in parallel with the expansion of the economy; premiums (particularly for liability policies) had augmented swiftly around the world, leaving unprecedented numbers of people (e.g., in the United States) uninsured (Community 2005). On the other hand, insurance companies face lawsuits that at times lead to large monetary awards. The insurance industry, however, remains strong and able to provide insurance products for the needs of advanced economies. Numerous direct providers of insurance and almost 200 reinsurance companies worldwide attest to the health of the industry. Insurance is increasingly part of an interconnected financial sector and of financial intermediation; and as liberalization and globalization progress further, they increase innovation and competition vis-à-vis large demand—mostly in emerging market countries—that is not reached and satisfied.

VII. The Current Period: Risk in Global and Interconnected Markets

The terrorist attacks on the United States on September 11, 2001, natural disasters (e.g., Katrina, el Nino) and then the financial crisis of 2007-8 show that the possibility of devastating events - provoked by people or by nature - can create new uncertainties and vulnerabilities (Ericson and Doyle 2004) for the insurance industry.

i. Terrorism and Natural Catastrophes

The severity of damages from terrorism and natural disasters has found insurers reasonably well prepared to manage the events' financial impact on that large scale. Insurers worldwide and the U.S. insurers benefited from favorable market conditions and built up surpluses for these unexpected events. Almost all rated insurance companies were able to meet their commitments, even though some individual companies' ratings were lowered, e.g., Selective Insurance group of companies (Standard's and Poor's Rating Direct September 2009), and Government intervention has been instrumental to overcome various problems and uncertainty (Barry, Doyle and Ericson 2003; Dixon, Arlington, Carroll, Lakdawalla, Reville and Adamson 2004; Ericson and Doyle 2004). There are unpredictable events that produce high losses and cannot be included in a rational model and therefore uncertainty is not converted into risk (Kunreuther and Pauly 2010, 235). In this case, there is a market failure and insurance is not available. Thus the role of Government is crucial to introduce impose some form of incentives in the design of policies and also to operate as the insurer of last resort in case of unpredictable events. However, there is also the possibility that Government intervention prompted by uncertainty enters areas and activities that belong to the private sector.

ii. The Global Financial Crisis of 2007–8

The crisis of 2007 -8 presents many aspects and implications for the financial and insurance sectors.

- The Financial Crisis

Though brewing for a while, the financial crisis started to show its effects in the middle of 2007 and into 2008 (when mortgages encouraged by government policies started to face large scale defaults and the housing market crumbled) and is still doing so at the time of this writing. Around the world, stock markets have fallen, large financial institutions have collapsed or been bought out, and governments in even the wealthiest nations have had to come up with rescue packages to bail out their financial systems. There are several interpretations about the drivers of the crisis. The list is rather long: monetary policy; excess savings with unbalances in some emerging countries; financial innovation; regulation and supervision failure; inability to deal with the so called shadow banking, i.e., finance companies that were able to build huge liabilities without having the necessary capital and access to central liquidity or public sector guarantees (Cassidy 2010, 272-75; Van Overtveldt 2009, 213; Friedman 2011, chapters 4 thru 10)¹; new forms of corruption difficult to detect; lack of transparency; accounting rules, e.g., mark to market that reinforce the pro-cyclicality of various rules of Basel II².

An overall explanation for the current financial crisis is that risk was inappropriately modeled following the myth of rational markets and efficient market theories, (Fox 2009). In addition, wrong incentives were in place to gain up-front fees and profits and shifting long term risk to others. Supervisory authorities have not been able to prevent or repress these practices. Once the first defaults appeared and the crisis started, uncertainty about the future became widespread. Thus the unraveling of the crisis takes us back to the distinction between risk and uncertainty (Skidelsky 2009; Skidelsky and Wigstrom 2010) in line with the insight of Minsky (2008, 1992) that uncertainty of cash flows from investments has negative repercussions on business. The global financial crisis of 2007–8 has strengthened the view that “the distinction between risk and uncertainty helps explain the financial markets from the late summer 2007 onward.” (Roubini 2010, 94) The 2007–8 crisis has verified that financially integrated markets provided better access to capital and sophisticated models, contributed to risk management and economic growth, but they have not been able to assess uncertainty, convert it into risk and reduce it (Tonveronachi 2010).

Under these circumstances, coordinated government intervention is needed in two directions: to provide a stimulus, and to regulate and supervise.

The first type of intervention, the stimulus (e.g., unemployment benefits, infrastructure financing, lower interest rates) is intended to reduce individuals’ uncertainty and make consumers’ and investors’ confidence come back, but open a huge debate on the role of the Government and also on the so called exit strategy once the crisis is over .

¹ Just to give an order of magnitude, derivatives to insure against loans went from \$866 million in 1987 to \$454 trillion in 2007 (Fox, 2009, xii).

² Basel II is the second of the Basel Accords, initially introduced in 2004. The accord enacts recommendations on banking laws and regulations issued by the Basel Committee on Banking Supervision. The goal of Basel II is to establish agreed international standards for the capital banks need to face financial and operational risks.

The second type of intervention, better regulation and supervision needed to restore discipline in an integrated market (and also to restore confidence and reducing uncertainty) deserve more attention. Claessens (2009, 2, 18) indicates that the main lesson to emerge from the crisis is “the need to balance regulation with the role of self-governing markets and to establish a sustainable and effective financial architecture.” Globally, there is a need for a wider regulatory perimeter and greater cooperation. Emerging markets and developing countries still face specific challenges in building up their own financial sectors and creating a credible and legitimate regulatory environment, and they need a stronger voice in international financial reforms, policy decisions, and actions to help overcome these challenges. In addition, a sound regulatory environment should favor healthy financial innovation. In fact, new financial theories favored by advances in computational science, increased freedom of action and prompted a wave of financial innovations - a form of entrepreneurship in financial markets- of the 1980s and 1990s (Allen and Yago 2010). Financial innovation plays a key role not only in improving the functioning of financial markets but also facilitating the global financial crisis of 2007–8, i.e., U.S. Federal Reserve chairman Ben Bernanke acknowledged the role of financial innovation, in that financial “innovation that is inappropriately implemented can be positively harmful.” He later added “the difficulty of managing financial innovation in the period leading up to the crisis was underestimated” (Bernanke 2009). Therefore, regulation and supervision play a crucial role. The Chairman of the Financial Stability Board (FSB), Draghi, has stated “regulation must not prevent innovation, which is necessary if we are to improve product choices for consumers and an expanded access to credit” (Draghi 2009, 8). Furthermore: “The goal will be to strengthen the resilience of the system without hindering the processes of market discipline and innovation that are essential to the financial sector’s contribution to economic growth” (Draghi 2008, 7).

- The Insurance Sector

With respect to insurance, the insurance industry as a whole has been able to absorb the damages from terrorism and natural catastrophes. Insurers built appropriate reserves and faced their liabilities and thus performing appropriately their role, of course with the intervention and support of government that in different forms has supported the industry following the terrorist attack and the natural catastrophes.

The financial crisis of 2007-8 is more directly related to the theme of this research and deserves a greater attention. Harrington (2009) indicates that the industry was affected by the 2007–8 global financial crisis in a dramatic way: the American International Group, Inc. (AIG). The AIG crisis was heavily influenced by credit default swaps written by AIG Financial Products, not by insurance policies written by its regulated insurance subsidiaries. AIG also ran into major problems with its life insurance subsidiaries’ securities lending program. The holding company was highly leveraged, and its overall investment portfolio was significantly exposed to reductions in the value of mortgage-related securities. If the financial crisis and AIG intervention are to be blamed on ineffective regulation, the blame should reflect the substantial evidence of fundamental failures in U.S. and foreign regulation of commercial banking, thrift lending, and investment banking. Despite AIG’s enormous exposure to increases in mortgage default rates, it is not clear that any of its insurance subsidiaries would have become insolvent if the U.S. government had not intervened, i.e., most federal assistance to AIG was paid to banking counterparties that federal intervention desired to protect.

According to the OECD, “deteriorating economic conditions and rising corporate insolvencies resulting from the financial crisis have led to worsened conditions for some lines of insurance business, most notably director and officer liability and trade credit insurance. Trade credit insurance has been particularly hard hit, with retrenchment by insurers in this sector affecting business transactions and bank lending, further aggravating the business environment”(OECD 2010, 5). Under these circumstances, the main point of the 2007–8 crisis for insurance is whether the insurance industry presents a systemic risk. According to the Geneva Association (2010), banks and insurers played markedly different roles in the crisis, i.e., banks, and investment companies, not insurers, were the source of the crisis, and they were also much harder hit by it. It is worth noting that, excluding those insurers with large quasi-banking operations, insurance companies received less than \$10 billion in direct government support during the crisis, compared with more than \$1 trillion given to banks.

The FSB, the Bank for International Settlements, and the International Monetary Fund have given their definition of systemic risk, which has been supported by the Group of Twenty’s finance ministers and central bank governors. The FSB’s definition is the most commonly cited. The FSB uses three criteria to assess the systemic risk presented by an institution: size, interconnectedness, and substitutability. The IAIS has added a fourth criterion: time—that is, the speed of loss transmission to third parties, particularly relevant to insurance, because insurance claims, unlike banking obligations, do not immediately generate cash outflows. The view of the insurance industry is that although these four criteria are correct and appropriate, activities of insurers and reinsurers do not pose a systemic risk. Insurance activities do not pass the test for systemic risk relevance, for at least one of the following reasons:

- limited size, which means that there would not be disruptive effects on financial markets;
- slow speed of their impact, which allows insurers to absorb them, e.g., raising capital over time or, in a worst case, engaging in an orderly shutting down;
- features of their interconnectedness mean that contagion risk would be small.

Also, historically, insurance has never been the cause of major financial crises that has always been prompted by the banking sector. Only two, non-core, activities of insurers could have the potential for systemic relevance, assuming that they are conducted on a huge scale and are using poor risk-control frameworks:

- derivatives trading on non-insurance balance sheets;
- mismanagement of short-term funding from commercial paper or securities lending.

The idea of applying more stringent supervision and, perhaps, more onerous regulations to “systemically relevant institutions” is relevant as applying to banks, but not to insurers. The question is whether existing regulation adequately mitigates potential systemic risk from these non-core activities or whether it needs to be supplemented or replaced with new measures. According to the Geneva Association (2010), the industry is strong and the view is that current and already-approved insurance regulatory regimes, e.g., Solvency II in the European Union, adequately address insurance activities. Solvency II is a capital adequacy for the insurance sector, equivalent to Basel II for the banking sector. It applies to the countries of the European

The History of Insurance: Risk, Uncertainty and Entrepreneurship

Union (EU), but it constitutes a standard to which other regulators around the world are watching. Solvency II is a comprehensive principle and economic-based regulatory and supervision framework applied to all entities within an insurance group (regulated or non-regulated). Solvency II, supported by sound industry risk management practices, is intended to mitigate the potential systemic risk related to insurance activities. In this context, insolvencies need not be avoided at any price. Faced with a very large event, an insurer can fail; but in contrast to the banking sector, closing down an insurer is an orderly process that does not generate systemic risk.

In seeking to close the remaining gaps in the supervisory framework, regulators should avoid to place special burdens on insurance companies that could distort the insurance market by skewing pricing, reducing aggregate market risk-bearing capacity, drawing supervisors' attention away from risky activities going on elsewhere, and creating moral hazard in "too big to fail" institutions. In this regard, these five measures recommended by the Geneva Association (2010) seek to either address gaps in regulation and industry practices (measures 1 and 2), or strengthen financial stability (measures 3 to 5):

1. Implement comprehensive, integrated, and principle-based supervision for insurance groups;
2. Strengthen liquidity risk management;
3. Enhance the regulation of financial guarantee insurance;
4. Establish macro-prudential monitoring with appropriate insurance representation;
5. Strengthen risk management practices.

The measures have been largely accepted in the international discussions and are considered to constitute part of the insurance industry's engagement including cooperation among supervisors (i.e., cross-border crisis management remains an area requiring improved coordination among supervisors) in contributing to the discussion on systemic risk, to the stability of the overall financial system, and to performing its enabling role in the real economy.

3. Considerations from the History of Insurance

From the historical analysis several considerations emerge related to:

- a. The factors of insurance;
- b. The relationship between insurance and economic growth;
- c. The interactions between entrepreneurship and insurance;
- d. The role of insurance as a crucial institution in a capitalist economy;
- e. The specificities of Latin American countries;
- f. The implications of the 2007/8 crisis and the role of effective public policy.

These considerations are spelled out next.

- a. The Factors of Insurance

The conceptual analysis, history and literature indicate that the idea of insurance is very old and the lower the degree of civilization of humanity, the weaker its ability to escape the dangers that threaten it. There are four fundamental factors at the root of insurance:

- (i) the spirit of entrepreneurship, which drives the motivation of reducing uncertainty and converting it into risk and make it urgent and compelling;
- (ii) the spirit of association, which leads to the organization of guilds and the like to protect individuals, groups, and communities from various threatening situations and operates as the other face of the spirit of entrepreneurship;
- (iii) the pressure of religious motivations, which direct people to select various forms of protection, and
- (iv) the influence of research on insurance operations.

It is useful to briefly examine each.

i. First, a main factor that drives the development of insurance is the spirit of entrepreneurship. As we have seen the entrepreneurial spirit operates under a certain accepted level of uncertainty and plays an economic role largely recognized (Baumol 2010, 2-8) and directly linked to innovations and their introduction in economic life, and it thus constitutes the main driver in seeking to reduce uncertainty and to develop forms of protection and of insurance. The entrepreneurial process is the so-called creative destruction of Joseph Schumpeter that the Austrian School developed further (see Schumpeter 1942, 80–84; Hayek 1945, 1948; Ferguson 2009, 349–50; Posner 2010, 99; Kling and Schulz 2009, 4, 182–83, 213). The drive to improve, and to profit from innovations normally contradicts the existing order, creates discontinuities and determines new uncertainties that need to be properly understood to prevent abuses and crashes. This process of creative destruction, however, is not linear, and the introduction of innovations may generate situations in which uncertainties are not eliminated but instead increased, like the global financial crisis of 2007–8. In this context, entrepreneurship prompts the emergence of insurance as a market institution beneficial to economic activity. The motivation to reduce or eliminate uncertainty and provide for contingencies was felt in earlier times and shaped the development of insurance. Though people did not then have at their disposal all the means available today (e.g., knowledge about the probabilities of occurrence of an event), they were able to develop certain—albeit inefficient and imperfect—methods to protect valuables. For example: the bottomry used in Babylon; convoy ships, traveling under naval protection and originating in Hamburg, were an early substitute for marine insurance; the practices of collecting building materials or money, or storing goods for the benefit of flood victims, are a substitute for flood or fire insurance, and have survived to this day (an example of this can be found in ports, for instance Bergen, Norway). Against this background, one should note “the most basic financial impulse is to save for the future because the future is unpredictable” (Ferguson 2009, 177, 185). Insurance constitutes a form of saving, i.e., long-term saving. Thus, a thriving insurance sector is of vital importance to every modern economy -first because it encourages the savings habit; and second because it provides a safety net to enterprises and productive individuals. Moreover, the savings fuel the economy as they are invested by way of financial intermediation and thus help realize the initiatives of entrepreneurs.

ii. The second key factor for the development of insurance is humanity's public spirit, the spirit of association, i.e., people's inherent need to associate with others, or simply "mutuality." Mutuality follows three main principles (see MIA 2010):

- self-help (i.e., solidarity among people in the group to achieve common goals);
- self-governance (i.e., members manage and control the group and the cooperative in a democratic manner); and
- self-responsibility (i.e., members collectively underwrite the performance of the risk pool, which implies that profit and losses are distributed among members only).

The family (or clan, or tribe) was the first and fundamental social unit, built up on the mutuality principle of "all for one and one for all." Its members owned their property jointly, shared risks, and together provided for their needs. However, the basis for this mutuality was not a premium payment in the modern sense but the personal service of the single members. Therefore, family, tribe, and clan lacked the essential requirement for insurance: association for the sharing of risks. In fact, the association of the members of one related group for this purpose did not meet this requirement, inasmuch as the property was held in common and individual participation in it was ideal, the members of each economic unit being strictly interdependent.

The spirit of association called into existence social welfare organizations like the medieval guilds and other societies. The guilds—an association of craftsmen in a particular trade—began to admit nonmembers into the organization upon payment of a sum of money. We may safely assume that, if the otherwise exclusive guilds opened their doors to outsiders, it was not done in the public spirit but in the interest of the members who prompted this opening. They expected advantages for the guild from the money from outsiders. The next step in this development was voluntary associations of people not tied by the same professional interest—inspired by the changed policy of the guilds.

From its very inception, the development of insurance showed two distinctly different tendencies: the capitalist and the cooperative. These two parallel tendencies did not develop independently from each other, but were for the most part so closely interwoven that it was almost impossible to draw a distinction between them. The capitalist tendency is equivalent to the spirit of entrepreneurship, which would see opportunities in business initiatives, and likewise try to reduce uncertainty and cover risk. The cooperative tendency corresponds to the public spirit of association of humanity and prompts developments in the field of compulsory insurance and various forms of direct intervention by government, culminating in the welfare state. Over time Government intervention spread over various insurance activities with the objective of reducing uncertainty often beyond the failures of market. An important form of government intervention, which tends to balance and channel the spirit of innovation, is that of the regulation and supervision of insurance activities. Regulation and supervision have always struggled between the introduction of appropriate innovative instruments that reduce uncertainty³ and make it quantifiable, and thus convert it into risk, and ultimately boost economic activity and growth and burdensome, potholed, inefficient innovations that threaten the system and lead to crises and disasters.

³ But possibly create new forms of uncertainty.

iii. Third, religious considerations influenced the development of insurance and often played a part in insurance-like activities, e.g., in medieval guilds and corporations (Barro and McCleary, 2006; Carr and Landa, 1983; Clark and Lelkes, 2005). Throughout history, devotion to old traditions and to superstitions has substituted insurance policies and hampered the progress of insurance in many countries (Noland, 2005). Hostility to insurance as a wicked and sinful interference with the divine is a phenomenon that in the remote past and even today prevents the development of insurance. For instance, the canon law of the Church in force in European countries for centuries, which forbade interest charges as usury, controlled the development of capitalist insurance. In the Islamic conception, certain forms of insurance are branded as usury. Islamic law forbids life insurance because the beneficiary might “profit” from someone else’s death, e.g., a practical substitute for life insurance in Islamic countries is called *Kataful*, which stresses shared responsibility and mutual insurance (Khorshid 2004). Against this background, at the beginning of the twentieth century, the Islamic inhabitants of Beirut were forbidden to take out life insurance. The slow and late development of the insurance business in Japan in the late nineteenth century was mainly due to the innumerable old customs and traditions that dominated economic life during the period of Japan’s isolation. It is paradoxical that at its inception (in the Middle Ages), almost every form of insurance has had to cope with the accusation of immorality and illegality. No type of insurance—life, liability, credit, or unemployment—has escaped this. The hostility of religion to insurance can be explained by the fact that insurance could provide answers to events and phenomenon that were considered of divine origination and thus inexplicable. In other words, the role of religion is to explain uncertainty as a superior order and dimension, while insurance markets eliminate uncertainty and substitute it with coverage of risk.

iv. Fourth, research has accompanied the development of insurance, even though, particularly in early times, insurance contracts were not based on a quantitative assessment of risks in the probabilistic sense. Pascal (Franklin 2003) opened a very significant area that of probabilities and statistics of continuous research in support of insurance. Studies and research have intensified in the last 50 years. In the 1970s, research on insurance was dominated by optimal insurance coverage, security design, and equilibrium under conditions of imperfect information. In the 1980s, an emphasis was placed on theoretical developments, including unexpected utility, price volatility, retention capacity, the pricing and design of insurance contracts in the presence of multiple risks, and the liability insurance crisis. The empirical study of information problems, financial derivatives dominated the research agenda in the 1990s and early 2000s as well as the issue of access to financial services and insurance for the poor, micro entrepreneurs, and small businesses. Catastrophic events, terrorism and the global financial crisis of 2007–8, while reaffirmed the key role of insurance, have exposed flaws – particularly following the financial crisis- in the regulatory and supervisory system and prompted studies, researches and calls to effectively regulate the sector. In other words, research supports the introduction, implementation and review of insurance policy beneficial to economic activity. However, as we have seen, there are instances in which the insurance is undertaken in absence of knowledge of events and their probability of occurrence.

b. Insurance and Economic Growth

In various periods of history, the relationships among business activity, economic growth, and financial sector represent a recurrent theme and insurance has been part of it. The literature supports the crucial roles of financial and insurance markets. Various economic historians such as Davis (1965), Cameron (1967), Sylla (1969), and Wright and Cowen (2006) have shown that

in the United Kingdom and in the United States the availability of financing encouraged potential entrepreneurs to formulate new business ideas so that economic growth in these countries has been fueled by the role of financial intermediation. Thus the financial sector mobilized the resources needed to start large projects in the pre-industrial period and had incentive effects in the real sector that extended beyond those firms that actually received financing (Rousseau 2003).

In this context, one has to discern the role of insurance. From the perspective of economic history, there have been various explanations of the relationship between insurance and economic growth.

i. Historians formerly regarded financial and commercial services including insurance as essentially derivative of the industrial economy and as subject to criticism if they were not delivered rationally or efficiently (Pearson 1997b). The traditional view -particularly of the insurance industry- argues that insurance followed the Industrial Revolution rather than leading it, favoring it, or making it possible.

ii. A different view is that financial and insurance services are autonomous important, and instrumental to the development of economic activity. The notion of innovation lies at the heart of this argument, because it is indeed “central to most concepts of the Industrial Revolution” (Hudson 1992, 3). However, in contrast to the attention devoted to industrial invention, there has been limited investigation of the process of innovation in financial services and its role in promoting the economic, productive sector. There has been some consideration of whether British financial services – including insurance- have been particularly innovative and successful by international standards, and have influenced positively the relationship between financial innovation and economic growth (Hudson 1992).

Along these lines, in the interpretation of the long-run development of modern economies, a new emphasis has been put on the size and performance of the service sector. Taking the case of the United Kingdom, Rubinstein (1993) has argued that Britain’s “comparative advantage” always lay in commerce and finance, which he claims is a “highly surprising contention,” although one that is less surprising to economic historians than to nonspecialists. The middle-class wealth, the distribution of employment, and the success of the City of London in comparison with manufacturing provide significant evidence. The period 1770–1860 marked a “partial and equivocal upsurge of industry and manufacturing,” which did not halt the “secular trend” toward a commercial and financial economy (Rubinstein, 1993, 22-44). Similarly, Cain and Hopkins (1993, 19-22) have claimed that “financial and commercial services have not received the historical recognition they deserve; they were in fact much more important in terms of output and employment before, during and after the Industrial Revolution, than standard interpretations of British economic history allow.” In particular, they have emphasized the “productivity gains” that arose from innovations in banking, insurance, legal services, transport, and communications. Lee (1986, 1990) has also emphasized the importance of financial institutions as “the essential centerpiece” of the British and international economies, particularly starting in the middle of the nineteenth century.

iii. Barras (1986, 1990) has examined the impact of information technology on financial services, such as insurance and retail banking, since the 1960s (see Ferguson 2009, 343–44). Drawing heavily from Barras (1990), the argument is that there is an interaction between new technologies in the capital goods industries (i.e., computer manufacturing) and innovation in the

adopting service industries, and this interaction occurs by way of the two product cycles working in opposite directions, so that manufacturing innovation moves from an emphasis on product to process, while services innovation does the reverse. Thus, as product innovation declines in industry, it accelerates in services. Why was there absence of new primary products in the British insurance markets before the 1840s? What explains the failure of the large established fire insurance offices to develop such products? The answers to these questions are that five factors may have determined the timing and rate of innovation in British insurance: technological opportunity; conservative corporate culture in leading firms; costs associated with uncertainty, legal obstacles; and market structures. According to Barras (1986, 1990), the innovation process in insurance suggests something less dramatic than revolutionary change in the service sector during the Industrial Revolution in Britain. It places a question mark after the emphasis placed by Rubinstein (1993), Cain and Hopkins (1993), and others on the dynamism of the financial sector. Insurance innovation was incremental for a long period before building up to a crescendo of new product development in the more sophisticated markets of the late nineteenth century. Barras (1986, 1990) and Pearson (1997) relate this process to the industrial economy by supporting the view of a parallel relationship between insurance innovation and industrial growth.

iv. Against this background, a comparison has been made between industrial growth in the United States and the United Kingdom (Hartmann and Wheeler 1979) and the long phases of insurance innovation (1780–1840, 1840–80, and 1880–1914). Drawing from the authors, there are at least three ways of interpreting this. First, there may have been a time lag between the Schumpeterian clusters of new industrial products in the downswings and the commencement of new phases of insurance innovation. This implies, however, that there is a direct correlation between the latter and technological opportunity, which was not clearly evident. Second, it might be that there was no relationship at all between innovation in the industrial and service sectors, but this seems unlikely, especially for fire and marine insurance during these years. A third interpretation is that financial services innovation stood in a rather weak and lagged inverse relationship with cycles of activity in the industrial economy. Following the chronology of the Hartmann and Wheeler (1979) cycles of industrial and infrastructural innovation, it seems that their periods of high aggregate levels of capital formation and innovation were not the most active periods of product innovation in insurance. This is true for the years 1760–89, most of the period 1813–49, and for the early part of the period 1873–96. Conversely, periods of low industrial innovation appear to somewhat correspond with periods of greater process and product innovation in insurance. When manufacturing investment tailed off (e.g., between the 1790s and 1813), there was a considerable acceleration of process innovation and there was rapid growth in the numbers of fire and life insurance offices. The same applies, with the addition of product innovation in insurance, for much of the periods 1849–73 and 1896–1914.

In this context, in the early stages of the insurance industry's expansion, companies may have been unwilling to accept new risks generated by new technologies and the increasing size of the industry, and they may have resisted innovating in response to such risks. This may have been partly because of prudence, as a consequence of technical and event uncertainties in underwriting, and partly the result of legal and other factors making it difficult to acquire the funds needed to cover the new types of risk. In the conditions of rapid industrial expansion, insurers may have faced liquidity constraints, which hindered their ability (or willingness) to finance the innovations needed to service this expansion. Though industry expands while generating a high internal rate of return, insurers have had to depend to a considerable extent

upon the money market yields on their investments to acquire the liquidity needed to provide the insurance cover for this expansion. Therefore, the higher the margin between its internal rate of return and the money market rate, the faster the industry expands—and this margin is thus known as the marginal rate of return. However, the larger this margin becomes, the greater the difficulty insurers face in trying to service this expansion (and finance innovation).

One can argue that while there may be a positive correlation between interest rates and innovation in financial services—high and volatile rates being associated with liquidity constraints, which in turn induce innovation—the correlation between the marginal rate of return as defined here and services innovation may be negative. Industrial expansion encouraged by a large margin between the internal rate of return and money market rates brings liquidity problems, which militate against innovation, possibly by making insurers more risk averse. If insurers become risk averse, they may seek to deal with the problem by raising premiums on existing products rather than developing new products. Although this has the potential for spurring process and product innovation as new entrants are attracted by high premiums, the lag before this occurs may be sufficiently long for the inverse relationship between the marginal rate of return and insurance innovation at any point in time not to be much disturbed.

This hypothesis, therefore, suggests that insurers would be prepared to take on significant new risks (and develop new products) only when industrial expansion is slowing down, as reflected in the narrowing of the margin between industrial and money market rates of return. However, as the insurer's financial ability (via greater liquidity) and technical ability (via process innovations) to take on new risks are improved, the opportunity to seek new risks may decline as industrial growth slows down. If there is a time lag, and the chronologies of the cyclical models for industry and insurance outlined above suggest that there was, any acceleration in process and product innovation might reflect competition between insurers in a market with fewer opportunities. A preliminary scrutiny of the shorter period 1790–1850 suggests some support for this thesis. The late 1790s and early 1800s were years of rising but increasingly volatile prices in the money markets, and, for industry, possibly a narrowing of the marginal rate of return. They were also years of considerable change—new entrants and process innovations—in fire insurance. The postwar decades after 1815 witnessed deflationary and stabilizing trends in the money markets—despite periodic crises, stock prices became much less volatile—and possibly a reversal of the trend toward convergence in the marginal rate of return for industry. There was certainly acceleration in capital investment activity in the textile industries during this period. Fire insurance was characterized by the emergence of a degree of competitive equilibrium in the 1830s and early 1840s, with little evidence of product innovation.

Empirical analysis has not verified conclusively the propositions also given the difficulty of obtaining data. There is insufficient knowledge about the levels and forms of liquidity constraints faced by those providing financial services in the eighteenth and nineteenth centuries, and there has not been much comparative statistical analysis of the changing margins between internal rates of return in different industries and money market rates in the same period. Though it has been suggested above that some factors internal to the world of insurance and unrelated to the industrial economy may have been important in shaping the cycle of insurance innovation, it is clear that the worlds of insurance and industry were not distinct in the eighteenth and nineteenth centuries. Therefore, the relationship between insurance and economic growth has to pass through the impact that insurance has on entrepreneurship and economic activity.

c. The Interactions between Entrepreneurship and Insurance

To fully understand the relationship between insurance and economic growth, one needs to consider the role of entrepreneurship and examine whether the link between insurance and economic growth operates through entrepreneurship.

Landes, Mokyr, and Baumol (2010) explore the entrepreneur's role in society from antiquity to the present. The study examines the deployment of entrepreneurship over time and in different geographical locations looking at social and institutional influences from a historical context, i.e., the history of enterprises in Mesopotamia and Neo-Babylon; of the Islamic Middle East; of China, Japan, and Colonial India; and the role of the entrepreneur in innovative activities in Europe and the United States, from the Middle Ages to today. Landes, Mokyr, and Baumol (2010, 533) present examples that provide lessons for promoting and successfully pursuing entrepreneurship as a means of contributing to economic growth and to the welfare of society. Throughout history entrepreneurs struggle to conquer and reduce uncertainty operating in parallel with the development of insurance systems. Over time, entrepreneurship and insurance have shown complementarities and have been mutually reinforcing and instrumental to economic growth.

Entrepreneurship is part of economic activity, and the taxonomy of economic activity as including large companies, SMEs, entrepreneurs, micro entrepreneurs, and the poor segment of population applies to advanced and emerging market countries as well. However, the ways in which the categories of actors—and entrepreneurs—are served are very different, depending on the level of economic and institutional development in the two groups of countries and among emerging market countries.

The literature and the various historical explanations about the relationship between insurance and economic growth supports the view that there is a continuous interaction between insurance and economic growth and that the insurance industry contributes economic growth and national prosperity (Buckham and others 2011, 7). At the macro level, insurance improves the efficiency of the economy by increasing productivity and the transfer of risk to whom is able to bear it at lower cost. At the micro level, insurance reduces the negative financial impacts of events and help people to cover the risks and organize their business. It allows the undertaking of economic initiatives, e.g., the development of the North Sea oil. Insurance operates against business and family contingencies, e.g., health insurance and reduces the overall level of uncertainty.

Finally, the insurance industry constitutes a vehicle whereby savings are converted into long term investments.

A lack of effective insurance markets increases the overall uncertainty of the institutional setting, reducing the drive and initiative of entrepreneurs, who become more risk-averse and unwilling to push for innovation and undertake business initiatives while assuming business risk. The brief history of insurance supports the view (High 2009) that insurance emerges as a market institution as a consequence of entrepreneurship and certainly shows that the two phenomena—entrepreneurship and insurance—develop in parallel. Thus, one needs to test empirically the interaction between the insurance and entrepreneurship and also find out whether the development of insurance facilitates the utilization of the human abilities, talents, and entrepreneurship that in turn prompt economic activity and growth.

d. Insurance as a Market Institution

The History of Insurance: Risk, Uncertainty and Entrepreneurship

In the economic and business activities, insurance play key functions:

- Insurers measure and manage the nondiversifiable risk faced by creditors and borrowers, facilitating the provision of credit.
- Insurance companies mobilize substantial funds through contractual savings products, and by investing them in bonds and stocks, facilitate long-term investments and the growth of debt and equity markets. In this context, insurance companies—as institutional investors—can pressure equity markets to adopt stronger corporate governance measures and greater transparency.
- Insurance markets support and create the conditions for economic growth; but to perform this function, they must operate effectively and respond to needs and not favor inefficient solutions.

Thus the fourth consideration that comes out of the history and the literature is the importance of insurance for the deployment of business activity that makes insurance a crucial institution for society, e.g., insurance policies that are enforceable constitute the response to natural and human uncertainty (Ericson and Doyle, 5).

Natural uncertainty is related to natural events (e.g., a given illness, or a severe natural disaster). On the basis of historical data and actuarial analysis, probabilities are derived and the market participants can translate uncertainty into risk and produce insurance contracts -different across countries and over time- to cover a number of possible outcomes. Dealing effectively with natural uncertainty requires the development of scientific knowledge, databases, institutions, and markets.

Human uncertainty has to do with events related to human activities (robbery, accidents, and also to a certain extent terrorism). Human uncertainty is also associated with illegal activities (e.g., piracy) and recently terrorist activities constitute areas for which it is still difficult to provide an appropriate insurance policy.

An additional level of uncertainty relates to the enforcement of contracts in general and of insurance contracts, or policies, in particular. Erbas (2004) argues that dealing with human uncertainty requires instruments, predictable rules of governance and freedom of recourse to trustworthy processes for arbitration and adjudication, and all this represents a powerful instrument for economic growth. With respect to human activities, scientific knowledge, including probability is equally important than legislation for contracts to reduce uncertainty. Of course, trust—existing and produced in a given society—represents a crucial ingredient for building solid and effective institutions including insurance. According to Erbas (2004), modern institutions, whether they have evolved throughout history or have been adopted or inherited, set the incentive structures, e.g., contract laws aim at the expeditious and fair settlement of disputes. This aim is broadly comparable across countries, regardless of their level of development. But contract law in some countries may be less transparent than in others. Transparency does not only pertain to what is written in books. It also pertains to the level of trust and social capital and to the efficacy and reliability of adjudication and enforcement; at those levels, many events and outcomes are possible.

History shows how insurance policies and contracts have evolved over time and over space (e.g., in advanced and emerging economies) and have tended to respond to the needs of

entrepreneurs and instrumental to economic activity. Information and data, their dissemination to markets, and their systemic use in decision making improve the capability of the entrepreneur (and any other individual) to assess risks and contingencies and make decisions. Insurance markets respond to the different needs of agents for buying insurance policies, i.e., life, business, and property. All this constitutes an institutional function of facilitating economic activities and growth. Insurance is a market institution that establishes itself through time to reduce uncertainty about the range and variety of possible events and the damage such events may cause. Thus insurance is a natural complement to entrepreneurship and constitutes a market institution along the lines of the theory of emergent institutions (High 2009).

However, considerable uncertainty remains about some outcomes for which markets fail to provide insurance in both developed and emerging market countries, and there are situations where uncertainty emerges and develops with the dynamics of an evolving society (e.g., technology, natural disaster). In addition, in many emerging countries, institutional setting remains a concern and does not favor the undertakings by entrepreneurs. The range and variety of possible natural and human events determine the level of uncertainty. Insurance based and operating on market principles can provide coverage to various forms of exposures and reduce the overall uncertainty. History shows that in many cases Government intervenes to reduce or eliminate insurance with the greater risk or distorting the functioning of the market.

The history and the literature display that what insurance will not cover is the intuition of the entrepreneur to enter a certain market, become successful, and be rewarded. Insurance does not cover bad business judgment. However, if, in a given country, entrepreneurs and investors perceive adjudication and enforcement as ambiguous, then, for a given rate of return, they will prefer countries with less uncertainty. In other words, entrepreneurs and investors prefer countries with better institutions. Alternatively, investors will seek higher rates of return as a quid pro quo for investing in countries with uncertain institutional settings. However, the entrepreneur's uncertainty will never go away, and he or she will always react to (unquantifiable) "uncertainty" that only his or her alertness can understand and that typically characterizes his or her added value.

In this context, insurance plays an institutional role in the sense of covering the existing risk and also reducing the overall level of uncertainty and thus stimulating economic activity and growth.

f. The Specificities of Latin American Countries

Latin American and Caribbean countries present specific features in general terms and with respect to the development of the insurance sector.

In general, the lack of development of Latin American countries depends on several factors that have roots in cultural attitudes (Arias 2011, 2-6).

A first one is the lack of perseverance in the pursuit of changes and innovations. In this regard, this implies that when it comes to entrepreneurship, Latin American countries have more controllers than entrepreneurs.

A second general aspect is the low level of trust that exists in Latin American countries, which prompts legal insecurity and limited confidence.

A third aspect is the fragility of democratic systems and the emergency of authoritarian regimes.

The History of Insurance: Risk, Uncertainty and Entrepreneurship

All this leads to a situation that since the independence from Spain and Portugal in the late 19th century, none of the Latin American countries can be considered truly developed, with the possible exception of the recent emergency of Brazil.

The history of insurance in Latin America follows broadly experiences similar to those of Europe and North America, though at a different point in time. However, three important aspects emerge from the history of insurance in Latin America:

- a. The early dependence of insurance from colonial countries has limited and retarded the emergence and development of local capabilities;
- b. The retardation has been enhanced due to the intrusive intervention of the Government in the insurance business with the argument to reduce foreign influence. The protectionist policy decisions for the insurance sector are part of a larger policy of protection that Latin America government followed and were among the reasons that delayed the establishment of a competitive environment and the development of insurance market;
- c. Insurance companies much more than in other parts of the world, have been serving the interests of Governments and big companies rather than those of the common entrepreneur.
- d. Insurance markets in emerging market countries, and particularly in Latin America and the Caribbean, show some progress and advances and also promising areas, such as agriculture and micro insurance. However, there is still a lack of adequate depth and penetration, and the region is behind other regions of the world based on standardized measures of insurance relative to economic development.

In Latin American emerging market countries, business insurance is still very often unavailable and/or mispriced. The insurance industry in Latin America, including Brazil, still has to deal with low efficiency, low penetration, limits to competition and narrow attitude to deregulation and liberalization compared with the 1990s. In addition to the personal setbacks from unemployment, divorce, unforeseen medical expenses, or a death in the family, widespread disasters such as droughts, floods, endemic illness, crop failures, and economic downturns often affect people badly, and mainly poor people. Informal insurance mechanisms provide limited protection, and people are overwhelmed by major or recurring calamities. Most people cannot obtain formal insurance, and thus the lack of private, effective insurance policies contributes to making the institutional setting unreliable and causing an excessive level of uncertainty and specific risks that are not covered, and this constrains investment, economic growth, and poverty reduction.

As indicated throughout, limited formal insurance mechanisms, low level of trust in the institutional setting and its enforcement, and in some cases lack of awareness of the existence of insurance products all lead to inefficient, inequitable economic solutions. Under these circumstances, as Sen (1999) states, the key point is that insurance allows everyone, and particularly poor people, to improve their economic potential and become less dependent on welfare state programs. Thus, insurance market development is justified by efficiency and equity concerns.

However, the situation has changed at the beginning of this century and also following the crisis of 2007-8. Prospects of low inflation and high economic growth prompt businesses' opportunities for a class of entrepreneurs that starts to emerge and in turn allow the insurance

industry to respond to a growing and latent demand. It is very significant to see that insurance policies are in demand at the moment in which in Latin America there is a very large movement of favoring innovation and entrepreneurship. Within this context, Brazil is a leader in entrepreneurship, with a likely one in eight adults being “entrepreneur.” Large part of the business is carried out by single individuals who sells his/her homemade goods or offers his or her services.

These considerations lead to two related questions: is the availability of insurance a supply problem, which implies that better insurance markets would favor economic activity and entrepreneurship? And should public policy realize that a gap exists and promote the availability of insurance instruments, in various forms, for the general public? These questions are at the core of the research outlined here. The task is to identify the specific contribution of insurance to the economic process, possibly through the intermediation of entrepreneurship—i.e., to uncover the relationship between insurance and entrepreneurship.

A related area of interest is that of the effectiveness of the insurance market in the sense that the working of insurance responds to the needs and demand of the various clients, i.e., customers, regulators, policy makers.

g. The Role of Effective Public Policy in Financial and Insurance Markets

To lay the foundations of the role of public policy to insurance, it is important to start from the considerations that emerge from the crisis.

The first consideration is that the Financial Revolution of the 1980s did not eliminate uncertainty. The future is not entirely predictable, because uncertainty can appear in new forms (e.g., human and social behavior, natural disasters, terrorism), and complex and complicated models are not always able to represent risk appropriately and transform uncertainty into risk. The 2007-08 crisis shows the limitations of rationality and efficient markets. The battle of innovation and entrepreneurship against uncertainty still rages.

The ultimate responsibility of the financial crisis of 2007-8 rests with financial executives who bundled risky assets such as subprime mortgages and complex structured products; with rating agencies that endorsed AAA ratings allowing structural products to be shifted off balance sheets; and with regulators and supervisors unable to assess the potential systemic risk of these products (Bauckham 2011, 55). In this context, one of the outcomes of the global financial crisis of 2007–8 is the rethinking of the regulation and supervision framework in order to make it more effective worldwide, fostering innovation, without allowing for situations where firms are too big to fail and thus operate in a climate of lack of market discipline and wrong incentives (Ferguson 2009, 360).

At the same time, the financial crisis of 2007-8 has dramatically demonstrated the essential role that responsive financial markets play for the economic activity: “every business need the right kind of financing at the right time in order to succeed....The recent financial crisis drove home this simple truth” (Allen and Yago, 2010, 51) and how failure of banking and capital markets determines economic crisis and in turns prompts the intervention of Government that may interfere with the functioning of markets. Therefore, the need of functioning financial markets opens, or reopens, the doors to Government intervention and questions its proper limits (Brown 2010, 10-13) and particularly the so called strategy for exit once the crisis is over and the role of state-owned banks (see the debate that the World Bank opened about the role of state

owned banks, <http://blogs.worldbank.org/allaboutfinance/the-question-can-state-owned-banks-play-an-important-role-in-promoting-financial-stability-and-access>).

In addition, there is a view (Cline 2011, 260) that while globalization and capital account openness -one of the major reforms of the 1980s and 1990s- might have been instrumental to the contagion and favored the spreading of the crisis, there is no evidence that greater financial openness caused more severe spillover to domestic economies. Thus there is no reason to reverse the reforms and opening of financial markets.

With respect to the insurance sector, dramatic structural changes in the industry in the last 40 years have burdened the abilities of policymakers and regulators to maintain effective and adequate roles in promoting the development of financial and insurance markets and providing direct intervention and also oversight of insurers' solvency and market practices (Ericson and Doyle 2004, 29,265,293). Despite natural catastrophes and terrorist human events are difficult to predict and to model, the insurance systems has shown that it is able to provide protection. Terrorism, natural events and the financial crisis have to a certain extent reaffirmed the independence of insurance from banking and capital markets to avoid that insurance companies are embroiled in banking and capital markets crises that detach them from their core insurance business and clients.

The view of insurance experts and practitioners (Harrington 2009; Geneva Association 2010) is that systemic risk is relatively low in insurance markets compared with banking, especially for property and casualty insurance, in part because insurers hold greater amounts of capital in relation to their liabilities, reducing their vulnerability to shocks. During the crisis of 2007-8, insurers maintained a relatively steady capacity, business volumes, and prices. Those few insurers that experienced serious difficulties, most notably AIG, were brought down not by their insurance business but by their quasi-banking activities. Similarly, the troubled "monoliners" (i.e., FSA, AMBAC, and MBIA) concentrated exclusively on financial guarantees and writing and trading credit-default swaps. According to this view, the application of Solvency II would have probably prevented the 2007-8 crises. One important response to the crisis, - for a complete view of the policies undertaken by various countries, see Annex to OECD 2010, Policy and regulatory responses to the financial crisis- is the July 2010 US overhaul of the financial system. The US legislation creates a new regulatory body at the federal level - the Federal Insurance Office (FIO) inside the Treasury Department to monitor insurers particularly from the point of view of the systemic risk- can strengthen the independence of the sector (see section below on the role of effective public policy). Under these circumstances, a study to be presented by 2012 is expected to recommend ways to further overhaul regulation of the insurance industry. Moreover, the insurance sector in emerging countries has not witnessed crisis related to the involvement of insurers with banking, quasi banking and speculative activities. This also provides some evidence that the insurance sector in emerging countries remains underdeveloped and unsophisticated.

The insurance business model (see Box 1) - encompassing both insurers and reinsurers - has specific features that make it a source of stability in the financial system. Insurance is funded by upfront premiums, giving insurers strong operating cash flow without requiring wholesale funding. Insurance policies are generally long term, with controlled outflows, enabling insurers to act as stabilizers to the financial system. The history has shed light on how insurance emerges as a market institution and on the role of public policies and Government in this process. Greene (1976) provides us with a review of the rationale for intervention by government in insurance

markets and concludes that although not all government insurance is unjustified, some appears to be based on weak grounds. However, the main justification for Government intervention – particularly with various forms of insurance- is to reduce uncertainty and promote economic activity when market is not available (Ericson and Doyle, 2004, 29; Clive and Granger 2011).

To this end, the crisis of 2007/8 confirmed that government intervention in insurance markets should be confined to regulation and supervision, without interfering with market functioning. While the definition of policies and its implementation is done in some situations of uncertainty (Stiglitz 2011, 44), the objective of Government should be that of allowing insurance markets to establish themselves as market institutions and to perform their role of facilitators of business activity. In this respect, in defining and implementing policies, Government should strive to identify and implement incentives to reduce uncertainty and also operate as a sort of guarantor of last resort in case of unknown events dealing with uncertainty, e.g., comet striking the earth (Granger 2011, 44).

The main challenge for the future in both emerging and mature markets is to create a public policy agenda to make insurance services open, available, and a market institution capable to promote entrepreneurship, as well as social and economic growth—without creating unwanted administrative obstacles that reduce productive and entrepreneurial initiatives. The policy recommendations of the OECD (OECD2010) move along these lines even though their focus seems more on advanced economies. The issue in advanced countries and, to a greater extent, in emerging market countries, is to create an effective regulatory and supervisory framework to improve the effectiveness and responsiveness of insurance and facilitates access and inclusiveness, i.e., large and small companies, entrepreneurs, and micro entrepreneurs need insurance to spread risks and reduce uncertainty, without resorting to direct intervention in the form of government-sponsored insurance. It is also crucial to maintain a keystone: the distinction and independence of insurance activities from banking and capital markets.

BOX 1 The Insurance Model

The primary purpose of insurance is to meet claims, i.e., the insurer's risks, at all times. Insurers are exposed to a number of solvency risks, which are either technical or investment related. Technical risks are of two types: underpricing and under provisioning. Under pricing occurs when the insurer attracts buyers by setting excessively low premiums that do not cover the expected claims. Technical reserves represent the largest share of an insurer's debt, and they are a measure of an underwriter's obligations to its policyholders. In case of under provision, the technical reserve is inadequate to meet the obligations. Investment risk is generated by the insurer's role as a financial intermediary and reflects how the insurer's exposure to insolvency resembles a bank's.

Market failure is threatened when the market price does not reflect the insolvency risk. In a world of perfect information, economic theory presumes that competition and rational behavior ensure that risk is reflected in consumers' willingness to pay, thereby inducing efficient risk management among insurers. To correctly assess the insurer's solvency, however, the buyer should have accurate data on the joint distribution of loss claims, the return on the insurer's asset portfolio, and the technical reserves that the insurer will hold when benefits are paid. In practice, however, because such information is costly or unavailable for buyers, it is plausible to think that they cannot fully assess the financial strength of their insurer or the quality of the insurance contract.

In addition to technical and investment risks, the insurer is also exposed to the possibility of default by a partner (e.g., a reinsurer) or of mismanagement, as well as to systemic risk. Conversely, the insurer cannot fully assess the nature of the specific risks of the potential insured and cannot control his or her actions.

These considerations point to the fact that asymmetric information, in the form of moral hazard and adverse selection, constitutes significant aspects of insurance that can lead to market failure. Moral hazard refers to situations in which one side of the market cannot observe the actions of the other and that insurance policies have

the effect of reducing the insured's initiatives to reduce expected losses. For this reason, it is sometimes called a "hidden-action problem" (Varian 1990). Adverse selection occurs when a negotiation between two people with different amounts of information—that is asymmetric information—restricts the quality of the good being traded (and its price). It refers to the situation in which consumers have different expected losses that the insurer is unable (or finds too costly) to distinguish and therefore he or she limits the insurance offered or raises the price (i.e., premium), at which point only individuals facing high risk sign up and are covered.

Most theoretical research has focused on the problems of adverse selection and moral hazard in the insurance market. Rothschild and Stiglitz (1976) show that asymmetric information between the insurer and the policyholder inhibits the design of an efficient contract when the buyers are heterogeneous in their accident probabilities (which are private information for the buyer). Yet the empirical evidence for asymmetric information in insurance markets is decidedly mixed. Several recent empirical studies have failed to find evidence of asymmetric information in the property-casualty, life, and health insurance markets. These studies include Cawley and Philipson (1999), who examine the U.S. life insurance market; Cardon and Hendel (2001), who look at the U.S. health insurance market; and Chiappori and Salanie (2000), who focus on the French automobile insurance market. In contrast, Cutler (2002) reviews a substantial literature that finds evidence in support of asymmetric information in health insurance markets; and Cohen (2001) offers some evidence for adverse selection in the U.S. automobile insurance market. Chiappori and Gollier (2006) argue that asymmetric information is a central reason that competition in insurance markets may fail to guarantee that all mutually advantageous risk exchanges are realized. These results support the conclusion that, depending on the specific market and situation, asymmetric information constitutes an important feature of insurance markets.

Regulation and Supervision

Moral hazard and adverse selection are typical forms of asymmetric information that lead to a risk of insolvency as well as to under provisioning of insurance products, pricing and, in the view of most, justify the need for government intervention in insurance markets through legal provisioning, regulation, and supervision (OECD 2003c). Insurance regulatory activities are divided into two primary categories: solvency and market regulation strictly related and to be coordinated to achieve their specific objectives. Solvency regulation seeks to protect policy holders against the risk that insurers will not be able to meet their financial obligations. Markets regulation affecting insurers' financial performance, attempts to ensure fair and reasonable insurance prices, products and practices. Insurers are licensed in a given state and are subject to solvency and market regulation in their state of domicile and also in the other states and locations where they are licensed to sell insurance. Reinsurers are also subject to solvency regulation in their domiciliary state. Some insurers write certain specialty and high-risk profiles policies on no-admitted – or surplus- lines basis that is not subject to price and product regulation. Regulators still control entry into the no-admitted market by imposing solvency and trust regulation. An open question remains that of the proper mix of regulation and government intervention. The importance of insurance regulation and supervision also is reinforced by the integration of world insurance markets, which requires an adequate and comparable regulatory framework in each jurisdiction.

The literature contains different views about motivations for regulation, taking into account the need for capital adequacy regulation and for supervision in the insurance business. Advocates for a free insurance market without any regulation, supervision, or capital adequacy requirements argue that asymmetric information in insurance is less severe than in banking and that an insurance company crisis or failure is less costly than a bank failure. Rees and Kessner (1999) discuss this issue extensively, and they favor a free insurance market based on their analysis of the U.K. (unregulated) and German (tightly regulated) markets. They argue that because buyers are always ready to pay for an insurer or a reinsurer that guarantees solvency, there is always enough capital available in case of insolvency. Therefore, the decision of insurers is efficient in terms of economic capital, and regulation would impose a deadweight loss on the market. This argument rests on the assumption that consumers are fully informed about the insolvency risk. Klemperer and Meyer (1985), however, remove this crucial assumption that the consumer can understand the solvency risk fully and can use relevant information effectively. Given the empirical evidence, they dispute the superiority of the U.K. unregulated model and assert that insurance failures (citing the period 1986–99) are more severe than the losses of other financial institutions.

Despite the arguments in favor of a free and unregulated market, in practice the regulation and supervision of the insurance industry are common and widespread around the world. Yet the argument for freedom from regulation and supervision is stronger for insurance than for banking. This is because insurers do not need to provide

suddenly massive liquidity (i.e., to cover rapid withdrawals by depositors, such as those that could lead to a bank run and spread throughout the system). In addition, the insurance business is better able to diversify its risk portfolio through reinsurance.

User perceptions of regulation and supervision combine with those of capital adequacy to help shape the evolution and development of insurance markets. Therefore, public policy is a significant factor in strengthening insurance markets (especially in Latin America and the Caribbean), in identifying the limits of government intervention to promote the insurance business, in avoiding under provisioning and financial disruptions, and in assuring welfare gains (Greene 1976). By the same token, excessive and direct intervention can increase inefficiencies. In fact, the danger of moral hazard increases whenever the government establishes implicit or explicit guarantees against insolvency. The promise of bailouts removes incentives from policyholders to consider insurers' financial strength when buying insurance coverage. The danger of adverse selection would normally decline as the government makes certain types of insurance policies (e.g., for automobiles) mandatory.

References and Bibliography

- Alesina, Alberto; Vittorio Grilli; and Gian Maria Milesi-Ferretti. 1993. The Political Economy of Capital Controls, CEPR Discussion Papers 793, C.E.P.R. Discussion Papers.
- Allen Franklin and Glenn Yago. 2010. *Financing the Future*. Wharton Publishing
- Arias Oscar. 2011. Culture Matters. The Real Obstacles to Latin American Development. *Foreign Affairs* January – February, 2-6.
- Barr Kenneth Barr, Shoon Lio, Christopher Schmitt, Anders Carlson, Kirk Lawrence, Jonathan Krause, Yvonne Hsu, Christopher Chase-Dunn and Thomas E. Reifer. 2006. Global Conflict and Elite Integration in the 19th and Early 20th Centuries, Institute for Research on World-Systems University of California, Riverside. 8-2-IROWS Working Paper #27 available at <http://irows.ucr.edu/papers/irows27/irows27.htm>
- Barras, R. 1986. Towards a Theory of Innovation in Services. *Research Policy*, 15: 161–73.
- . 1990. Interactive Innovation in Financial and Business Services: The Vanguard of the Service Revolution. *Research Policy* 19: 215–37.
- Barro R.J. and R. M McCleary. 2006. Religion and Economy, *The Journal of Economic Perspectives*, vol.20, number 2, Spring.
- Barry Dean, Aaron Doyle, Diana Ericson. 2003. Insurance as Governance. University of Toronto Press, Scholarly Publishing Division
- Baughman, James. 1965. Recent Trends in Business History of Latin America. *Business History Review* 39, no. 4, Special Issue Winter.
- Baumol, William. 1968. Entrepreneurship in Economic Theory. *American Economic Review: Papers and Proceedings of the 80th Annual Meeting of the American Economic Association*, May, 64–71.
- . 1990. Entrepreneurship: Productive, Unproductive and Destructive. *Journal of Political Economy* 98, no. 5: 893–921.
- Berger, Allen N., and Gregory F. Udell, 1995, Relationship Lending and Lines of Credit in Small Firm Finance. *Journal of Business* 68, 351–381.
- Bernstein, Peter. 1998. *Against the Gods: The Remarkable Story of Risk*. New York: John Wiley and Sons.
- Bernanke Ben S. 2009. Financial Innovation and Consumer Protection, At the Federal Reserve System's Sixth Biennial Community Affairs Research Conference, Washington, D.C., April 17, 2009
- Bernanke, Ben and Cara Lown. 1991. The Credit Crunch. *Brookings Papers on Economic Activity*, 2:1991, pp. 205-39.
- Borch Karl. 1964. *The Economic Theory of Insurance* Bergen, Notes for an informal discussion in Edinburgh, June
- Bouwens Bram. 2007. Mergers and acquisitions in a small and open economy; the second merger wave in the Netherlands, 1920-1940. Research Institute for History and Culture Utrecht University
- Brenner Reuven .1996. Gambling, Speculation and Insurance: Why they continue to be confused and condemned, *Journal of Applied Corporate Finance*, Volume 9, Issue 3, pages 118–128, Fall.
- Brown Gordon. 2010. *Beyond the Crash: Overcoming the First Crisis of Globalization*. Free Press
- Brown, A. 1987. *Hazard Unlimited: From Ships to Satellites 300 Years of Lloyd's of London an Intimate Portrait* Informa Pub.
- Bulmer-Thomas, Victor. 2003. *The Economic History of Latin America since Independence*, 2nd ed. Cambridge: Cambridge University Press.
- Buckham David, Jason Wahl, Stuart Rose. 2010. *Executive's Guide to Solvency II*. Wiley & Sons Business.
- Cain, P. J. and Hopkins, A. G. 1993. *British Imperialism: Innovation and Expansion, 1688–1914*. London: Longman.

- Cameron, Rondo. 1967. England, 1750-1844, in R. Cameron, O. Crisp, H.T. Patrick, and R. Tilly, eds., *Banking in the Early Stages of Industrialization: A Study in Comparative Economic History*. New York: Oxford University Press, pp. 15-59.
- Cardon, James, and Igal Hendel. 2001. Asymmetric Information in Health Insurance: Evidence from the National Medical Expenditure Survey. *RAND Journal of Economics* 32: 408–27.
- Carr JL and JT Landa.1983.The Economics of Symbols, Clan Names and Religion, *The Journal of Legal Studies*, vol.XII, January, The University of ChicagoThe University of Chicago.
- Carter Robert L. and Peter Falu *The British Insurance Industry Since 1900: The Era of Transformation*, Palgrave Macmillan Studies in Banking and Financial Institutions), Palgrave Publisher
- Cassidy John. 2010. *How Markets Fail: The Logic of Economic Calamities*. Picador
- Cawley, John, and Tomas Philipson. 1999. An Empirical Examination of Information Barriers to Trade in Insurance. *American Economic Review* 89, no. 4: 827–46.
- Cerny Philip G. 2008. Embedding NeoLiberalism: the Evolution of a Hegemonic Paradigm, *The Journal of International Trade and Diplomacy* 2 (1), Spring 2008: 1-46
- Chava, S. and A. Purnanandam.2008. Is default risk negatively related to stock returns?, working paper, University of Michigan.
- Cheffins, Brian R. 2003. Mergers and Corporate Ownership Structure: The United States and Germany at the Turn of the 20th Century; *51 Am. J. Comp. L.* 473
- Chiappori, Pierre-André and Christian Gollier. 2006. *Competitive Failures in Insurance Markets. Theory and Policy Implications*. Cambridge, Mass.: MIT Press.
- Chiappori, Pierre-André, and Bernard Salanie. 2000. Testing for Asymmetric Information in Insurance Markets. *Journal of Political Economy* 108: 56–78.
- Claessens Stjn. 2009. The Financial Crisis: Policy Challenges for Emerging Markets and Developing Countries, Policy Paper No. 6 – March.
- Clark Andrew and Orsolya Lelkes. 2005. Deliver us from Evil: Religion as Insurance, European Centre, Berggasse17, 1090 Vienna, Austria
- Cline William. 2010. *Financial Globalization, Economic Growth and the Crisis of 2007/09*.Peterson Institute for International Economics, Washington DC
- Cohen, Alma. 2001. Asymmetric Information and Learning in the Automobile Insurance Market. Department of Economics, Harvard University, Cambridge, Mass.
- Colander, David, Michael Goldberg, Armin Haas, Katarina Juselius, Alan Kirman, Thomas Lux and Brigitte Sloth. 2009. The Financial Crisis and the Systemic Failure of the Economic Profession. *Critical Review: A Journal of Politics and Society*. 21(2):249-267. <
<http://www.informaworld.com/10.1080/08913810902934109> >
- Community Catalyst, Inc. 2005.Access to Affordable Insurance for Individuals and Small Businesses. Community Catalyst, Inc. Consorte, Minzoni Antonio. 2005. *Cronica de dos Siglos del Seguro en México*. Mexico City: Comisión Nacional de Seguro y Finanzas
- Congregado Emilio. 2007. Measuring Entrepreneurship: Building a Statistical System (International Studies in Entrepreneurship). Springer
- Cummins J. David and Bertrand Venard.2007. *Handbook of International Insurance: Between Global Dynamics and Local Contingencies*. Springer.
- Cutler, David. 2002. Health Care and the Public Sector. In *Handbook of Public Economics*, vol. 4, ed. A. Auerbach and M. Feldstein. Amsterdam and New York: North Holland and Elsevier.

The History of Insurance: Risk, Uncertainty and Entrepreneurship

- Cutler David and Richard Johnson. 2001. The Birth and the Growth of the Social insurance State: Explaining Old-Age and Medical Insurance Across Countries, RWP01. Research Division Federal Reserve Bank of Kansas City
- Dasgupta Partha. 2010. *Economics*. Sterling, London, New York
- Davila Carlos. 2009. Entrepreneurship and Cultural Values in Latin America, 1850-2000. From Modernization and Dependency Theories Toward a Business History Perspective. Research Group Historiay Empresariado, Paper presented at the session “The Historical Determinants of Entrepreneurship, 1800-2000,” XVth World Economic History Congress, International Economic History Association (IEHA), Utrecht (the Netherlands).
- De Paiva Abreu Marcelo and Felipe Tâmega Fernandes. 2010. The Insurance Industry in Brazil: a Long-Term View Working Paper 10-109
- De Roover Florence Edler. 1945. Early Examples of Marine Insurance, *Journal of Economic History* 5, 2, November.
- Dixon Lloyd, J. Arlington, S. Carroll, D. Lakdawalla, R. Reville, David Adamson. 2004. Issues and Options for Government Intervention in the Market for Terrorism Insurance, Rand Corporation
- Diebold Francis X., Neil A. Doherty, Richard J. Herring. 2011. *The Known, the Unknown, and the Unknowable in Financial Risk Management: Measurement and Theory Advancing Practice*. Princeton University Press.
- Doherty N. and Muermann A. 2011. On the role of insurance brokers, in Diebold Francis X., Neil A. Doherty, Richard J. Herring. *The Known, the Unknown, and the Unknowable in Financial Risk Management: Measurement and Theory Advancing Practice*. Princeton University Press.
- Draghi M. 2009. Financial Stability in the global environment? Learning the Lessons from the Market Crisis, Keynote Speech at IOSCO’s Annual Conference, June 10.
- Draghi M. 2008. How to Restore Financial Stability, Bundesbank Lecture Series, September 16.
- Draghi M. 2007. Transformation in the European Financial Industry: Opportunities and Risks, Center For Financial Studies, Presidential Lecture Series, Frankfurt, November 22.
- Eghigian Greg A. . 2000. *Making Security Social: Disability, Insurance, and the Birth of the Social Entitlement State in Germany (Social History, Popular Culture, and Politics in Germany)*, University of Michigan Press
- Erbas, S. Nuri. 2004. *Ambiguity, Transparency, and Institutional Strength*. IMF Working Paper WP/04/115. Washington, D.C.: International Monetary Fund.
- Ericson, Richard, and Aron Doyle. 2004. *Uncertain Business: Risk Insurance and the Limits of Knowledge*. Toronto: University Toronto Press.
- Fama Eugene. 1965. Random Walks in Stock Market Prices. *Financial Analysts Journal* 51 (1). September–October 1965. <http://www.aimrpubs.org/faj/issues/v51n1/pdf/f0510075a.pdf>.
- Ferguson Nial. 2009. *The Ascent of Money: A Financial History of the World*. Penguins
- Fox Justin. 2009. *The Myth of Rational Markets*. Harper
- Franklin, J., 2001. *The Science of Conjecture: Evidence and Probability Before Pascal*, Baltimore: Johns Hopkins University Press.
- Friedman Jeffrey. 2011. *What Caused the Financial Crisis*. University of Pennsylvania Press.
- Gastel Ruth .2004. *Reinsurance: Fundamentals and New Challenges*, Insurance Information Institute Geneva Association. 2010. Systemic Risk in Insurance. An analysis of insurance and financial stability Special Report of The Geneva Association Systemic Risk Working Group
- Giddens, Anthony. 1998. *The Third Way. The Renewal of Social Democracy*. Cambridge: Polity

- Grace Martin F., Robert W. Klein, Richard D. Phillips. 2003. Insurance Company Failures: Why Do They Cost So Much? The Center for Risk Management and Insurance Research, Georgia State University, Working Paper No.03-1
- Granger W.J.Clive. 2010. Risk: a Decision Maker's Perspective, in Diebold Francis X., Neil A. Doherty, Richard J. Herring. 2010. The Known, the Unknown, and the Unknowable in Financial Risk Management: Measurement and Theory Advancing Practice. Princeton University Press
- Greene, Mark. 1976. Government as an Insurer. *Journal of Risk Management* 43, no. 3: 393–407.
- Grilli, V.,and G. Milesi-Ferretti. 1995. Economic Effects and Structural Determinants of Capital Controls, IMF Working Paper WP/95/31.
- Gwynne, Robert N. and Cristobal Kay. 2004. *Latin America Transformed: Globalization and Modernity*. London: Hodder Arnold.
- Haber, Stephen. 2000. *Political Institutions and Economic Growth in Latin America: Essays in Policy, History, and Political Economy*. Stanford, Calif.: Hoover Institution Press.
- Harrington Scott E. 2009. The Financial Crisis, Systemic Risk, and the Future of Insurance Regulation, *Journal of Risk & Insurance*, 2009, vol. 76, issue 4, pages 785-819
- Hartmann, R. S., and D. R. Wheeler. 1979. Schumpeterian Waves of Innovation and Infrastructure Development in Great Britain and the United States: The Kondratieff Cycle Revisited. *Research in Economic History* 4: 37-85.
- Hayek, Friedrich von. 1945. The Use of Knowledge in Society. *American Economic Review* 35, no. 4: 519–30.
- . 1948. The Meaning of Competition. In *Individualism and Economic Order*. Chicago: University of Chicago Press.
- High, Jack. 1992. *Regulation: Economic Theory and History*. Ann Arbor: University of Michigan Press.
- . 1999. *The Politics of Purity: Harvey Washington Wiley and the Origins of Federal Food Policy*. Ann Arbor: University of Michigan Press.
- . 2001. Split Personality: A Brief History of Competition in Economic Theory. In *Competition*. Cheltenham, U.K.: Edward Elgar.
- . 2004. The Roles of Entrepreneurship in Economic Growth: Toward a Theory of Total Factor Productivity. In *Entrepreneurship and Regional Economic Development: A Spatial Perspective*, ed. Henri L. F. de Groot, Peter Nijkamp, and Roger R. Stough. Cheltenham, U.K.: Edward Elgar.
- . 2009. Entrepreneurship and Economic Growth: the Theory of Emergent Institutions, *The Quarterly Journal of Austrian Economics* 12, n. 3: 3–36
- Hudson Pat. 1992. *The Industrial Revolution* / Publisher: Bloomsbury USA
- Khorshid Aly. 2004. *Islamic Insurance: A Modern Approach to Islamic Banking*, Routledge.
- Kirzner, Israel. 1973. *Competition and Entrepreneurship*. Chicago: University of Chicago Press.
- . 1985. *Discovery and the Capitalist Process*. The University of Chicago Press: Chicago and London.
- . 1997. Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach, *Journal of Economic Literature* 35, no. 1: 60–85.
- Klein, Robert. 1995. Insurance Regulation in Transition. *Journal of Risk and Insurance* 62, no. 3 (Symposium on Insurance Solvency and Finance, September): 363–404.
- Kling Gerhard 2006. The long-term impact of mergers and the emergence of a merger wave in pre-World-War I Germany, Utrecht School of Economics, Vredenburg 138, 3511 BG Utrecht, The Netherlands
- Kling Arnold and Nick Schulz. 2009. *From Poverty to Prosperity: Intangible Assets, Hidden Liabilities and The Lasting Triumph over Scarcity*. Encounter Books
- Knight, Frank. 2002. *Risk, Uncertainty and Profit*. Washington, D.C.: Beard Books. Orig. pub. 1921

The History of Insurance: Risk, Uncertainty and Entrepreneurship

- Korpi Walter. 2006. Welfare State Regress in Western Europe: Politics, Institutions, Globalization, and Europeanization. IFN Working Paper No. 678, Research Institute of Industrial Economics, SE-102 15 Stockholm, Sweden
- Kramer Randall A. 1983. Federal Crop Insurance 1938-1982 *Agricultural History* Vol. 57, No. 2 (Apr., 1983), pp. 181-200, Agricultural History Society Stable
- Kuczynski, Pedro-Pablo, and John Williamson. 2003. *After the Washington Consensus: Restarting Growth and Reform in Latin America*. Washington, D.C.: Peterson Institute for International Economics.
- Kunreuther Howard and Mark V. Pauly. 2010. Insurance Against Catastrophes, in Diebold Francis X., Neil A. Doherty, Richard J. Herring. *The Known, the Unknown, and the Unknowable in Financial Risk Management: Measurement and Theory Advancing Practice*. Princeton University Press.
- Jara Alejandro, Ramon Moreno and Camilo E Tovar. 2009. The Global Crisis and Latin America: Financial Impact and Policy Responses. *BIS Quarterly Review*, June.
- Jenkins, David, and Takau Yoneyama, eds. 2000. *History of Insurance*. 8 vols. London: Pickering & Chatto.
- Jimenez Gabriel Jiménez, Steven Ongena, José Luis Peydró and Jesús Saurina, 2009. Hazardous times for monetary policy: What do twenty-three million bank loans say about the effects of monetary policy on credit risk-taking?, Banco de Espana, Working Papers 0833, Banco de España
- Jones Charles A. 1984. Competition and Structural Change in the Buenos Aires fire insurance market: the Local Board, 1875- 1921, 114-5, in Westall Olivier. *The Historian and the Business of Insurance*. Manchester University Press
- Jorda Oscar, Moritz Schularick, Alan M. Taylor. 2010. Financial Crises, Credit Booms, and External Imbalances: 140 Years of Lessons, Paper presented at the 11th Jacques Polak Annual Research Conference Hosted by the International Monetary Fund, Washington, DC - November 4-5
- Landes David S., Joel Mokyr and William J. Baumol. 2010. *The Invention of Enterprise*. Princeton University Press
- Lee, C. H. 1986. *The British Economy since 1700: A Macroeconomic Perspective*. Cambridge: Cambridge University Press.
- . 1990. Corporate Behavior in Theory and History II: The Historian's Perspective. *Business History* 32: 163-79.
- Lintner, J., 1965. The Valuation of Risky Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budget, *Review of Economics and Statistics* 47, 13-37.
- Lowenstein Roger. 2010. *The End of Wall Street*. The Penguin Press, New York.
- Manes, Alfred. 1942. Outlines of a General Economic History of Insurance. *Journal of Business of the University of Chicago* 15, no. 1: 30-48.
- Markowitz Harry M. 1959. *Portfolio Selection: Efficient Diversification of Investments*. New York.
- Martin Frederick. 2010. *The History of Lloyd's and of Marine Insurance in Great Britain: With an Appendix Containing Statistics Relating to Marine Insurance*, Nabu Press
- Masci, Pietro, Luis Tejerina, and Ian Webb. 2007. *Insurance Market Development in Latin America and the Caribbean*. Technical Papers Series. Washington, D.C.: Inter-American Development Bank. Available at www.iadb.org.
- McCosker M.J. 1945. *The Historical Collection of the Insurance Company of North America*. Insurance Co. of North America
- Mesa-Lago, Carmelo. 1978. *Social Security in Latin America: pressure groups, stratification, and inequality*, University of Pittsburgh Press, Pittsburgh.
- Micro Insurance Academy (MIA). 2010. *Enhancing Value in Community – based Micro Insurance*. Acts of Workshop, New Delhi May 17.
- Minsky Hyman. 2008. *Stabilizing an Unstable Economy*. McGraw-Hill.

- Minsky, Hyman P. 1992. The Financial Instability Hypothesis (May). The Jerome Levy Economics Institute Working Paper No. 74. Available at SSRN: <http://ssrn.com/abstract=161024> or doi:10.2139/ssrn.161024
- Muller A. L. 1978. *Quesnay's Theory of Growth: A Comment*, Oxford Economic Papers, New Series, Vol. 30, No. 1, pp. 150-156
- OECD. (Organization for Economic Cooperation and Development)..2010. The Impact of the Financial Crisis on the Insurance Sector and Policy Responses 2010. Paris: OECD
- . 2003a. *Insurance Statistics Yearbook: 1994/2001–2003 Edition*. Paris: OECD.
- . 2003b. *Policy Issues in Insurance: Assessing the Solvency of Insurance Companies*, vol. 4. Paris: OECD.
- . 2003c. *Policy Issues in Insurance: Insurance and Expanding Systemic Risks*, vol. 5. Paris: OECD.
- . 2004. *Understanding Economic Growth*. Paris: OECD.
- Paxton Robert O. 2004. *The Anatomy of Fascism*. Knopf.
- Pearce John, Martin Millett, and Manuela Struck. 2000. *Burial, Society and Context in the Roman World*. Oxbow.
- Pearson, R. 1955. The Development of Reinsurance Markets in Europe during the Nineteenth Century. *European Economic History* 7, no. 24: 557–71.
- . 1992. Fire Insurance and the British Textile Industries during the Industrial Revolution. *Business History* 34: 1–19.
- . 1993. Taking Risks and Containing Competition: Diversification and Oligopoly in the Fire Insurance Markets of the North of England in the early Nineteenth Century. *Economic History Review* 46: 39–64.
- . 1997a. British and European Insurance Enterprise in American Markets, 1850-1914. *Business and Economic History*, Volume Twenty-six no, 2, Winter.
- . 1997b. Towards an Historical Model of Services Innovation: The Case of the Insurance Industry: 1700–1914. *Economic History Review* 50: 235–56.
- . 2004. *Insuring the Industrial Revolution: Fire Insurance in Great Britain, 1700-1850* (Modern Economic and Social History) Ashgate Publishing
- Peek, J., Rosengren, E. 1997. The international transmission of financial shocks: the case of Japan. *American Economic Review*. 87(no. 4): 495–505.
- Popov Alexander and Gregory F. Udell Cross-Border Banking and the International Transmission of Financial Distress during the Crisis of 2007-2008. European Central Bank, Working Paper Series No 1203. June 2011
- Posner Richard A. 2010. *The Crisis of Capitalist Society*. Harvard University Press.
- Prudential Insurance Company of America. 1915 reprinted 2009. *The Documentary History of Insurance, 1000 B. C. - 1875 a. D.* Prudential Insurance Company of America.
- Pugh Peter and Chris Garratt. 1996. *Introducing Keynesian Economics*. Totem Books
- Puri, Manju, Rocholl, Jörg and Steffen, Sascha. 2010. Global Retail Lending in the Aftermath of the US Financial Crisis: Distinguishing between Supply and Demand Effects, June 15. Available at SSRN: <http://ssrn.com/abstract=1397557>
- Quinn, Dennis P. 1997. The Correlates of Change in International Financial Regulation" *American Political Science Review* 91(September):531-551.
- Rees, R. and E. Kessner. 1999. Regulation and Efficiency in the European Insurance Markets. *Economic Policy*, October, 365–97.
- Reid Michael. 2007. *The Forgotten Continent*. Yale University Press,
- Reinmuth Dennis F. and David L. Lewis. 1970. The Case of the Missing Insurance Entrepreneur, *The Journal of Risk and Insurance*, Vol. 37, No. 2, June, pp. 291-300, American Risk and Insurance Association <http://www.jstor.org/stable/251191>

The History of Insurance: Risk, Uncertainty and Entrepreneurship

- Rojas-Suarez Liliana. 2010. The International Financial Crisis: Eight Lessons for and from Latin America, Working Papers 202, Center for Global Development.
- Roubini Nouriel and Stephen Mihm. 2010. *Crisis Economics: A Crash Course in the Future of Finance*. Penguin Press HC,
- Rousseau Peter L. 2003. Historical Perspectives on Financial Development and Economic Growth, *Federal Reserve Bank of St Louis*, July/August
- Rubinstein, W. D. 1993. *Capitalism, Culture and Decline in Britain, 1750–1990*. London: Routledge.
- Sharpe, W.F., 1964. Capital Asset Prices: a Theory of Market Equilibrium Under Conditions of Risk, *Journal of Finance* 19(3), 425-442
- Skidelsky Robert. 2009. *Keynes, The Return of the Master*. Public Affairs, New York.
- Skidelsky Robert (Editor), Christian Westerlind Wigstrom (Editor). 2010. *The Economic Crisis And The State Of Economics*, Palgrave Macmillan
- Standard & Poor's. 2009. Rating Direct September. Standard & Poor's
- Stiglitz Joseph. 2011. The Anatomy of a Murder: Who Killed the America's Economy? In Friedman Jeffrey. *What Caused the Financial Crisis*. University of Pennsylvania Press.
- Sylla, Richard. 1969. Federal Policy, Banking Market Structure, and Capital Mobilization in the United States, 1863-1913, *Journal of Economic History*, December, 29(4), pp. 657-86.
- Svallfors Stefan and Taylor-Gooby P, eds. 1999. *The End of the Welfare State? Responses to State Retrenchment*. London: Routledge
- Teichman, Judith. 2000. *The Politics of Freeing Markets in Latin America: Chile, Argentina and Mexico*. Chapel Hill: University of North Carolina Press.
- The Geneva Association. 2010. *Systemic Risk in Insurance—An analysis of insurance and financial stability* Published by The Geneva Association, The International Association for the Study of Insurance Economics, March
- Thoyts Rob. 2010. *Insurance Theory and Practice*. Routledge
- Tonveronachi Mario. 2010. Financial Innovation and System Design Paper presented at the conference on Reforming the Financial System: Proposals, Constraints and New Directions, organized by Ideas, January 25 - 27, Muttukadu, Chennai, India.
- Trenerry, C.F.; Gover, Ethel L., and Agnes S. Paul, Editors. *The Origin and Early History of Insurance Including The Contract of Bottomry*. London: P.S. King & Son, 1926. xiv, 330 pp. Reprint available January 2009 by The Lawbook Exchange,
- Trenerry, C. F. 1926. *The Origin and Early History of Insurance*. London: P. S. King.
- Van Niekerk J.P. 2009. *The Development of the Principles of Insurance Law in the Netherlands From 1500 to 1800*, Juta Legal and Academic Publishers
- Van Overtveldt Johan. 2009. *Bernanke's Test*. A B2 Book Chicago
- Varian, H. R. 1990. *Intermediate Microeconomics: A Modern Approach*, 2nd ed. New York: W. W. Norton.
- Vaughan, E. J., 1997, *Risk Management*, New York: Wiley.
- Wertheimer Eric. 2006. *Underwriting: The Poetics of Insurance in America, 1722-1872*. Stanford University Press
- Wiarda Howard J. and Harvey F. Kline. *Latin American Politics and Development*. Westview Press 2011.
- Winter William. 2010. *Marine Insurance: its Principles and Practice*, Nabu Press
- Wright Robert E. and David J. Cowen. 2006. *Financial Founding Fathers: The Men Who Made America Rich*. University Of Chicago Press.