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Selected Econometric Models of Social Capital Formation in New Zealand.

A thesis

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Abstract

This thesis examines the factors contributing to the formation of social capital in New Zealand from three distinct angles. Each of these angles concerns a form of geographically referenced investment, either by individuals through settlement post-migration or their homeownership, or by local government investing in local social infrastructure. The aim of this thesis is to provide the first empirical analysis of social capital formation within New Zealand and to contribute to the existing body of international literature on the subject in areas which have as yet received little or no attention.

The first aspect considered is the relationship between homeownership and social capital formation. Prior studies suggest that homeownership is positively related to social capital formation. However, many of these studies find it difficult to control adequately for personal attributes that may be correlated with homeownership while also impacting on social capital formation. The New Zealand Quality of Life survey provides data that enable analysis that controls for these selection effects with propensity score matching methods, while also benchmarking the results by means of regression methods. The results confirm that homeownership exerts positive impacts on the formation of social capital. Concurrently, homeownership demands greater accountability of local government and leads to reduced satisfaction with local government performance – thereby negatively bringing impact upon community social capital. Hence these two dimensions of housing-related social capital work in opposite directions from each other, a finding which has not been previously observed.

The role of immigration in social capital formation in New Zealand is the second aspect considered, an important issue for New Zealand given that a quarter of the population was born overseas. Using cross-sectional data from two separate surveys, the 2006 Adult Literacy and Life Skills Survey and the 2008 New Zealand General Social Survey, this thesis evaluates the relationship

connecting the birthplace of a migrant and the years since migration with social capital formation. It examines, through a range of regression methods, the factors influencing the stock of social capital held by migrants and the investment of social capital migrants undertake, where social capital investment is separated into bridging and bonding. This chapter finds that stocks of social capital are lowest for migrants in their new host country when they first migrate. This disadvantage appears to decrease over the first five years since migration. In addition, it shows region of birth to be an important factor, with noticeable heterogeneity between different migrant groups. Finally, the section finds that migrant clustering between regions decreases the formation of bridging social capital, while migrant clustering within regions increases the formation of bonding social capital.

Thirdly, the thesis investigates the role of local government investment in spatially fixed social capital infrastructure. To achieve this, it links unique data on local social infrastructure expenditure with micro-level individual survey data, which explores self-reported social capital measures of trust and participation in community activities. It uses both probit and tobit models to estimate the impact of social infrastructure expenditure on social capital formation. The results imply that the links between social capital, demographic characteristics, human capital, geography and public social infrastructure investment are more subtle and complex than much of the literature suggests. The analysis presents evidence in support of many of the hypothesized relationships discussed in the social capital literature. The results also suggest that both selection effects and free rider processes shape the impact of public social infrastructure investment.

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Wallace (Wally) Wise.

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CHAPTER 1

Introduction

1.1. Motivations

Humans are social animals, and social interaction forms an important part of everyday life. Social interaction is essential for wellbeing, commerce, industry, governance and almost all other aspects of society. It is therefore surprising that, with few exceptions, it was only in the late 20th century that researchers became interested in the role of social interaction in economic wellbeing, and in particular, the role of social networks through which this interaction takes place. The formalization of the study of the costs and benefits of social interactions and networking, collectively known as social capital, has become increasingly popular since the work of Putnam (1993) who related community interaction and civic engagement to local government performance in Italian regions. Putnam's arguments highlighted the potential economic role of social capital, which before then had been primarily a sociological concept concerning the positive externalities of social interaction (e.g., Bourdieu, 1986; Coleman, 1988, 1990). Since Putnam's publication, the growth in publication of articles which consider social capital has been rapid and diffuse, with a wide range of disciplines taking an interest in the concept, and it is now routinely considered as a factor in economic and social wellbeing.

Social capital as an economic concept has however encountered some criticism (e.g., Arrow, 1999; Solow, 1997, 1999), but empirical findings have consistently shown that measures of social capital are linked to improved individual, local and national outcomes. However, while the effects of social capital have been well documented, there remains a deficit in the theory and evidence regarding the causes of social capital formation (Glaeser, 2001). With better understanding of the factors influencing the formation of social capital,

policy makers would be able to develop policies with the formation of social capital in mind, either generally or targeted to specific populations. They would also have a better understanding of the impact their policy decisions make on the formation of social capital. This, in turn, means that policy is better able to contribute to the growth of the stock of social capital or mitigate any unintended loss of social capital.

To date there has been a notable lack of analysis of social capital formation in the New Zealand context. Therefore, the focus of this thesis is to impart a deep understanding of these factors, providing the first quantitative analysis of social capital formation in New Zealand. It contributes to the international body of literature by providing new insights into how place-based investments influence social capital formation, with a particular focus on homeownership, migrant settlement and local social infrastructure.

1.2. Social Capital and the New Zealand Context

The term 'social capital' can be found in a range of disciplines and publications. The specific term first appeared in academic literature in an article by Hanifan (1916), examining the role of rural schools on community wellbeing. It was not until the 1980s that the concept was largely rediscovered by sociologists Bourdieu (1986) and Coleman (1988, 1990). The theory began to cross disciplines with the popular publications of Robert Putnam (1993, 1995, 2000). He used a combined economic, political and sociological approach to apply social capital to the diversity of economic performance, firstly between the Italian states and later in the United States. Putnam's work provided the earliest evidence that social capital was related to economic growth and other factors. It also identified some determinants and outcomes of social capital. This evidence led to rapid growth in applications of the concept, as researchers attempted to identify how interpersonal relations could influence social as well as economic wellbeing and improve national outcomes.

'Social capital' has held varying meanings during the twentieth century. Its earlier definition remained fluid and differed in meaning from its contemporary uses (Castiglione et al. 2008). Throughout its development as a concept, social capital has been consistently linked to human capital. However, even in its modern usage, the concept of social capital has been notoriously difficult to define, with no commonly agreed upon definition appearing in the literature (Claridge 2008). While the particular definition adopted by a study often depends on the discipline and level of investigation (Robison et al., 2002; Adler and Kwon, 2002), there has been a common theme amongst the usage: a focus on the productive and consumptive benefits of social relations. Westlund (2006) states that 'social capital' has now come to refer to social networks, relationships, norms and values. These factors are all related to the social situation in which an actor is embedded.

A problem with this definition is that it begins to fall short of what is commonly considered to be 'capital', which may be described as a stock used in the process of production. Many economists have therefore exchanged the broad definition of social capital to a more refined definition, which includes only interpersonal networks. This is because social networks represent something in which people can invest, which can be seen as a stock; which can be used to improve both production and consumption; and which depreciates over time without further investment.

In conclusion, numerous definitions of social capital exist within the body of academic literature. They vary depending on whether the focus is primarily on the relations an actor maintains with other actors, the structure of relations among actors within a collective, or both types of linkages (Adler and Kwon, 2002).

Once introduced to mainstream economics, the links between social capital and economic growth began to be investigated by several authors, such as La Porta et al. (1997), Knack and Keefer (1997) and Zak and Knack (2001). All found some support for the theory that social capital contributes to economic

growth and wellbeing of nations. However, the current popularity of the concept has not been without controversy. The intangible nature of the subject makes quantification, validation and even defining social capital a potentially problematic exercise. This subjectivity of interpretation has drawn criticism from Nobel Prize winning authors Robert Solow (1997, 1999) and Kenneth Arrow (1999), whose arguments are particularly critical of including social capital as a form of productive capital, similar to human or physical capital. Nevertheless, over time, this debate has given way to a general acceptance of the theory.

There is also a body of literature suggesting that social capital may, in some cases, generate negative externalities for society and also negative outcomes for individuals. Social 'bads' may result when a strongly cohesive group acts in its own interest rather than in the interest of society. Examples are gang related crime or ethnic discrimination (Portes, 1998). Negative outcomes for the individual are discussed in detail in Dasgupta (2005). He suggests that these occur when social capital incentivizes individuals to remain in relationships which have negative outcomes, either because of the violation of the individual's group norms and values (for instance, remaining in an abusive marriage) or because of the destruction of existing social capital (such as remaining in a poorly paid or unpleasant job to maintain work ties). This 'dark side' of social capital, in which negative externalities are generated, will be discussed in detail in Chapter 2.

The role played by social capital in regional (Westlund 2006) and national (Castiglione et al. 2008; Tinggaard Svendsen and Haase Svendsen 2009) economic growth has now become largely accepted and widely used in economic literature. Social capital can be examined at several levels, including at the political, community and individual level. There is now a wide range of literature regarding the applications, validity and methodological considerations associated with using the concept of social capital in economic research. Even so, the exact mechanisms by which social capital contributes to growth and development still remain the topic of much debate and investigation.

This also relates to the use of data. Without any overall consensus as yet on how to define or operationalize social capital, researchers often utilize a wide array of datasets, such as those provided by the World Values Survey and General Social Survey, in order to develop proxies for social capital from survey items. Many of these datasets were not originally intended for such an analytical approach (Miller and Buys, 2008; Baum and Ziersch, 2003; Zack and Knack, 2001; Kawachi et al., 1997).

Given the data available for this study, this thesis will focus on examining the levels of social capital held by individuals. At this individual level, there are two generally accepted dimensions which can be used to gauge personal stocks of social capital. These are, firstly, trust in people and, secondly, personal involvement in other people's activities (Huang et al. 2009). These measures have been adopted by both the World Values Survey and the General Social Survey, and as such have appeared frequently in social capital analyses.

New Zealand provides an interesting context for examining individual level social capital for several reasons. Firstly, New Zealand consistently ranks as one of the world's most open, cohesive and institutionally stable societies (McCann 2009; World Bank 2013). Secondly, sub-national institutions and governance are largely homogenous at the policy level. Thirdly, very detailed individual level data are available for New Zealand. Finally, given its geographical isolation, it is unlikely that institutional spillovers from neighbouring countries influence its social capital. This means that New Zealand studies into individual-level social capital may more closely reflect individual factors rather than institutional or governance factors. It also allows, in chapter six, the estimation of the impact of social infrastructure expenditure to be interpreted in the absence of large variation in institutional policy, corruption or related potentially confounding factors.

In the particular case of New Zealand, while concepts such as social infrastructure, participation and community development were already discussed prior to the 1990s, the social capital concept itself had not been

applied until relatively recently. In 1997, stimulated by both an interest from policy analysts and by a trip to New Zealand by Robert Putnam, the Victoria University of Wellington Institute of Policy Studies (IPS) began applying social capital concepts to New Zealand. This research, while largely social in nature, also provided insights into the economic relationships between social capital and development. More importantly, this research provided a framework and issues for the measurement and analysis of social capital in the New Zealand context.

The results of the IPS study into social capital were published in three books (Robinson, 1997; 1999; 2002), and also led to several other important publications, most notably Statistics New Zealand's "Framework for the Measurement of Social Capital in New Zealand" (Spellerberg, 2001). In addition, New Zealand has been included in two cross-country studies on levels of trust, as reported in the World Values Survey (WVS), and the relationships between trust and economic growth. The studies by Zak and Knack (2001) and González (2001) were extensions on the original work of Knack and Keefer (1997), in which trust (using WVS data) was found to be correlated with Gross Domestic Product (GDP) growth across several countries. The results showed that New Zealand had a level of GDP growth consistent with expectations, given the level of trust reported.

However, despite the suitability of New Zealand data for analysis of this concept, there remains a gap in the understanding of social capital in New Zealand. New Zealand research can not only inform local policy and understanding, but can provide new insights regarding social capital formation for utilization by the international community. This is particularly true as New Zealand regions are relatively homogenous in terms of population culture and governing institutions, reducing the need to control for local governance when examining individual social capital formation. This sub-national homogeneity also facilitates the examination of whether location is enough, or whether individual factors are also important in predicting social capital formation. More discussion of social capital in the New Zealand context is provided in chapter 3.

1.3. Aims and Scope

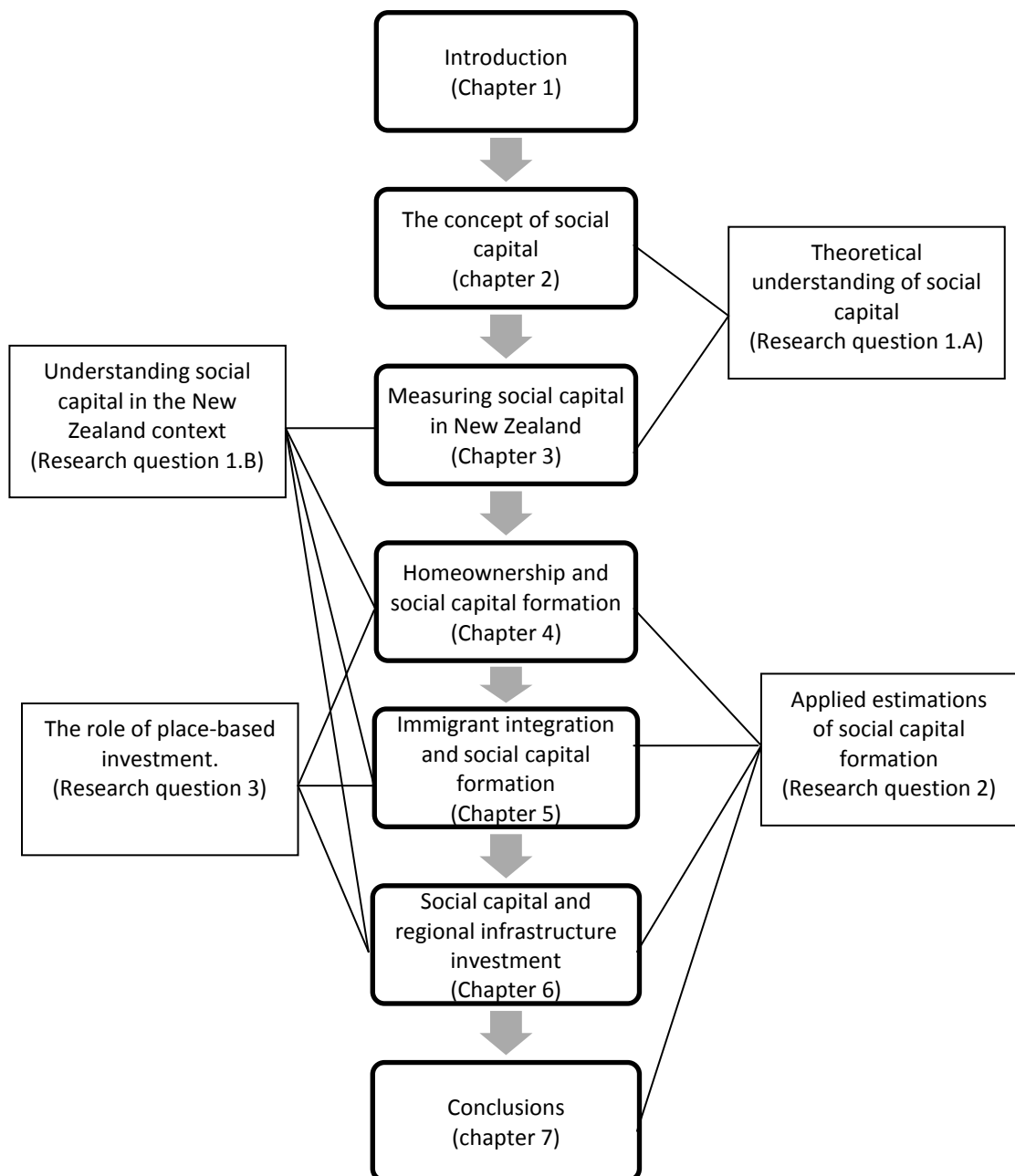
This thesis aims to enrich the domestic and international understanding of the factors influencing social capital formation in order to better inform policy and decision makers and build evidence allowing for further development in economic understanding. To achieve these aims, several aspects of social capital formation by individuals in New Zealand will be investigated. Each of these aspects represents a different location-specific investment by either an individual through purchasing a home or integrating post migration, or by the local government through the provision of social infrastructure. The aim is to provide an understanding of the factors influencing the formation of social capital in New Zealand not only through the direct findings of each of the chapters, but also by examining common factors consistently related to social capital formation across the chapters. In order to meet the aims of this thesis, three central questions form its basis:

1. How is modern social capital understood and research into the concept conducted, and are these methods and theories applicable to New Zealand?
2. What factors influence the formation of social capital in New Zealand?
3. What is the role of location specific investment in influencing social capital formation?

The first of these central questions is investigated in the second and third chapters of this thesis. The second chapter aims to describe the development and modern applications of social capital research, as well as describe social capital related concepts of importance to understanding the outcomes and caveats of social capital research. The third chapter examines the applicability of the second chapter's findings in a New Zealand context by scrutinizing the literature to date on social capital in New Zealand and judging whether unique factors exist regarding New Zealand that require special attention.

The three subsequent empirical chapters examine the second and third questions. Each of these chapters is designed to test data against question two, while simultaneously investigating a different aspect of location-specific investment in social capital. Figure 1-1 gives a general overview of the chapters and topics of this thesis, and how they interrelate with the research questions.

Figure 1-1 Structure of thesis



1.4. Structure

This thesis comprises seven chapters, including a detailed literature review, a discussion of the history and contextual considerations of social capital research in the New Zealand, three empirical chapters, each focusing on social capital formation, and some aspect of location specific investment. Chapter 2 formally introduces the topic of social capital, from the seminal works through to modern applications of the theory. The goal of this chapter is to fully acquaint readers with the concept of social capital, as well as familiarise them with the various controversies and discussions regarding both how and why social capital should be examined. Chapter 3 will introduce a New Zealand context to social capital, examining the research that has been conducted on social capital in New Zealand and exploring the ways in which New Zealand provides a rich context which must be considered when conducting and interpreting empirical research, beyond the average case study for analysis. The three empirical chapters will draw on the findings to present findings on social capital formation while considering different forms of location-based settlement, rising from location specific investment by an individual in the form of homeownership in chapter 4, to the more general community-based investment as migrants settle in New Zealand in chapter 5, and culminating in regional-based investment by local authorities in chapter 6. In addition, the meta-findings of factors which influence social capital formation will be presented in chapter 7, which concludes this thesis.

Chapter 4 is the first of three empirical chapters. This chapter examines the role homeownership has in influencing the formation of social capital in New Zealand, alongside a range of other explanatory factors. Prior studies suggest that homeownership is positively related to social capital formation. However, many of these studies find it difficult to control adequately, because of personal attributes that may be correlated with homeownership while also bringing impact upon social capital formation. This chapter uses data from the 2006 and 2008 waves of the New Zealand Quality of Life (QoL) survey. This analysis uses

both regression and propensity score matching techniques. The results confirm that homeownership exerts positive impacts on the formation of social capital. At the same time, homeownership demands greater accountability of local government and leads to reduced satisfaction with local government performance – thereby negatively affecting community social capital. Hence these two dimensions of housing-related social capital work in opposite directions from each other, a finding which has not been previously observed.

Over the last five years, New Zealand has attracted an average of 84,000 new permanent and long term migrants per year to its shores, contributing to a population of which roughly one quarter were born overseas. Chapter 5 examines the factors influencing social capital formation amongst migrants in New Zealand. The relationship between years since migration and social capital investment is tested using cross-sectional data from two separate surveys, the 2006 Adult Literacy and Life Skills Survey and the 2008 New Zealand General Social Survey. Social capital investment is assumed to be represented by participation in community and voluntary activities, while the stock of migrant social capital was measured using proxy variables including feelings of safety, interpersonal contact and inclusion. Investment is then divided into bridging and bonding (concepts elaborated in both chapters 2 and 5). The chapter investigates factors determining the varying forms of social capital in which migrants choose to invest while settling in New Zealand. The findings suggest that stocks of social capital are lowest for migrants in their new host country when they first migrate, and this disadvantage appears to decrease over the first five years after migration. In addition region of birth is shown to be an important factor, with noticeable heterogeneity between different migrant groups.

Chapter 6 moves from investment by individuals to examining the role local government can play in social capital formation through investment in local social infrastructure. Expenditure on social infrastructure is examined, along with micro-level individual survey data of self-reported social capital measures of trust (interpreted as the stock of social capital) and participation in community

activities (interpreted as investment in social capital). Regression methods are used to estimate the impact of social infrastructure expenditure on social capital formation. The results of this analysis imply that the links between social capital, demographic characteristics, human capital, geography and public social infrastructure investment are more subtle and complex than much of the literature implies. While evidence is found in support of many of the hypothesized relationships discussed in the social capital literature, the results also suggest that the impact of public social infrastructure investment is affected by both selection effects and free rider processes.

The final chapter provides a discussion on the findings across the thesis and draws conclusions from the preceding chapters. It then discusses the implications of these conclusions for policy and finishes with a discussion of future direction for research.

CHAPTER 2

The Concept of Social Capital

2.1. Introduction

Despite being a recently developed concept in economics and the social sciences, the theory of social capital has become both popular and contentious. Social capital as a concept is now prominent in multiple disciplines, and has contributed to a change in contemporary thinking regarding a range of topics.

Within economics, a particular contribution has been in understanding, alongside other forms of non-physical capital such as cultural and human capital, how human factors can influence economic and social wellbeing (Francois 2002; Semitel Garcia 2006; Westlund 2006). Baum (2000) tracks the popularity of social capital, finding that before 1981, 20 articles listed social capital as a key word, rising to 109 between 1991 and 1995 and 1003 between 1996 and 1999. Using “social capital” as a key word in Google Scholar¹ now suggests over 133,000 articles or documents contain the phrase, more than 21,000 of which are linked to economics.

The rise of social capital as a topic of interest in the social sciences can in part be explained by the interest in understanding the broad manner in which social interaction benefits society, and how institutions can both form and utilize the stock of social capital available to them. Social capital has gained prominence within academic disciplines such as sociology and economics as an aid to the analysis and explanation of a variety of phenomena such as in governance (e.g. Brown and Ashman, 1996), political analysis (e.g. Jackman and Miller, 1998; Putnam, 2000), education (e.g. Healy and Cote, 2001; Coleman, 1988; Algan,

¹ A search engine that indexes scholarly literature. See <http://scholar.google.com/>

Cahuc and Schleifer, 2011) and health (e.g. Leader and Dominello, 1999; Rose, 2000; Helliwell 2007; Frey, 2008; Sabatini, 2011).

Modern social capital research has contributed to the development of methods of quantification and testing of social capital hypotheses, providing an evidence base for the existing theoretical relationships. Qualitative methods have also enhanced the understanding of social capital, allowing for the contextualisation and providing a finer level of investigation than is often able to be conducted using a purely quantitative approach. Through the combination of these techniques there now exist many robustly tested relationships of both the factors which form, and which in turn are influenced by, social capital. This has allowed social capital to be considered in a range of public and private policies.

The popularity of the concept of social capital is, however, not without controversy, as the intangible nature of the subject makes quantification, validation and even defining social capital a potentially problematic exercise. This subjectivity of interpretation has drawn criticism from several authors, and these criticisms will be explored in detail later in the chapter. Despite these caveats, the number of research projects and publications drawing on the theory of social capital has continued to grow.

This chapter will draw on the international body of literature regarding social capital to provide a detailed description of the concept's development. It will also examine some of the controversies, applications and conceptualisations regarding social capital's role as a driver of economic growth and determinant of social wellbeing. The chapter then discusses some of the different forms and functions of social interaction identified in the international literature. Following this, it will discuss the methods by which social capital have been examined in the past, including common conceptual measures of social capital. This chapter will conclude with a review of some of the key empirical findings regarding both the formation and functioning of social capital.

2.2. Understanding Social Capital

Despite its current popularity, a unified theory of social capital remained relatively illusive until the 1980s. Although the development of social capital could potentially be traced to classic authors in economics such as Adam Smith (Westlund, 2006), concepts which would form the foundation for 'social capital' were only sporadically introduced with varying meaning during the 19th century. The role of social interaction in economic and personal wellbeing remained fluid and differed in meaning from its contemporary uses (Castiglione, Van Deth and Wolleb, 2008).

It was not until educator L.J. Hanifan's article titled *The Rural Community Center* (1916), which attempted to draw attention to the social role of community schools and local developments facilitated by social meeting places, that social capital was used in a form similar to the modern usage of the concept (Putnam, 2000; Westlund, 2006). Hanifan (1916) used the term 'social capital' several times as a label applied to his observation that through social interactions, individuals can be made better off, both through fulfilling their desire for social contact and through developing community goods to satisfy individual wants. He used community developments which were facilitated through the social interactions brought about by community meetings and planning at rural schools as an example of social capital. This definition suggested that he regarded social capital as the linkages between individuals, possibly under co-ordination from a group or common membership, which facilitate collectivist action to provide community goods. The linkages therefore form a 'stock' of social capital which is used in the production of communal 'goods'.

Usage of the term 'social capital' was limited over the following decades with only a few exceptions, such as the publications by Jacobs (1961) and Loury (1977). Jane Jacobs describes in *The Death and Life of Great American Cities* (1961) the importance of protecting the 'social capital' of a city to ensure the

safety of the streets and foster a sense of civic responsibility. While social capital was not specifically defined, factors relating to it were discussed. In particular, she suggested that social capital can be protected through both diversity at the neighbourhood level, so people can remain in a local area as their needs change, and in the provision of settings for social contact, particularly social infrastructure and neighbourhood facilities.

Both these concepts are explored in this thesis at a higher level through the use of diversity indices in chapter 5 and the use of social infrastructure spend in chapter 6. Loury's (1977) usage of the term focused more on the individual, with social capital relating to the set of resources that allow people to reach their educational potential within a social context, essentially relating social capital to the interpersonal linkages which facilitate opportunity and success.

However, during the 1980s, social capital began to be 'rediscovered' by the social sciences (Van Deth, 2003). Deficiencies in the prevailing mode of thinking were becoming apparent in academic literature, providing the basis for this rediscovery. Within the social science and educational fields, theorists were developing the notion that through social interactions, a sense of community and the distribution of norms and values, individuals could provide benefits to themselves and others which were otherwise unachievable on their own. Meanwhile, economists were becoming progressively aware that traditional forms of capital, which to this point were usually confined to physical, natural and, increasingly, human capital, along with growth in the labour force, were insufficient for explaining economic growth. It was in this environment that social capital was able to emerge as a concept which captured the productive aspects of community and interpersonal connections.

Two sociologists are commonly associated with the re-emergence of social capital during the 1980s through attempts to both define and position social capital. These authors were French sociologist, anthropologist and

philosopher Pierre Bourdieu (1980, 1986), and American educational sociologist James Coleman (1988, as cited in Castiglione, Van Deth and Wolleb, 2008). Both authors positioned social capital closer to the writings of Loury (1977), with respect to individual linkages which facilitate positive outcomes, as opposed to Jacob's (1961) writings, where social capital is described as beneficial at a community and societal level.

While Bourdieu had published on social capital in Europe as early as 1980, it was not until his work was translated into English in 1986 that it came to the attention of Anglophone academia. Bourdieu (1986) defined social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition – or in other words, to membership in a group” (Bourdieu, 1986, p.248).

To Bourdieu, social capital comprised of the pool of resources which an individual could gain access to through their connections with other individuals or groups. Stocks of social capital were defined as both the size of the potential social network that an individual could mobilise and the resources of the agents in that network. This theory held that the networks and linkages in which individuals took part provided the access to social capital, but were not social capital in themselves.

Bourdieu (1986) also laid out a framework for understanding social capital as being both a private and public good. The private good aspect of social capital arises from the rival nature of the resources which can be accessed through a network, as well as the excludability of network membership achieved either directly through application processes or indirectly through exclusion of individuals who do not comply to network rules and norms. Any other benefits were externalities generated unintentionally, but which affected broader society.

There is also a public good aspect in social capital, due to the non-rival and non-excludable elements often inherent in the externalities generated through investment in networks. This includes benefits such as social cohesion, trust, increased efficiency of investment and resource allocation (Putnam, 1993). As such, social capital at the individual level may be thought of as a private good, while at the societal level, it acts as a public good.

Further, drawing on the work of Buchanan (1965), some aspects of social capital may have aspects of both public and private goods. In particular, where a social network is non-rival, as additional members do not decrease the value a member can extract from the network, but are excludable in that individuals can select who to include into a network, then the social network appears much like a club good. While the club good aspect may allow rents to be extracted for social networks, increasing the benefit for those accessing the network, it may also restrict social capital below a social optimum, reducing the spillover benefits.

Drawing on the club good nature of some social networks, it is also possible, that social capital could be thought of as having a public bad aspect, due to intra-social behaviour such as gang membership and intergenerational transmission of poverty (Alderidge et al. 2002). This duality of social capital as both a potential public good and bad will be discussed later in this chapter. Some authors such as Fukuyama (2000, 2002) and Dasgupta (1999) go as far as to suggest that social capital is solely a private good, subject to extensive externalities both positive and negative, and that these externalities should not be considered as either public goods or bads.

Coleman (1988) offered a different understanding of social capital. Extending Bourdieu's theories, Coleman's paper examined the role of social capital in the development of human capital. Coleman (1988) describes social capital as the links between actors, which facilitate both economic and non-economic activity. In his later work, Coleman developed this line of thinking

further to ascribe a purely public-good understanding to social capital. Under Coleman's theory, social linkages are not an individual's private property, as social capital arises in a social or public structure, with no one person having ownership over the linkages. Instead, all members of the network invest in these linkages (Coleman, 1990) and the individual is therefore limited in her ability to make conscious investments in building social capital.

This is an important observation, as it begins to suggest, as Hanifan's (1916) article did, that the role of developing social capital is not solely based on the individual, but also on the social structure and institutions in which they interact. This implies that there is some role for governance and institutions in the development of the stock of social capital in a given society, relating back to the writings of Jacobs (1961) and an issue explored in detail in chapter 6.

While both Bourdieu (1986) and Coleman (1988) recognise the role of social capital in individual wellbeing, and also that social capital is related to linkages between actors, there is a key difference between them. Westlund (2006) provides an excellent and concise summary of these differences. He argues that while Bourdieu's viewpoint is that links between actors facilitate the procurement of social capital, Coleman suggests that it is these links themselves which are social capital. The difference between the two lies, therefore, in their different understandings of exactly what social capital is. It is, however, an important difference, as the methods of expanding the stock of social capital under Bourdieu's definition include increasing or broadening the resources available to an individual, while Coleman's definition means that the quality and quantity of social linkages and networks dictates the stock of social capital available.

This has important implications for both individual actions and policy recommendations. Under Bourdieu's definition, policy aiming to expand, maintain or utilize social capital stock needs to be targeted at the individual,

increasing the individual's ability to contribute in a social network. Conversely, Coleman's definition suggests that policy should focus on providing the greatest opportunity for social interaction and network formation. It further emphasizes the role of policy in this, as individuals require collectives and institutions with which to engage, but are limited in the ability to create those collectives and institutions.

Similarly, the strategy for attaining social capital growth under Bourdieu's definition may come about through targeting high-value individuals for inclusion in a social network, while Coleman's suggests that expanding the network increases social capital. In fact, both these factors appear to contribute to overall social capital formation. It is likely that a balance must be struck between the two positions to maximise the stock of, and investment in, social capital.

The theories of Bourdieu and Coleman provided an operationalized theoretical framework from which a modern definition of social capital could be conceived. However, it was Robert Putnam's (1993) work on the performance of Italian regions and their democratic institutions that is credited with providing a theoretical framework and empirical evidence which adapted the concept to the modern framework (Castiglione et al., 2008).

Putnam's book made several important contributions to the concept of social capital. His work was founded on the concept that there was a lack of understanding as to which factors influence the functioning of governments or institutions. Putnam observed that there are linkages between institutions and societal, cultural and economic factors, and these linkages need to be explored to better understand how institutions should be organised and how they should conduct their operations to be both efficient and long lasting. To achieve this, Putnam studied the development of Italian regional institutions in order to examine the differences in institutional performance and how this is related to regional growth and development.

Putnam (1993), in *Making Democracy Work: Civic Traditions in Modern Italy*, developed social capital into something which strongly resembles a public good. He defined it in terms of features such as trust, norms and networks, which can improve the efficiency of society by facilitating coordinated actions. This definition is consistent with that of Coleman (1988), by representing social capital as the linkages themselves. The key finding of Putnam's work was a strong predictive relationship between proxies for social capital (civicness) and economic performance. He also provided a framework for thinking of social capital as a form of capital, and theorised its relationship with macro-economic variables such as economic growth.

Putnam's later work introduces these concepts of social capital to America (Putnam, 2000), as well as addressing some of the criticisms of authors such as Portes and Landolt (1996), who suggest that there may be negative externalities arising from social capital, such as discrimination, exclusion or organised crime, which may mean that social capital could play a role as a public 'bad' as well as a public 'good'.

Bowling Alone (Putnam, 2000) describes Putnam's research into the changes in the socio-landscape of America. The findings of this work engaged a large number of American — and subsequently international — academics with backgrounds in areas such as economics, geography, psychology, sociology, political science and epidemiology into the social capital discourse. The interplay of these disciplines, along with the intense interest from academics and later policymakers and non-government organisations to an increasing degree, has led to the concept being developed into its current understanding.

The writings of Hanifan, Bourdieu, Coleman and Putnam laid a strong foundation for the development of social capital into its modern application. However, there remained several controversies and debates. Indeed, the definition of social capital continued to differ between authors. As noted earlier,

Bourdieu (1986) envisioned social capital to be the pool of resources accessed through social networks, whereas Putnam (1993) and Coleman (1988) identified it as the linkages themselves constituting social capital. Both Putnam and Coleman described social capital as a public good (in many ways if not absolutely) while authors such as Lin (2001) have stressed the individual nature of social capital. In more recent literature, there are many definitions attached to the concept, and synthesising an encompassing cross-disciplinary definition becomes near impossible. There is, however, a need to form a well-structured definition of social capital in order to justify the measurement of the concept in a policy context (Harper, 2001; Sabatini, 2009).

The Organisation for Economic Cooperation and Development (OECD) defines social capital as “Networks together with shared norms, values and understandings that facilitate co-operation both within and among groups” (Organisation for Economic Cooperation and Development, 2001, p.41). The OECD definition is similar to that used by Putnam (1993) and Coleman (1988), in that it suggests social capital is the set of linkages between actors. It goes further, including norms and values, which overlaps with the concept of cultural and relationship capital (McCann et al., 2010). These terms describe benefits which arise from the ability to identify or interact within a given culture. The relationship between cultural and social capital is discussed in full in section 2.2.2. An important observation of the OECD definition of social capital is that this definition suggests there are real yields to investment in social capital in the form of decreased costs to co-operation and increased access to resources. These benefits are described as being both inter- and intra- group. However, the emphasis still remains on treating social capital as a public good.

Westlund (2006) addresses the apparent conflict between Putnam (1993) and the OECD definition. Putnam’s understanding of social capital is one which is dominated by the concept of a civic society, and social capital facilitates civic action and interaction. Should social capital then be thought of only as occurring

when considering civic society, or is it a more general concept, which can be applied to all social linkages between individuals? Most authors now agree that while the public good aspect of social capital has implications to civic society, it also expands beyond this to provide benefit to other levels of collectively, and therefore social capital becomes appropriate for both individuals through private good aspects and other aspects of society through the public good aspect.

Some authors, such as Meadowcroft and Pennington (2007), have even suggested that nodes within a social capital network do not necessarily have to be individuals, but rather brands, companies or organisations may all act as nodes for social networks. An example of this may be an individual who has developed a 'linkage' with a particular brand of breakfast cereal. The trust and attitudinal relationship with this brand forms a new node in the network. The trust with the brand is held as a stock, and the brand is used as a flow of 'packaged' information, perhaps simply by placing a logo on a product, which allows an individual to decide on quality and reduces information seeking costs. A problem with identifying non-individuals as social capital nodes, however, is that the information flow is not reciprocal, as linkages are formed through marketing. These linkages only transmit information one way. Nonetheless, it may be possible to think of companies and branding as heuristics designed to facilitate social capital by establishing a sense of identity, to which the social network can connect attributes.

Westlund (2006) provides a summary of the functionality and form of social capital as "a phenomenon that is found in all parts of society, in all types of organisations and thus in the private and public as well as civil sectors of society" and that "Social capital should be analysed as a concept of economics, i.e. as a form of capital." (Westlund, 2006 p.4). This provides a framework for conceptualising social capital, expanding beyond the constraints of Putnam's civil society application, and allowing a more functional interpretation of social capital in that it can be defined as all social or societal linkages.

It follows then that social capital exists in all societies where two or more individuals have some interaction resulting in information about each individual and the resources they possess being generalised. From this it can be seen that social capital is not necessarily constrained to democratic or even modern society. Westlund (2006) goes on to make the point that social capital should be examined as a member of the capital 'family', however, not all theorists concur with Westlund regarding the status of social capital as a true form of capital, resulting in much debate as to whether social capital is really capital at all.

2.2.1 Is social capital really 'capital'?

The view that social capital is an actual form of capital has been criticised extensively in the academic literature (Falk and Kilpatrick, 1999; Arrow, 1999; Solow, 1999; Inkeles 2000; Robinson, Schmid and Siles 2002). This debate has led to considerable refinement and in depth examination of the concept as well as contributing to a more balanced appreciation of the uses to which the concept could be put (e.g. Halpern, 2005), thus constraining some of the hyperbole and more adventurous applications with which it had become associated.

A starting point for addressing the debate around the nature of social capital is to understand exactly what is required for some stock to fall under the definition of capital. While an encompassing definition of capital in the economic sense is difficult to ascertain (Serageldin and Grootaert, 2000), there is consensus on several points. This consensus provides a 'minimum requirements' framework for understanding what is mean by the term 'capital'.

The standard textbook style definition states that capital can be thought of as factors which dictate productivity, i.e., output per worker. A more definite list of basic requirements are summarised in both Arrow (1999) and Westlund (2006). Both write that the term 'capital' should be used to represent a good which arises from investment or savings. This means that stocks of capital are

invested in by sacrificing consumption in the current period, in order to increase consumption in a future period. That stock should then provide a flow of returns into the future.

Nee and Sanders (2001) outline the fact that social capital is an asset which provides a yield, and use this as their basis for including social capital in the capital family. This, however, could be suggested to be overly brief and ambiguous, missing many of the nuances of the nature of stocks and investment in social capital. For example, consumption in the current period is forgone when investing in social capital through two mechanisms. The first of these is the time and resources spent in social interaction which forms the connections which make up social capital. Secondly, consumption is forgone through the 'free' distribution of information, which may hold a premium that could be exploited to increase consumption in the short term, but which is shared to strengthen networks and incentivise reciprocity of information to improve consumption in the longer term.

Social capital also depreciates over time, and requires investment in time, resources and information sharing in order to maintain the stock. Glaeser (2001) suggests that social capital can be thought of as a stock which yields both market and non-market returns. The market returns can be thought of broadly as the economic wellbeing that arises from social capital while the non-market returns include the personal and social wellbeing aspect.

Social capital does share several similarities to other, more traditional forms of capital. Alder and Kwon (2002) show that social capital is similar to other forms of capital in that it can be invested in through accessing existing nodes or establishing new nodes within the network. In order to form social linkages, participation in networks or social situations are required, which requires investing time and possibly funds. Investing in social capital also requires that others are being provided access to an individual's stock of

information and resources. By sharing information, individuals may lose some of their competitive advantage. However, an optimal investment would result in this being offset by the information accessed through the reciprocation via other individuals' networks. An example of these investments may include offering a discount on prices to a member of a social network, in the understanding that the discount provider can access the network's information when required.

The rate of depreciation of social capital also differs from that of traditional capital. The traditional economic understanding of capital depreciation is that it occurs through either physical depreciation as the stock ages, through obsolescence of the stock or through falling value resulting from falling demand for that form of capital. Social network linkages can and do lose value through obsolescence of the network, due to changing information needs. For example, changing employment between industries may mean that social networks that supplied information of the state of the former industry are now obsolete. The concept is similar for changes in demand for information flows, such that the value of a social capital linkage may fall if the supply of information flowing along that linkage begins to fall in value, lowering demand.

However, the key difference between depreciation of social capital and other forms of capital is that social capital depreciates more rapidly, due to both underuse and overuse. If an individual chooses not to access an interpersonal network, then the bonding link through which information flows reduces in both volume and velocity. This is also important in the reverse, as the flow of knowledge about the individual is no longer being spread throughout the network. Conversely, if individuals demand too much from the network, or fail to reciprocate the demands they place by making information and resources available, other nodes within the network may begin to weaken their linkages. Between this over- and under- use, however, there remains the possibility of an optimal sustainable rate of consumption, where linkages are maintained through both investment and usage, but not overburdened.

Social capital consumption occurs when an individual accesses, either explicitly or implicitly, resources or information through their social network. The observation that social capital can be consumed is important, as it fulfils one of the guidelines on what constitutes capital by being a stock which is used to provide a yield. An example of this may be a woman requiring a plumber. In order to make the most efficient decision on which plumber best suits her requirement, she can access her stock of social capital, tapping into the generalised knowledge of her social network to find the plumber who provides the best mix of costs and qualities which she requires. In this way, social capital works to lower the costs of accessing resources through increasing information and reducing risk. Consumption in social capital is different from traditional capital, for which consumption results in decreased stocks. Low to moderate consumption of social capital may actually result in an increase of social capital as connections within the network are strengthened or broadened.

Social capital therefore creates a flow, primarily of information, which is drawn from an individual's underlying stock of social capital which was invested in through interaction with other individuals, engaging in reciprocity and sharing information. Hence, the flow of benefit from social capital can be thought of in two ways: it lowers the transactions costs by gaining insider knowledge through a network rather than conducting individual research (e.g. Coase, 1937; Buchanan, 1965), and it also improves knowledge as information flows along the network. Improved knowledge is related to better decision making. Both the lower transactions costs and the improved knowledge benefit the individual, but these also spill over to benefit society as a whole. These circumstances are elaborated on later in this chapter.

2.2.2 The relationship between social capital and other forms of capital

Capital in the economic sense traditionally referred to what is now termed physical (K_P) and natural (K_N) capital. These two factors of production,

along with employment (L), were often included in standard production functions. This is seen in equation 2-1, with Q referring to real output.

Equation 2
$$Q = f(L, K_P, K_N)$$

While several historical authors had suggested a broader definition of the term, the first forays into personal forms of capital, regarding the factors of the person, which influence productivity (Q/L), are credited to Schultz (1961) and Becker (1962). These two works introduced the term 'human capital' as “activities that influence future real income through the imbedding of resources in people” (Becker, 1962. p.9) or more generally, non-tangible investments by persons which improve their future productivity. Davenport (1999) suggests that human capital is generally considered to include skills, experience and knowledge. Investments in education are a prime example of additions to human capital, since a cut in current consumption in terms of lost wages and costs to attend university constitute an investment in improving the productivity of an individual through improved knowledge and skills.

Portes (1998) describes social capital in relation to economic and human capital as follows: “Whereas economic capital is in people’s bank accounts and human capital is in people's heads, social capital inheres in the structure of their relationships” (Portes, 1998, p.7). This description of Portes, while perhaps simplistic, is rather insightful in thinking about how the three forms interact. Human capital is built through investing in both social capital and economic capital as well as claiming time in order to gain knowledge, but in the process, adds to future economic capital through increased earnings and social capital through the expansion of networks while training.

Economic capital and social capital also have a similar interaction. While investing in social capital costs economic capital through costs of participation and time spent investing in social capital rather than building economic capital,

future economic capital is increased as the social capital flows on to improve gains from network knowledge spillovers. Social capital also makes actors better able to compete and provide information on forms of consumption that maximise utility, and to improve future income through providing market information around employment, investment and risk.

In addition to human and economic capital, both natural and cultural capital are suggested forms of capital which have been widely discussed. Natural capital is relatively well established in academic literature and is defined by Costanza and Daly (1992) as a stock which occurs in a natural ecosystem and yields a flow of valuable goods and services into the future. Examples of natural capital include land, forestry, fisheries and mineral deposits.

Cultural capital, however, suffers from similar criticisms as social capital. Bourdieu (1986) describes cultural capital as being present in three forms. The first form is an embodied state that represents situational information passed between generations such as language, norms and values. The second form, the objectified state, represents information passed through generations in objective form, such as books, art and symbolism. Finally, Bourdieu refers to an institutionalised form of cultural capital, in which a person's skills or abilities are captured in a culturally understood framework; for example, the understanding that a particular level of education represents a particular degree of skill or ability.

Cultural capital can therefore be thought of as the ability of an individual to identify and subscribe to a given culture, and thereby gaining access to resources and lowering costs involved in interacting in a given society (Throsby, 1999). It also relates to a person's position within a culture which may be independent of a person's action, but rather the result of birth right, age or any other cultural factor which provides access to resources at a lower cost.

All of these forms described by Bourdieu appear to have one common theme, in that cultural capital by his definition is represented by the cultural norms or generalised understandings of a given society or group. This suggests that natural capital represents the flow of resources from a given ecosystem, economic capital represents the investments in physically built factors which influence productivity, human capital represents the knowledge and skills investments in the individual, cultural capital represents the investments in understanding and adhering to a society's norms and rules, while finally social capital represents investments in the linkages between individuals.

Other major personal forms of capital may also include concepts such as entrepreneurial capital (Erikson, 2002; Firkin, 2003) and relationship capital (Dollahite and Rommel 1993; McCann et al., 2010). Entrepreneurial capital relates to an individual or societal propensity to engage in 'creative destruction', i.e., breaking down or taking rents from existing, less productive capital, to invest in new, highly productive and/or high return forms of capital. Relationship capital is a term primarily drawn from the sociological literature and is used to describe the mutually beneficial relationships among family and friends. As such, relationship capital can be thought of as a highly exclusive social networks with high trust and reciprocity. This can therefore be described as a type of social capital rather than a distinct form of capital on its own. Where social capital sits in this 'family of capital' is not entirely clear.

As can be seen, there appears to be an overlap between all of the forms of capital discussed above, so that thinking of them as a distinct entity becomes difficult if not impossible, particularly when considering cultural capital, since all forms of capital exist within some cultural context. What this means for social capital is that while a definition of social capital is important and helpful in understanding the concept, it is also important to consider how it inter-relates with other capitals and how important balanced stocks and growth in capital is to improving overall productivity and thereby increasing economic wellbeing.

2.2.3 Definition of social capital

The previous discussion in this chapter makes it clear that defining social capital is problematic, with many different definitions in current use. This is both because of the youth of social capital as a concept and because of the varied background of the researchers who are interested in using the concept. As this thesis sits primarily within the domain of economics, the discussions conducted previously in this chapter have focused on the capital aspect of social capital, with language designed to place social capital within the family of capital and establish the concept's role in economic development and personal wellbeing.

For the purposes of this thesis social capital can be thought of as a stock of social networks possessed by an individual along which information flows. This definition suggests that social capital is the quality and quantity of interpersonal linkages that result from direct (for example, getting to know someone, or performing a favour) or indirect (such as having shared norms, and values, or having a reputation for trust or ability) investment in relationships, which generates knowledge spillovers through interactions along the networks (Performance and Innovation Unit, 2002).

Social capital is developed and maintained through social interactions, by supplying personally held information which is then generalised as it is passed along the social network. This suggests that it is not only important to be involved in direct social interactions, but also to be acknowledged as a member of a network without being directly involved in an interaction.

This functional definition is very much orientated towards utilizing the concept for empirical economic analysis. By treating social capital as a network of social linkages between individuals through which information flows, we can show the economic benefits provided by improvements in consumptive and productive wellbeing through firstly lower transaction costs of gaining

information or accessing resources, secondly facilitating decision making on values such as trust, and thirdly allowing access to generalised information sets about an individual, thereby improving the efficiency of prediction.

2.3. Recent refinement

The concept of social capital has been subject to refinement over the two decades since Putnam's analysis (Claridge, 2012). These refinements arose from the realisation, as researchers delved into the implications of interpersonal relationships, that not all relationships were formed for the same reason, had the same appearance or had the same outcomes. In addition, the externalities generated by social capital were found to differ dependent on the nature of the network it was located in. This section of the thesis will deal specifically with common divisions of social capital into concepts that explain the different shapes and impacts of the networks individuals belong to.

2.3.1 Levels of social capital

The term 'level' in this context refers to a relationship in a hierarchical structure, and in this context specifically refers to the shape of a network and how the members of the network identify with each other. While social capital should be thought of as residing within an individual, it also has an aggregate component as individual networks often sit within larger networks that have a common context (Brehm and Rahn, 1997; Newton, 1997).

In consideration of this aggregate component, social capital is often discussed in terms of the level that the network resides in after it was observed that an individual's linkages and networks are not constrained to other individuals, but may also include groups, organisations and institutions such as governments. Halpern (2005) discusses 'levels' of social capital, suggesting that social capital can be thought of as existing at the micro (individual) meso (group)

and macro (national and international) level. Considering these different levels of social capital is important. While social capital is argued to be the linkages between individuals the nature of these linkages may be subject to (dis)economies of scale and scope, as well as externalities, at different levels of aggregation. This means that the sum of social capital amongst individuals may not be equal to the social capital in society. These externalities are often difficult to measure, but could be controlled for through including aggregate-level information or through the use of multilevel modelling.

At the micro- level, consider an individual who may have horizontal links with other individuals or vertical links with other hierarchical groups. The individual level is a common level of social capital used in analysis and often forms a focal point for vertical or horizontal linkages. An individual may also possess a social link to an entire group or organisation. That group or organisation acts as a higher level due to the amalgamation of individuals. An individual's brand loyalty is an example of a vertical linkage between an individual and an organisation (in this case a business) where there is an implicit trust relationship between an individual and an organisation such that their brand acts as a heuristic for determining product preference.

At a higher order, social capital can exist between an individual and an institution such as a governing body. At this level, social linkages and trust associations exist such that individuals will allow an institution to govern on their behalf. The linkages between individuals and institutions are thoroughly examined by Putnam (1993, 2000) as discussed earlier. Examples of these relationships include community boards and local governance, where an individual who trusts these organisations allows them to represent their interests and govern.

Beyond the individual level, social capital is commonly considered at the meso- level by examining the linkages between groups of individuals. While the

type of group that is examined varies, it is often the case that the group falls into several categories, being some mixture of demographic (e.g. ethnicity or age group), geographic (e.g. community or neighbourhood), professional (e.g. workplace or profession), social (e.g. sports, hobbies and religion) or increasingly virtual (e.g. online forum or gaming communities) in nature (Office of National Statistics, 2012).

Further aggregating, we reach the macro-level of social capital. The macro-level analysis has thus far primarily concerned itself with the relationship between actors and governance. However, it may also include aggregations of groups into broad categories, such as considering all migrants rather than non-native groups based on nationality or aggregated religious groups rather than individual faith-based communities.

2.3.2 Bridging, bonding and linking.

With the exponential growth in the literature involving social capital across several disciplines, it is not surprising that attempts to define social capital have resulted in several different forms of social capital becoming apparent. Within academic literature, the distinction between 'bridging' and 'bonding' forms of social capital has risen to become generally accepted (Harper, 2001; Woolcock and Narayan, 2000). Woolcock and Narayan (2000) describe this approach to understanding social capital as a networks approach, in that it identifies two separate forms of social networks with different purposes, which have different outcomes.

Networks which exist within a group or association are known as horizontal or 'bonding' forms of social capital, while the networks which link individuals between groups are known as vertical or 'bridging' social capital (Gittel and Vidal, 1998). Woolcock and Narayan (2000) go on to argue that different combinations of these two forms of social capital result in different

outcomes. Bonding social capital refers to interpersonal linkages which knit a group which is similar by some aspect together while bridging social capital is a term used to describe those linkages which link individuals who are seemingly different by some aspect.

While bridging and bonding social capital may be more evident at a meso- or macro-level, where communities or cultural group networks are easily distinguished into the linkages within the groups and linkages between different groups, they are also evident at the individual level. Often, individual linkages perform both a bonding and bridging function. For example, having a linkage with a neighbour from a different ethnic group would be considered bonding social capital within the local community, but bridging social capital as it links an individual to a different ethnic group. Similarly, participation in religious events often results in bonding social capital being formed within the congregation while facilitating bridging social capital between different socio-economic, generational and cultural groups.

These two forms are also used to represent some of the negative as well as positive outcomes of social capital. High levels of bonding social capital may be responsible for excessive claims on an individual's resources by other members of a social network. As described earlier, this can result in poor entrepreneurship and investment, particularly in traditional societies. High levels of bonding with low levels of bridging are also related to problems of exclusion of outsider groups. This is often present in groups engaged in organised crime or discriminatory practice.

In addition to the distinction between bridging and bonding, a more recent concept known as 'linking' social capital has gained recognition in the academic literature. Linking social capital specifically refers to social capital which spans explicit, formal or institutionalised power gaps (Woolcock, 2000). Linking social capital has many features similar to bridging

social capital and may be considered as a subset of bridging which specifically relates to bridging across individual gaps in hierarchical relationships. Linking social capital enables individuals to leverage resources, ideas and information from actors in positions of relative power (Australian Bureau of Statistics, 2002).

2.3.3 Can social capital have negative returns?

Early literature depicted social capital exclusively in a positive light, focussing on all the benefits to an individual and society through having greater linkages between actors. Later works, however, started to develop an argument that while there are benefits to having social capital, there are also potential negative aspects to social capital (Halpern, 2005).

Waldinger (1995) made the observation that within closed groups such as ethnic groups, unions and professional organisations, there may be very high levels of social capital which facilitate the economic advancement of the particular group. These same high levels of social capital may contribute negatively to the wellbeing of outsiders who are excluded from such activities, and then may have negative impacts on the closed group itself through excessive reactionary and conservative behaviour.

Portes (1998) also describes several other potential downsides to having high levels of social capital. He suggests that in some cases, social capital may result in entrepreneurs and fragile businesses being negatively impacted by job-seeking or otherwise resource-seeking individuals with whom strong social capital ties exist. Social capital may also result in a negative impact through facilitating crime, education underachievement and health-damaging behaviour (Aldridge et al., 2002).

When considering negative aspects of social capital, it is important to distinguish between whether high quantities of social capital have an implicitly negative impact, such that increased social capital has the result of private costs

outweighing private benefits, or whether there are externalities generated from social capital, much in the same way that physical capital may generate pollution, creating a situation where the social costs are higher than the private costs.

Understanding the role of social capital on crime and antisocial behaviour is challenging and it appears unlikely that any one particular force or linkage is the best explanation for this occurrence. One possible theory as to how social capital and crime are interrelated is that the cultural capital of the members of the social capital network may dictate behaviour which reinforces the social linkages within that network.

To illustrate this theory, assume that social capital is built and maintained through social interactions and generalised knowledge about aspects of an individual's personal, social and behavioural tendencies. In other words, a network member has an information set made available through generalised knowledge of each member acting as a node within the network. This information set allows other members to engage in strategy where maximum benefit can be achieved for both the individual and members of the network. Provided that a person is a member of a law abiding network, the incentive is to engage in law abiding activities because following these social rules provides benefits within the network, while deviating brings private costs as the knowledge of illegal activity is generalised.

If, however, an individual operates in a social capital network where illegal activity is accepted or even acts as a bonding agent between members of a network, such as in a crime syndicate, then illegal activity can bring benefits to an individual. Knowledge that they have engaged in this activity is transmitted through the network, forming stronger bonds of trust, and greater ability to access information and resources as a result. Negative aspects to social capital may therefore occur from both high quantities of social capital which acts to exclude access to social resources, and from the form of social capital present, which may facilitate negative externalities such as crime and other social 'bads'.

2.4. Measurement and Analysis

Measuring social capital is essential for understanding its characteristics and potential, as well as for providing evidence of the theoretical relationships (Durlauf, 2002; Falk and Harrison, 1998). Social capital suffers from the same challenge that many of the forms of capital which are stored in individuals (such as human and cultural capital) suffer from, and that is that the stocks are neither directly observable nor quantifiable. While physical capital can (arguably) be seen, measured, valued, aggregated and then entered into a ledger book, the investments people make in themselves and their social networks are neither directly observable nor measurable.

In order to overcome this, either qualitative measures of social capital are required through either stated or observed social interactions and networks, or else quantitative methods which rely on indirect measures or proxies are required to form estimates or imperfect measures of the unobservable phenomena. These proxies, following carefully consideration of framing and the importance of validating through theory, existing literature and statistical methods, can provide estimates which reflect underlying quantity of social capital. Within human capital terms, a proxy for the level of human capital an individual possesses may be their tenure and experience in a particular role, or a level of educational achievement such as years of schooling or specific qualifications. While such proxies do not measure the level of human capital which a person possesses, they do allow for both an imperfect measure to be taken to assess stocks and judge effectiveness, as well as to allow an individual to signal the level of human capital they possess to potential employers and other interested parties.

An example of the imperfection these proxies represent can be seen in the variation in knowledge sets between two graduates with degrees in the same subject and university. While according to the proxy they are both ranked equally,

the actual stock of human capital may differ significantly between the two. Similarly, proxies also exist for social capital and some combination of reported values can be then used to infer the true level of social capital of a person or group.

To understand the role of social capital in the wellbeing of individuals and groups, a qualitative approach may also be taken. Common qualitative methods including public observation, ethnography, life histories, in-depth interviews, and focus group research, have long been used to elucidate values, perceptions, attitudes, and opinions of both individuals and groups of people, providing in-depth examination of relationships and behaviours (Krishna and Shrader, 1999).

All of these approaches hold potential value when considering social capital, as the very nature of the concept means that it is heavily contextually dependent, and understanding the discourse on the topic allows for micro-mechanisms of social capital to be more clearly defined. For example, it would be difficult, time consuming and costly to quantitatively measure the role of social capital networks in lowering the costs of resource access for an individual. However, through qualitative techniques individuals can report the degree to which they feel they personally benefited as a result of their network.

Quantitative methods of social capital analysis also vary considerably in their approach, depending primarily on the level of social capital to be analysed as well as the aspect of social capital that is under consideration. One of the most direct methods of measuring social capital remains any attempt to enumerate and qualify an individual's social networks. This approach may be seen as a mixed method, in that in order to get the quantitative data, intense qualitative research is required. The resource and time intensity to estimate the number of linkages an individual possess makes getting sufficient observations for statistical analysis almost impossible, although aggregation of individual linkages into groups makes the approach more plausible. Another drawback of

this approach is that individuals may not be explicitly aware of the size and strength of their network.

The rise of social networking platforms on the internet such as Facebook² have allowed for network measurement to be conducted in a less resource intensive manner. As the number of linkages are held as a metric by these networking sites, researchers can simply ask individuals the number of connections they have on a social media site. This method of measuring social capital assumes that social networking via the internet has been shown to strengthen and maintain social linkages, but has less of a benefit for meeting new people (Acquisti and Gross, 2006). This suggests that social networking via the internet is good at investing in existing linkages, but not at investing in new linkages.

Recent research such as that conducted by Valenzuela et al. (2009) appears to be showing a positive relationship between intensity of Facebook use and other proxies related to social capital such as social trust, civic engagement and political participation. However, the researchers note these relationships, while positive and significant, were not as large as may be expected.

In addition to enumeration of social networks, measures of attitudes and behaviours are also used as proxies for social capital. Trust is one of the most common attitudinal measures currently in use, if not the most. While trust has been highlighted important as a means of reducing transactions costs by authors such as Coase (1937), Putnam (1993) was the first to relate trust as an important aspect of social capital. His description can be likened to that of greater trust occurring as a direct result of greater social capital within a community. The result of this is that a community becomes more productive as people are willing to lend time and resources to each other due to the information they hold about

² An online social networking site with over a billion users at 13th March 2013.

the other individual's propensity to engage in reciprocal gift giving, and to return resources. The link between trust and social capital is now generally accepted as being valid and strong enough for trust to be used as the most common proxy for social capital (Fukuyama, 1995; Zak and Knack, 2001; Francois, 2002).

Trust is most often measured by asking participants to rate their level of trust in a given situation using a variety of likert-style scales. This means that measures of trust can vary significantly depending on the vehicle and structure of the question posed to the participant, with some authors examining trust between individuals, others trust between individuals and groups or organisations, yet others trust between individuals and institutions and, at a higher level still, trust in local or central government (Narayan and Cassidy, 2001). The use of likert-style scales to quantify trust presents a particular problem in that the variable structure does not lend itself to easy analysis and interpretation in regression methods. This can however be overcome either through the use of ordered logit techniques or through bunching of the variable into a binary structure and analysing it using logit or probit regressions.

Trust is shown to have an economic payoff beyond the hypothetical community action groups proposed by Putnam (1993). Zak and Knack (2001) examined trust and its relationship to economic growth. They observed that proxy measures for trust vary significantly across different countries, and that trust was higher in more ethnically, socially and economically homogeneous societies. High-trust societies, in turn, exhibit higher rates of investment and growth. In addition to trust, a wide range of attitudinal variables are increasingly used to proxy for social capital. These are often related to an individual's attitude towards others, institutions or governing bodies. Here the concept suggests that a more positive attitude towards others suggests more willingness to engage, thereby increasing social capital.

Commonly used behavioural measures of social capital accumulation are participation, volunteering, voting and interpersonal contact. Actual participation and group membership are the broadest and most common behavioural measure, often taken from surveys such as the World Values Survey or the General Social Survey. Research by Donovan et al. (2004) found that participation in sporting and social activities is positively correlated with greater political engagement, and that this relationship is robust to model specification.

Volunteering is often considered separate from participation. While participation often relates to inter-personal connections, volunteering is used to suggest a more community-based sense of social capital. In addition, voting and civil engagement behaviours have been regularly used to proxy for social capital since their use in Putnam's (1993) seminal work.

Finally, behaviours relating to inter-personal contact are sometimes measured by surveys and used to estimate individual social capital stocks. These relate to a wide range of behaviours and activities that reflect social interactions. Examples may include the frequency at which an individual attends a social occasion such as a cocktail party or family dinner. It may also include the frequency at which an individual contacts people by email, skype or telephone.

2.5. Findings on the Formation of Social Capital

According to social capital theory as described previously, social capital is accumulated through investment in the formation of new social networks and linkages, as well as investing in the strength and character of existing networks. This section will discuss some of the variables not yet introduced which have been consistently related to the formation of social capital.

In addition to the factors introduced here, specific topics such as homeownership (chapter 4), migrant settlement (chapter 5) and infrastructure (chapter 6) will be dealt with in the chapters relating to these factors. Social capital formation is influenced by many factors, including aspects of the individual such as their innate characteristics, socio-economic situation and behaviours as well as the social and political environment they reside in.

Glaeser (2001) highlights the importance of understanding the causes of social capital. Only through building a coherent model of the formation of social capital can researchers be enabled to inform policy makers and other interested groups on how to formulate policy designed to grow social capital stocks. In this study Glaeser also highlights the importance of considering social capital formation as an individual level activity, with influences from higher levels, but still located very much in the individual's decision to form, build and maintain networks for the individual's perceived benefit.

Turner (1999) suggests that the best method for examining the factors which influence social capital formation is to consider the different levels of influences on social interaction. Turner's model of social capital formation distinguishes between a hierarchy of social capital investment, with strong parallels to the levels of social capital stocks as described in section 2.3.1. In this context, macro-level primarily relating to social and political institutions which influence social capital formation, meso-levels relate to geographic and organisational factors and micro-levels relate to individual-level factors.

Within the published studies on social capital formation, there appears to be at least three important individual-level groups of determinants for social capital which should be considered when conceptualising the formation of social capital. Including demographic and personal characteristics; human capital attainment and factors relating to employment and income.

An Individual's demographic characteristics play a role in the formation of social capital and are important to control for, as some characteristics may predispose individuals to different behaviours or provide individuals with varying opportunity costs of time and marginal benefit of network formation, impacting on their rate of investment as well as the form of investment and overall stocks held. Specific demographic attributes that have been shown to have a relationship to social capital formation a person's age and gender (e.g. Glaeser et al., 2002; Putnam, 2000; van Emmerik, 2006; Baum et al., 2000). Older individuals often presented with more traditional behaviours related to social capital formation such as participation and volunteering, while gender differences appear to be more closely related to the types of social capital forming activities. Silvey and Elmhirst (2003) also note that there may be specific disadvantages in social capital formation by women as they may encounter additional barriers to joining more powerful social networks than men. Household composition is also an important consideration, particularly the presence of children (Kleinhans et al., 2007).

Additionally, ethnicity matters as there are cultural differences in social beliefs and attitudes which may influence social capital formation. In addition, group differences such as national, race or religious differences have been shown to encourage behaviours which are present when there is a lack of social capital, such as cheating or a lack of trust while social status and charisma were found to be positively related to social capital (Glaeser et al., 2000). Culture and Ethnicity will be explored in detail for the New Zealand context in chapter 3.

In addition to an individual's demographic characteristics, human capital is also consistently found to be positively related with measures of social capital such as community trust, institutional involvement and community participation (Alesina and la Ferrara, 2000; Huang et al, 2009; Glaeser et al, 2002; Helliwell and Putnam, 2007; Pendakur and Mata, 2012). Indeed it is the strength of this relationship which has led to debate on the role social capital plays. Bowles and

Gintis (2002) argue that social skills are a product of education and as such, social capital could be considered to be a sub-component of human capital. In contrast to this, several studies of children have found that a high level of social capital amongst family members in turn leads to improved educational outcomes later in life.

It is therefore important to control for human capital attainment in analysis of social capital formation however drawing causative conclusions on the relationship remains difficult without controlling for both selection bias and reverse causality. Meta-analysis by Huang et al. (2009) assess the empirical estimates of education on social trust and participation across 410 studies. They found a significant relationship between educational attainment and social capital for both trust and participation, with one standard deviation in years of schooling accounting for 12-17 percent of the standard deviation in social trust and social participation.

Finally for the micro-level determinants of social capital, the relationship between employment status and income is often related to social capital formation. Alesina and la Ferrara (2000, 2002) find a significant relationship in the United states between employment status and both trust in others and participation in community activities, both proxies for social capital. Their work suggests that social capital formation is highest amongst those employed part-time, while those employed full time compared to unemployed have significantly higher participation but are no different in relation to trusting others. Social capital is also significantly and positively related to social capital formation within both these studies, and both these findings appear consistent throughout the literature.

At the meso-level, social capital investment is largely determined by the location and environment, both social and physical, that an individual is located within. The relationship between an individual's physical location in social capital

formation is rather complex, and can be traced back to the early work by Jacobs (1961) as described earlier, where the neighbourhood an individual resided in needed to be somewhere an individual wanted to invest and which offered the opportunity for social interaction.

In addition to the physical characteristics of the location or environment, the social characteristics should also be considered. This includes both the more obvious consideration, being the availability of organisations and networks for an individual to link with, and also the less obvious consideration which is the underlying social structure of the local environment.

This stems from the idea that high levels of social capital are often found in rather homogenous societies such as those of Scandinavia and that the commonly held cultural and national values of these societies assist in network formation and minimize discrimination. In contrast however diverse societies may benefit more from social capital formation as it allows individuals to share information and linkages across ethnic and national boundaries, improving innovation and social cohesion.

Several authors including Cheong (2006), Alesina and Le Ferrara (2000) and Putnam (2007) have suggested that due to the role of homogeneity in encouraging bonding social capital, increasing city sizes and levels of diversity may have a negative impact on the aggregate stocks of social capital, and this can be somewhat overcome by having strong ethnic enclaves which may increase social capital within these groups. This is contrasted by Collier (1998) who argues that high levels of ethnic fractionalization rather than enclaves are beneficial for social capital formation provided that social stability and strong public institutions are provided. This is due to ethnic fractionalization encouraging the formation of bridging social capital between groups, leading to the benefits described earlier, while ethnic enclaves may foster excessive

bonding social capital, generating negative externalities and resulting in competition for resources between groups.

Based on these, it is reasonable to expect that regions with larger, clustered minority populations may experience low levels of bridging and high levels of bonding social capital formation while regions with smaller, fractionalized populations may experience higher rates of bridging social capital formation and lower rates of bonding.

While most evidence at the macro level focuses on the outcomes of social capital, in relation to improved economic and personal wellbeing, there is nether the less some evidence that factors at a national level influence overall social capital formation. In particular, there appear to be two distinct groups of factors; population factors such as culture, religion and diversity, and structural factors such as governance, inequality and corruption (Helliwell, 2006; Bjørnskov, 2007; Scheepers, et al., 2002).

There is also appears to be an interaction between social capital and political institutions, however this is rather complex. There is evidence that high levels of social capital within a population facilitate the establishment of more effective institutions (e.g. Fukuyama, 1995). In turn, the political environment may encourage or discourage participation and volunteering (e.g. Grootaert, 1998), and provide a better or worse environment for social capital to develop (killerby, 2001). There may also be a substitution effect between the two, with social capital used to facilitate civic interaction in the absence of formal political institutions.

2.6. Findings on the beneficial outcomes of Social Capital

While some of the negative impacts of social capital formation were already discussed earlier, this section will focus on some of the benefits that have been suggested by researchers that have not been discussed in earlier

sections of this chapter. Social capital research has undoubtedly gained from cross-disciplinary application of the concept. The fact that social capital represents linkages between individuals makes it relevant to several social science disciplines such as sociology, psychology, geography, political science and economics.

While the application, definition and relevance of social capital can vary significantly between these disciplines, the underlying concept of networks and interpersonal linkages remain. As economics is at its foundation a science of choice under scarcity, the economic approach to social capital primarily involves two factors that are outlined below.

The first of these factors involves the personal choice of the quantity and form of investment in social capital an individual chooses to make. An economic understanding of the decision to invest in social capital is important, in that once the underlying incentive structure is understood, models which allow prediction of social capital can be developed and clearly defined. Moreover, policy and investment decisions can then be made by governing bodies in order to influence the levels of social capital present in their area. The decision to invest is assumed to be one of costs and benefits, or incentives, with actors investing until the marginal cost of additional investment in social capital is greater than the marginal benefits. This involves identifying both the benefits and costs of social capital, and modelling them so that an understanding of investment behaviour in social capital can be reached. Glaeser et al. (2002) conducted such an analysis by assuming that social capital is similar in investment structure to human or physical capital.

The second role of economics in this context is understanding the results of social capital on societal wellbeing and utility. Assuming that individuals will choose to invest in a stock of social capital, economics is then interested in what effect this stock has on a community's social and economic wellbeing. These

studies usually draw on either theoretical or empirical support to justify their conclusions. Theoretical economic studies into social capital involve envisioning potential links and relationships between stocks of social capital and social wellbeing.

While primarily a sociological perspective, Putnam's analysis (1993) which drew theoretical links between greater stocks of social capital and greater wellbeing through social cohesion and community action is a good example of what this sort of work entails. Once the economic relationship between stocks and public outcomes is defined, empirical research is used to test the validity of these relationships.

Economic growth is commonly held to contribute to wellbeing. Traditional models of economic growth and several economic studies into social capital have examined the effects of social capital stocks on growth. Knack and Keefer (1997) found that a one-standard deviation increase in a measure of country-level trust increases economic growth by more than one-half of a standard deviation. These benefits may be related to the observed relationship between social capital and factors which contribute to productivity such as improved educational outcomes (Australian Bureau of Statistics, 2002) and improved health (Kawachi et al., 1997), or it may arise directly from the social capital, either through improving productive decision making by utilizing the information gained via the networks an individual is a member of.

Social capital may also contribute to the economic success of business. It is suggested as a method of improving human resource management (Gant et al., 2002), engaging discretionary effort by employees and in encouraging workers to actively assist in reaching organisational goals (Turner, 1999). It has also been suggested by several authors (e.g. Adlešič and Slavec, 2012) to be an important factor in business start-up and incubation, holding a close relationship to knowledge spillovers and agglomeration economies as location facilitates the

stock and flows of social capital by positioning the actors in the firm within a geographical environment that facilitates engagement with actors from firms who possess knowledge beneficial to the growing firm.

Infrastructure is a term used to describe a general set of pathways which facilitate the conduction of economic activity. Infrastructure can be thought of in a physical sense, such as roads goods travel along and fibre optic networks which facilitate communication. These allow contracts to be engaged without people being face to face. However, this definition can also be applied to non-tangible networks such as social capital. Social capital is here interpreted as a network of interlinked individuals, and this network acts to facilitate conducting business and decision making by allowing information dissemination regarding individuals, not only allowing for resource and information exchange but also for impacting on the reliability of the exchange, ultimately improving decision making and reducing risk. By performing this role, social capital allows business decisions to be made at lower costs in time and allows an individual to seek information on prices at a lower cost, reducing the cost of goods and improving economic wellbeing.

In addition to economic wellbeing, social capital also improves personal wellbeing through the utility gained by satisfying the human desire for interaction as well as through facilitating a range of positive externalities which improve the overall functioning of society. Bjørnskov (2003) examined the determinants of self-reported happiness using a cross country dataset. He found that while income per capita, economic certainty and future expectations were positively associated with happiness social capital was a much stronger predictor, leading to the conclusion that, at least in developed countries, social capital had stronger ties to happiness than did pecuniary wellbeing.

Social capital influences social wellbeing through both increased engagement in institutional systems and through the distribution, understanding

and adherence to social rules, norms and values. La Porta et al (1997) found a significant positive relationship between trust and judicial efficiency and government corruption, with one-standard deviation increase in trust increasing judicial efficiency by 0.7 of a standard deviation and a decrease in government corruption by 0.3 of a standard deviation.

In summary, the now vast literature regarding the benefits of social capital has identified many beneficial outcomes of increasing an individual's or community's investment or stock of social capital. While these relationships vary widely in their level of evidence, it nonetheless appears that social capital has a positive relationship with both economic and social wellbeing, and is therefore an important consideration for both the public and private sector to improve outcomes within businesses and society as a whole.

2.7. Summary

While a relatively young and dynamic concept, social capital has developed quickly from the attentions of several disciplines and the challenges of sceptics to become a solid, well developed and robust concept. The concept itself, first proposed by Hanifan (1916), who used the term to describe the benefits of community action facilitated by interaction, and later further defined by Bourdieu (1986) and Coleman (1988) benefited greatly from the empirical and theoretical modelling introduced by Putnam (1993), and now available across a wide range of disciplines and settings. The modern understanding grew from Putnam's work and modern research has established social capital as a member of the capital family, by being a stock which is invested in and which provides a yield (Westlund, 2006).

Hence, despite the criticism that the concept has attracted, social capital can be plausibly defended as a member of the capital family, comprising of a stock of linkages between actors along which information flows. investment in

social capital is required to build and maintain existing stocks, and this investment occurs through the commitment of time and resources into interpersonal interaction.

Social capital also depreciates through both under- and over- use. The concept has been broken down into several divisions useful for examining specific aspects. These include the level that the social capital and the linkage is held at, representing the type and quality of the information which flows along the network. In addition, social capital is often divided into bridging and bonding forms, where bridging represents networks which span and interconnect potentially different groups while bonding represents linkages within a group, bonding members of that group together.

One of the greatest hurdles with regards to social capital is finding an appropriate method for the measurement of what appears an intangible concept. Innovative researchers have found a number of clever ways to measure social capital through observable proxies which are theorised to closely correlate or predict the underlying stock or investment in social capital. These have included both qualitative and quantitative methods, and often relate to the attitudes or behaviours of individuals. Researchers have since tested models to find the underlying factors contributing to both the formation of social capital and the resulting outcomes, and these have been discussed in sections 2.5 and 2.6 respectively and form the foundation for the models which are developed in the empirical chapters of this thesis.

Overall, it is clear that social capital is a growing area of interest, with researchers just beginning to develop evidence-based models and inform interested parties on how to both encourage the formation and utilize stocks of social capital to improve outcomes.

CHAPTER 3

Measuring Social Capital in New Zealand

3.1. Overview

Only twenty five years ago, social capital was just beginning to find its feet amongst the social sciences. Since then, the explosion of academic literature has led to the term becoming commonplace amongst the social sciences, including in economics, though not without controversy. Despite this growth, in New Zealand, there has remained a relative drought in literature applying social capital frameworks and concepts to the domestic case.

In particular, there has been an absence in literature regarding the role of social capital in New Zealand's national and regional economic development and in conducting business activities. There has been, however, significant interest in the topic from both a political and governance standpoint, particularly in the late 1990s. There have also been isolated applications in health, resource management and cultural development. This interest appears to have been renewed in recent years in the public sphere. The Royal Commission on Auckland Governance discussed investment in social wellbeing, social infrastructure and barriers to doing business (Rowe, 2008). However, there remains a relative shortage of academic literature to support the public sector interest, particularly in the economic domain.

While understanding the role of social capital in New Zealand has a strong domestic relevance, there are also many insights to be gained internationally from this study. The relative homogeneity of sub-national institutions and governance across New Zealand, and the low levels of corruption and ease of doing both domestic and international business means that New Zealand provides the ideal case study for separating the role of location from that of

social capital. There is specific merit in examining whether location is enough to give access to the agglomeration benefits, or whether being a part of the local networks is also important for business and growth.

This chapter will outline the literature regarding social capital in New Zealand, and advance the argument for understanding the role of social capital in New Zealand's economic growth, which is not only important domestically for planning and developing, but also from an international standpoint.

3.2. New Zealand Discourse on Social Capital.

New Zealand sits on the edge of the Pacific ocean, a small and geographically isolated former British colony with a population of around 4.4 million (Statistics New Zealand, 2013). Despite this isolation, New Zealand has developed an open, modern economy largely dependent on its agricultural and tourism sectors to provide stimulus for its relatively large service sector.

New Zealand's population is ethnically diverse. Though Europeans make up the clear majority, there are also large populations of indigenous Māori and people of the Pacific Islands and Asia, particularly in the urban areas. The population is largely urbanized, with around 80% of the population living in urban centres, with the largest city, Auckland, containing at present about one third of the nation's population and Auckland is a powerful driver of the New Zealand economy (Small and Sweetman 2008a, 2008b).

Business in New Zealand enjoys relatively light bureaucracy and low levels of corruption, as indicated by the international business compliance survey, 'Doing business' released by the World Bank (2013). This survey ranked New Zealand third in 'ease of doing business' behind Singapore and Hong Kong, and Transparency International (2008) which ranked New Zealand first equal with

Denmark and Sweden in their Corruption Perceptions Index - a ranking still held in 2013 (Transparency International, 2013).

New Zealand is largely homogenous with respect to both the culture of the population and the application of policy across its regions, with local government able to institute small policy differences under the cohesive macro-institutional framework. This is a much different scenario from that found in Putnam's (1993) work on the Italian states, where fractured and heterogeneous regions were measured for a relationship between various social variables and wellbeing.

While striking division within New Zealand is not prevalent, and institutions are largely effectual and trusted, there are several social factors at the sub-regional which remain of some concern, particularly equality, opportunity and personal security. These social factors are often discussed as a policy focus, with apparent trade-offs between economic and social policy suggested by political and stakeholder groups (e.g. Anderton, 1995; Bates, 1996). The discussion between social and economic trade-offs appear to be closely related to economic performance.

Economic reforms from the mid-1980s in New Zealand led to variable economic performance as the economy adjusted to an open market. However, by 1998, the economy entered into a period of economic growth continuing until the global financial crisis, which began in 2007 (Cassino and Yao, 2011). Hazeldine (2000) has suggested that the poor economic performance of New Zealand between the mid 1980s and late 1990s was in part due to the undermining of interpersonal social capital and loss of institutional social capital which occurred as a result of the reforms, resulting in reduced productivity over this period. However, at present inter-personal and inter-regional inequalities remain much greater than in pre-reform period (Alimi et al., 2013).

Therefore, it is not surprising that interest in applying social capital as a concept to New Zealand's economic growth and wellbeing has been slow to form. With the relative consistency and stability in institutions and social cohesion that is present both nationally and within New Zealand, there would on the surface appear to be few obvious insights to be gained from such a study. The counter argument to this, however, is that the cohesion and institutional homogeneity of New Zealand allows for an opportunity to examine social capital specifically in the form of networks and relationships, and to explain what role, if any, social capital has in determining growth when institutions and cohesion are kept constant.

3.2.1 Foundational applications of Social capital in New Zealand.

While concepts such as social infrastructure, participation and community development, which are now related to social capital, were discussed in the New Zealand context prior to the 1990s, the concept itself had not been applied to New Zealand until relatively recently. In 1997, stimulated by both an interest from policy analysts and a recent trip to New Zealand by Robert Putnam, Victoria University's Institute of Policy Studies (IPS) in Wellington began applying social capital concepts to New Zealand. This research, while largely social in nature, also provided insights into the economic relationship, and importantly, the framework and issues for measurement and analysis in the New Zealand context. The results of the IPS study into social capital were primarily published in three books, although the program also led to several important departmental publications, most notably the Statistics New Zealand's "Framework for the Measurement of Social Capital in New Zealand" (Spellerberg, 2001).

The first of the publications from the IPS program, "Social capital and Policy Development" edited by David Robinson (1997) provided a collection of papers from various departments and agencies which examined the value of the concept of social capital within New Zealand. The main focus of this workshop

was to bridge the various usages of the terms 'social capital' and 'social cohesion', and to flesh out the linkages between social and economic policy (Pomeroy, 1998). This seminal publication had several important implications for social capital in New Zealand.

Particular achievements of the study included the stimulation of thought and discussion on the topic, and the encouraging discourse on social capital within government departments and public policy. The IPS social capital program produced two further volumes on social capital in New Zealand. The second of these volumes, "Social Capital in Action" (Robinson, 1999), introduced the community and public good aspect of social capital, with a heavy emphasis on wellbeing and participatory aspects. This book saw the concepts of social capital applied to Māori and in several health and community settings.

The concept of social capital here focused primarily towards the Putnam framework, heavily discussing social cohesion and wellbeing derived from social capital. While this undoubtedly has a flow on effect for economic growth, there were no apparent direct linkages established between social capital and productivity or growth. The findings of the publication did, however, suggest that social capital was strongly influenced by social infrastructure. Social infrastructure, particularly in the forms of community facilities and network creation, was discussed as allowing the formation and maintenance of social capital, and enabling the utilization of existing social capital.

Coinciding with Robinson's (1997) publication, Statistics New Zealand released their "Draft Framework for the measurement of Social Capital in New Zealand", later released in final form in 2001 (Spellerberg, 2001). In its final form, this paper provided both a definition of social capital and an analytical framework which was relevant and topical for New Zealand. Social capital was defined in this framework as "Relationships amongst actors (individuals, groups and/or organisations) that create a capacity to act for mutual benefit or a

common purpose". This definition was comparatively individualistic, in that it was the direct relationships, or the network, rather than the norms and shared values which comprised the social capital.

Using this definition, the 1997 draft framework developed three interdependent components to measuring and understanding social capital in New Zealand: population groups, participation in social networks and a combined attitudes and values component. However, the final 2001 framework revised these relationships and introduced organisations as a fourth (Spellerberg, 2001).

Participation in social networks or simply the behaviour of actors provides an observable measure of social capital. Participation and engagement (quantity and quality) in social capital are of particular interest. Attitudes and values were suggested to provide an understanding of the linkages and motivations for behaviours, providing substance to the framework. As institutional divergence and division is not a significant problem within New Zealand, the behavioural, attitudinal and value variables identified within the report are largely about networks rather than cohesion. The third suggested component, population groups, underlines the importance of understanding the composition of the group under study. This is important not only to identify differences within the population, but also to provide understanding as to how the networks and underlying infrastructure may differ between groups.

The additional component in the final report, organisations, provides understanding of the underlying infrastructure within which the social capital arises. Spellerberg (2001) also emphasised the importance of considering both the stocks and flows of social capital in New Zealand. Some variables may act as proxies for the stock of social capital, such as trust in others or in institutions. They provide the ability to measure concepts such as the effectiveness of the underlying infrastructure and differences between groups. In contrast, the flow

variables, which could be indicated by actions such as participation, giving and volunteerism, provide a measure of the effectiveness of investment in social infrastructure, or in changes to other related variables.

The final publication in the IPS seminar series, “Building social capital” (Robinson, 2002), was published shortly after the Statistics New Zealand framework. This publication had two goals: to present a further developed framework for measuring and understanding social capital in New Zealand, and to substantiate this framework with community-based experiences and observations. The authors created a framework which included actors (nodes), organizations (networks) and the opportunity for actors to access or join these networks. The final concept was suggested as being the key role of policy, to provide social infrastructure to encourage accessing of networks by actors.

These four works present the seminal and foundational basis for the measurement and role of social capital in New Zealand. While these works provide little direct insight into the role of social capital in growth and business in New Zealand, they do suggest that any framework which considers social capital can be more concerned with the opportunity to access, develop and maintain social capital, rather than institutional variance across the nation.

3.2.2 Recent New Zealand Studies on Social Capital

Since the seminal research program on social capital in New Zealand by the IPS, there have been several studies which examine social capital within New Zealand, although the use of the term appears to have waned around the turn of the millennium (Davis, 2007). These papers cover a diverse range of topics, including economic growth, governance, reforms, cultural wellbeing, labour, state institutions, health and the environment — all relating specifically to New Zealand. Alongside these, several New Zealand authors such as Philip Morrison, Dorian Owen, Stephen Knowles and David Fielding have published on social

capital theory or development outside of New Zealand. While this falls beyond the scope of the chapter, it does represent continued interest in the topic, particularly where funding for the projects originated from domestic grants.

The first New Zealand publication on social capital outside of the IPS program occurred at the same time as the IPS seminars were operating, and likely also stimulated discourse on the topic. This is the paper by Bates (1996), written for the New Zealand Business Roundtable, an interest group for businesses operating in and out of New Zealand. This paper examined the relationships between economic growth and social cohesion, and argued strongly that policies which favour economic growth provide strong stimulus for social cohesion. The framework used suggested that cohesion, a concept closely linked to social capital in Robinson (1997), included three factors: opportunity, personal security and participation. Participation was linked closely to trust in institutions, while opportunity related to the ability to participate in economic activity and personal security due to the absence of crimes. Bates concluded that economic growth is related to gains across these three factors. While economic growth and social capital are not explicitly linked in New Zealand in this thesis, there appears to be a generalized yet unspecified understanding that social capital has a role in economic growth and development.

The political discourse on social capital is reviewed by Davis (2007), who wrote a chapter on the political use of social capital in New Zealand from the mid 1990's to the mid 2000's. Davis found that the political use of social capital was often very conservative in nature, and often related strongly with economic growth rather than with community and volunteerism. This, however, may reflect the changing role of networking as New Zealand has moved into an increasingly knowledge-based economy. In addition, the real cost of communications and network participation have fallen, meaning that modes of social capital formation may have shifted away from community and volunteerism and towards other methods of accessing social capital.

More recently, in 2011 the New Zealand Treasury began working on a 'Higher Living Standards Framework'³ which includes social capital alongside four other measures of wellbeing as a method of improving the living standards of New Zealanders. The Treasury emphasises the role of particularly civic social capital, such as trust, effective public institutions, rights and freedoms, security and cultural values, has on individual and societal wellbeing (The Treasury, 2011).

Zak and Knack (2001) measured social capital across 41 countries including New Zealand, using trust as a proxy variable. This study found that there was a positive relationship between trust, investment and growth. They also found that where successful institutions and social homogeneity exist, as may be the New Zealand case (particularly in the middle classes), growth was further increased due to the increased trust associated with these factors.

Regional examination of factors relating to social capital in New Zealand was conducted in a discussion paper by Pool et al. (2006) using data on benefit use, overcrowding and justice statistics. They found that there was significant division amongst the New Zealand regions, and conclude that this is related to the lower level of human capital in the regions with poorer indicators, which affects the development of positive social capital while possibly reinforcing the negative aspects of social capital, although this is not developed in the discussion paper.

A presentation by Taylor et al. (2007) suggested that economic growth may foster the development in social capital. In particular, they suggest that labour participation was a major factor in social capital formation and maintenance in New Zealand. They concluded that people who hold multiple jobs make considerable contributions to social capital, and that this is of particular importance in rural areas where multiple job holding and social capital

³ See <http://www.treasury.govt.nz/abouttreasury/higherlivingstandards>

may offset some of the costs involved with distance between network participants.

Social capital is, however, frequently related to the cultural aspects of New Zealand. There is some overlap in the academic literature between social capital and cultural capital, with cultural capital referring specifically to the networks and relationships which occur because of a shared culture or ancestry (Dalziel et al., 2006). Of particular interest when considering social capital in New Zealand is the translation of the social capital model into a Māori-orientated framework. This is a largely sociological exercise which provides valuable insight into how social infrastructure may vary for Māori, and how investment in social infrastructure may be targeted to improve Māori stocks of social capital, therefore assisting in overcoming deficiencies in economic and social wellbeing that could be generated through following a euro-centric model. In addition, New Zealand's cultural predisposition to sporting participation was identified in research by Donovan et al. (2004) who used New Zealand as a case study to test the relationship between sporting participation and political engagement, finding individual-level evidence that membership in private, non-political associations corresponds with greater political engagement in New Zealand.

In addition, social capital has been related to environmental considerations and natural capital in New Zealand by authors such as Killerby (2001) and Grafton (2005). New Zealand has a policy objective of sustainable exploitation of the natural capital that the country possesses, including fisheries, forestry, farming and ecological-tourism attractions. As social capital can encourage collectivist action and goal setting, as well as facilitate the development of rules and norms, there is a clear role for the use of social capital in the sustainable management of these resources. Killerby (2001) focused on the importance of the consultative nature of New Zealand governance in working towards sustainable management of natural resources, dealing specifically with the case study of the creation of a resource management plan for water usage at

the Whangamata harbour⁴. Grafton (2005) examined the role of social capital in assisting with the sustainability of New Zealand fisheries. Both concluded that social capital was an important part of ensuring sustainability of these resources and concluded that participatory governance styles will both improve resource management and encourage the development of social capital.

At a more macro-level, a study by Thorton and Clark (2010) examined the effect of social heterogeneity on volunteering in New Zealand. They found that ethnic, language, religion and income heterogeneity were all significant and negatively related to volunteering, although only income heterogeneity was robust to different model specifications.

Overall, there appears to be a clear deficiency in research regarding social capital within the New Zealand context. This is somewhat surprising given the popularity of the concept and the availability of good quality unit record data sets in New Zealand.

3.3. International comparison

Compared to other countries, New Zealand is often described as having high levels of social capital, however, there is very little cross country comparison available to support this opinion. Using the World Values Survey⁵ (2009), it is possible to compare social capital between New Zealand and other countries using two proxies for social capital introduced in chapter 2, trust in others and participation in social activities. The World Values Survey collect has collected data from 87 countries in three waves since 1995, including 27 OECD countries. To compare across countries the data of these three waves has been pooled.

⁴ A harbour on the Coromandel peninsular, located on the east coast of the North Island of New Zealand.

⁵ See chapter 6 for a full description of the World Values Survey.

Trust in others is measured as the percentage of respondents who agreed with the statement "In general, most people can be trusted". New Zealand ranked 6th out of the 85 countries that were surveyed, with a 50% of the sample agreeing that most people can be trusted. Figure 3-1 present the comparisons in trust between 27 OECD countries⁶, and shows that within the OECD, New Zealand has the 4th highest levels of trust behind three Scandinavian countries, Norway (69.5%), Sweden (64.7%) and Finland (53.9%). The OECD average for trust was 33.5%, and both the United States (37.2%) and Great Britain (30%) were very close to this average. The lowest levels of trust were reported in Poland (18.6%), Slovenia (16.8%) and Turkey (12.4%).

Within the World Values Survey, there are a number of questions relating to whether the respondent is an active member in a range of organisations, including religious organisations, sports clubs, cultural or arts organisations, labour unions, political organisations, environmental organisations, professional organisations and charitable or humanitarian organisations. Figure 3-2 presents the comparisons of New Zealand with other OECD countries on the percentage of individuals who indicated they were active participants in any one of these organisations. New Zealand ranks 1st both of the 26 OECD countries, with 69% of respondents indicating they were active participants in at least one of these organisations, compared to the OECD average of 37.6%. Closely following New Zealand is Australia (68.6%) and Switzerland (62.7%). While the United States has a relatively high participation rate of 49.9%, Great Britain reported a participation rate well below the OECD average with 29.4%. The lowest levels of participation were reported in Turkey, with only 6.7% of respondents indicating they were active participants in at least one activity.

⁶ OECD countries not surveyed are Austria, Denmark, Greece, Iceland, Ireland, Belgium, Luxemburg and Portugal.

Figure 3-1 Comparison of Trust between New Zealand and other OECD countries, World Values Survey

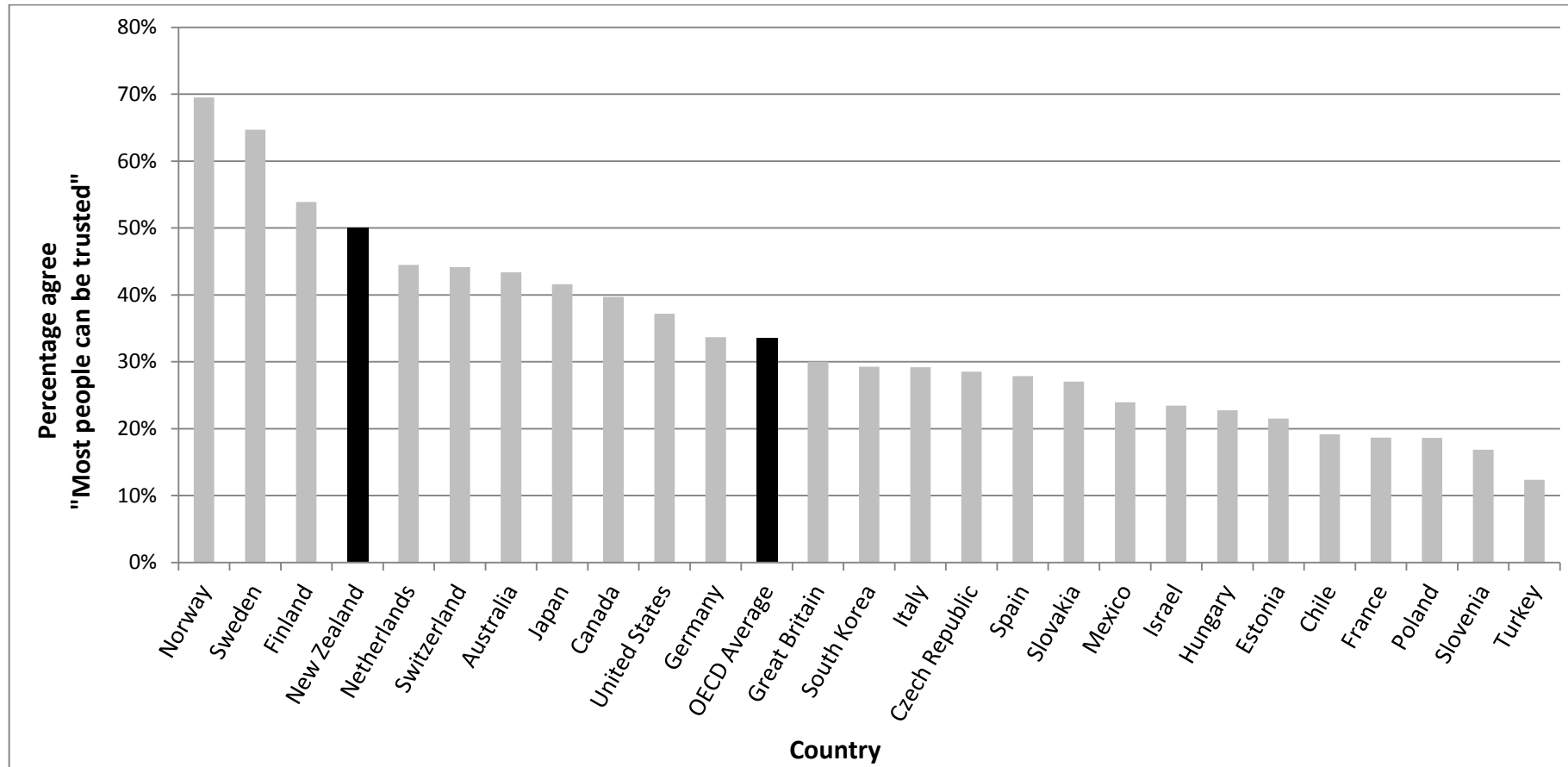
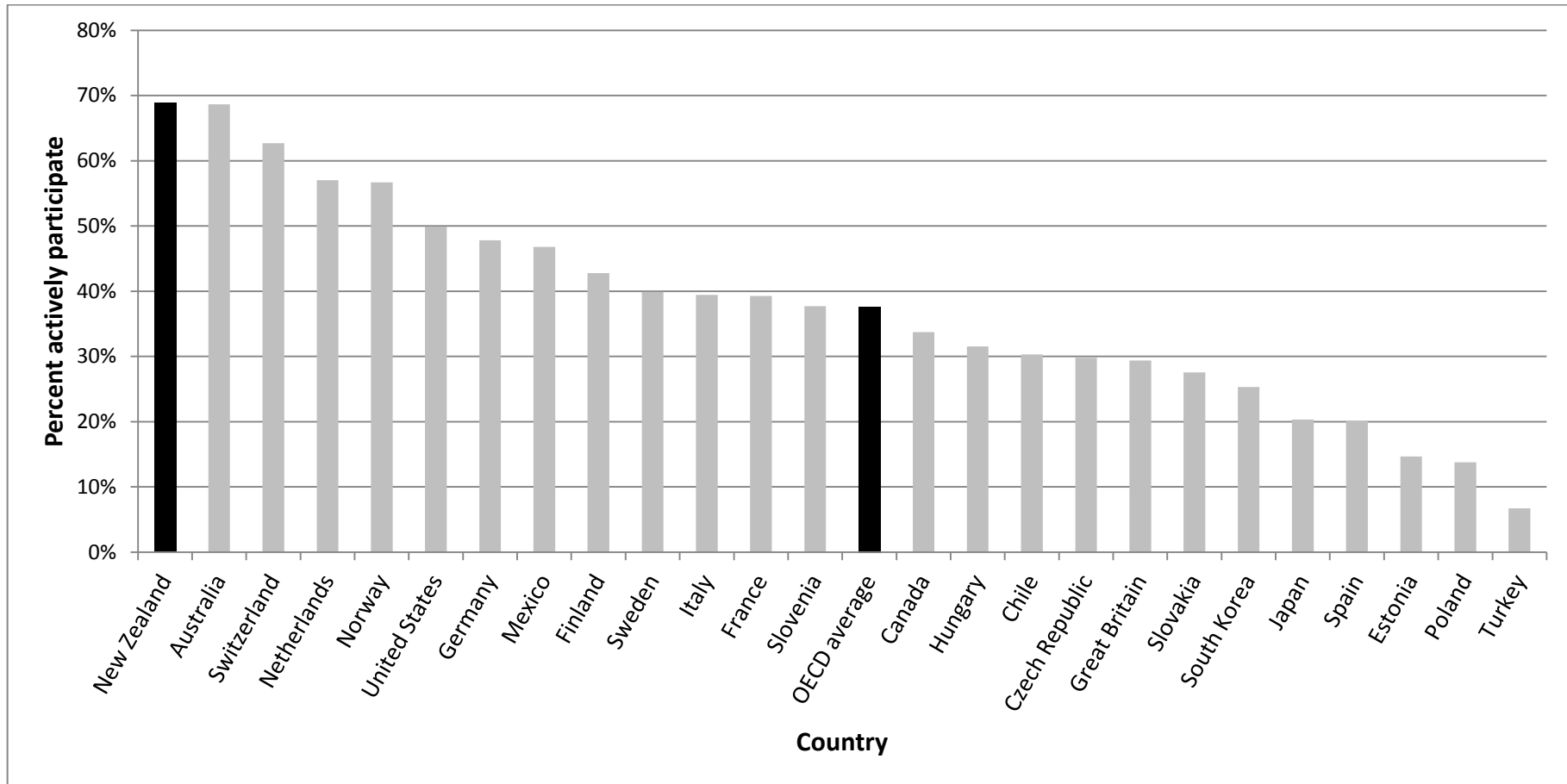


Figure 3-2, Comparison of Participation between New Zealand and other OECD countries, World Values Survey

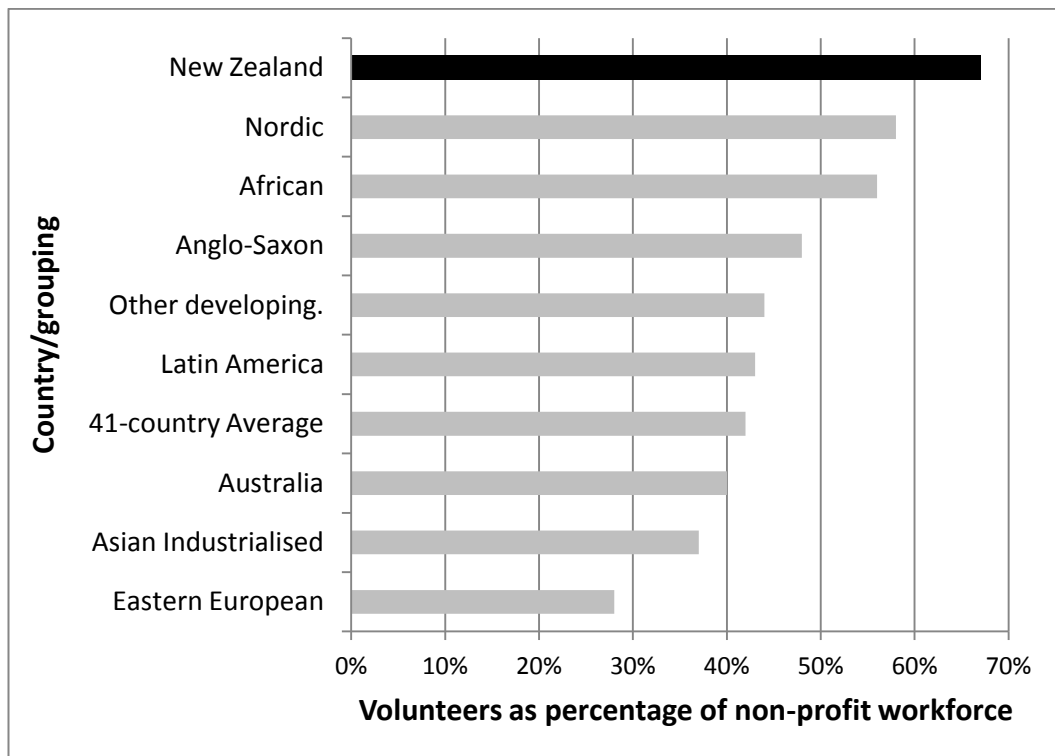


In addition, Sanders et al. (2008) compare the New Zealand not-for-profit sector to other countries. In particular, Sanders et al. (2008) examine the non-profit workforce and philanthropy as a percentage of GDP, comparing New Zealand levels to groupings of other countries for which data was available⁷. Both these factors are relevant to social capital.

Volunteering is related to social capital in chapter 2, with higher rates representative of attitudes which proxy for social capital and with the act of volunteering being social, facilitating the formation of new social linkages. Sanders et al. (2008) examined both the percentage of the economically active population active in the non-profit organisational workforce and also the percentage of volunteers as a share of the non-profit workforce for New Zealand and other country groups. New Zealand was shown to have the highest overall percentage employed in the non-profit organisational workforce, at 9.6% compared to 5.6% average across 41 other countries. Of interest in regards to social capital, of this high workforce New Zealand had the highest percentage of volunteers in the non-profit workforce, as shown in Figure 3-3. Here we see that New Zealand has the highest percentage, with 67% of the non-profit workforce volunteering, well above the 41 country average of 42%. Following New Zealand is the Nordic country grouping at 58%, and the African grouping at 56%. The countries with the lowest percentage of volunteers included Australia with 40%, industrialised Asia with 37% and Eastern Europe with 28%.

⁷ Groupings include Anglo-Saxon (Austria, Belgium, Canada, France, Germany, Ireland, Israel, Italy, Netherlands, Portugal and Spain), Nordic (Denmark, Finland, Norway, Sweden), Eastern Europe (Czech Republic, Hungary, Poland, Romania, Slovakia), Asian Industrialised (Japan and South Korea), Latin America (Argentina, Brazil, Chile, Columbia, Mexico, Peru), African (Kenya, South Africa, Tanzania, Uganda) and Other Developing (Egypt, India, Morocco, Pakistan, Philippines).

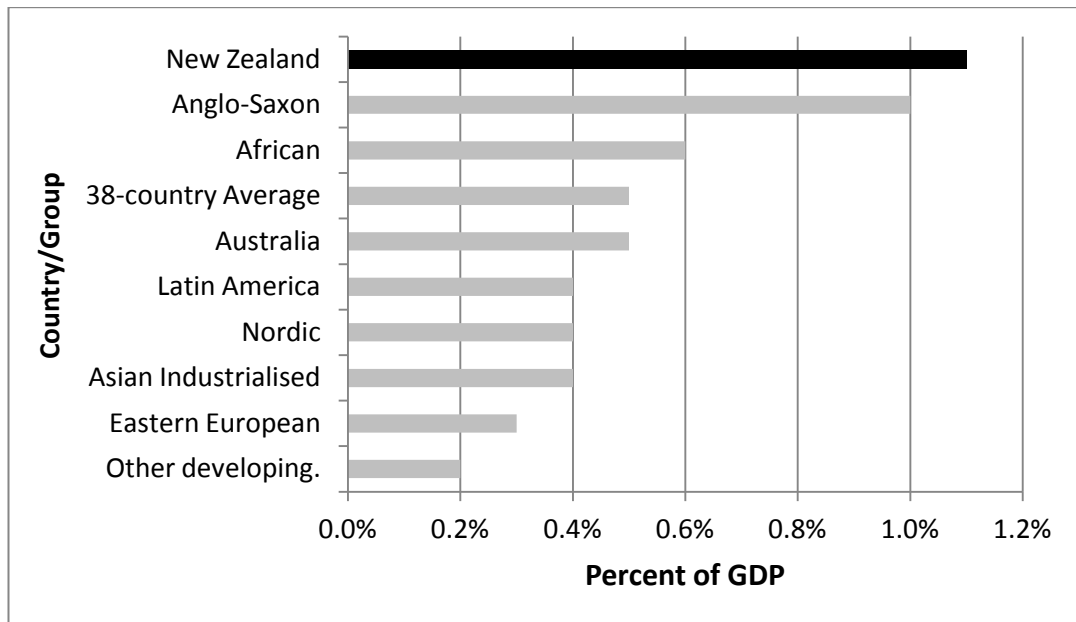
Figure 3-3, Volunteers as a share of non-profit workforce, New Zealand versus other country groups.



Source: Sanders et al. (2008, p. 13).

Charitable giving is related to social capital, with increased social capital strongly related to increased giving (Brown and Ferris, 2007). Sanders et al. (2008) find that New Zealand has a much higher rate of donations as a percentage of GDP, relative to other country groups. These findings are presented in Figure 3-4, where for New Zealand private philanthropy makes up 1.1% of GDP, compared to 1% for Anglo-Saxon countries, 0.06% for the African grouping, 0.6% for Australia, 0.5% for both Latin America, Nordic groups and Asia industrialised groups while Eastern Europe had the lowest percentage, with private philanthropy making up 0.3% of GDP.

Figure 3-4, Private philanthropy as a percentage of GDP, New Zealand versus other countries and groups



Source: Sanders et al. (2008, p. 21).

While these findings present a snapshot only social capital across countries, it nonetheless appears that there is some support for the hypothesis that New Zealand has high levels of social capital when compared to other countries. This evidence includes New Zealand showing the 4th highest rates of interpersonal trust behind the Scandinavian countries, the highest rate of active participation and very high levels of volunteering and philanthropic giving.

3.4. Beyond a Dataset

Spellerburg (2001) identified several cultural artefacts unique to New Zealand that are important to consider when conducting any social capital research in New Zealand. The most important of these is recognising that within New Zealand, Māori and Pacific (both NZ born and overseas born) place significant cultural value on social interaction, and in particular community activity and reciprocity. This means that any measure of social capital that is

conducted using New Zealand data which does not include a proxy for ethnic-specific social interaction at a community level will likely bias against both Māori and those who identify with Pacific Island ethnic groups.

At a governance level, Wallis and Dollery (2001) examined the role social capital plays in facilitating good outcomes by local government. They concluded that stocks of local social capital are an essential resource for local government to draw on in order to assist in good governance. Hence, local government had a strong incentive to invest in social capital formation so that a stronger stock is built. This partially explains the strong interest in New Zealand not only in national social capital but also in local social capital amongst regional councils, as improving the social capital stock of a region may make the region relatively more attractive, thereby encouraging new labour and investment.

Craig and Lerner (2002) examined the developing discourse on inter-institutional partnerships and co-operation within New Zealand. They highlighted the importance of New Zealand being seen as a country with a stable and cohesive social and institutional framework in order to attract both overseas investment and access to internationally networked high skilled labour to undertake vital tasks. While not explicitly discussed in this research, demonstrating high levels of both domestic and international social capital in New Zealand is a clear way to display both the social stability and social networks which are congruent to ensuring the safety and suitability of doing business in New Zealand.

The relationship between good governance, social capital, and attracting international investment was also emphasised in research around the future of Auckland city. Hambleton (2008) and Small and Sweetman (2008b) suggested that good governance structure and a strong focus on encouraging civic engagement and social cohesion are required to compete at a global level and attract overseas investment.

In 2008, a royal commission was established in New Zealand to investigate the merger of several local governments in the greater Auckland region into a unified governing body, the Auckland Council. During the operation of this commission, several submissions were made and reports generated specifically discussing the social wellbeing and social capital aspects of Auckland city and the impact of this governance change on these factors.

Rowe (2008) reported to the commission on the existing state of social wellbeing and the role of governance within that, as well as the impact moving to a unitary city council may have. This author found that those living in Auckland thought highly overall of the social infrastructure and attention to social wellbeing provided by the existing councils, particularly following the introduction of the Local Government Act (2002). The author also noted that despite the generally positive feedback, there were some limitations in the strategic planning and funding aspects of local governments, as well as a lack of strategies for including groups such as elderly, migrant communities and Māori or Pacific Island ethnicities. Rowe (2008) stressed the need to consider the differences between groups within New Zealand, as often generally good outcomes appear to hide pockets where individuals lack the infrastructure or support to access social facilities and build networks. The author also questions the current vision and long term planning for social capital, and the importance of this may be an interesting area for further research.

Understanding the role of social capital in New Zealand has both practical and theoretical importance. In practice, having an understanding of the factors which influence the formation of social capital provides planners and policy makers with a valuable tool to help them make investment decisions regarding the area they govern.

It is also important for the role of social capital to be identified across different situations. An example of this includes understanding the role of social

capital across a business's lifecycle, as planners who are seeking to attract young businesses to an area may want to invest in different social infrastructure from those who are attempting to strengthen or retain existing businesses. Theoretically, with the nation's absence of significant corruption, institutional differences or social disharmony, there is an opportunity to examine the role of social capital in economic growth where large conflicts and cohesion are not issues, but networks, social infrastructure provision and location are critical.

3.5. Summary

The study of social capital in New Zealand is both of intrinsic interest and also contributes to the international understanding of the concept. New Zealand provides an interesting opportunity for the study of social capital, with a wealth of accessible unit-record level datasets facilitating this study. Within New Zealand, a detailed understanding of social capital provides both a platform for the formation of evidence based policy as well as information for organisations and community groups to better show their value and understand their role in building a cohesive New Zealand. Internationally, New Zealand becomes an interesting case study for social capital due to the nation's relative youthfulness, homogeneity of the institutional framework and the comparative lack of corruption and conflict removing much of the variation and historical factors which traditionally influence social networks.

New Zealand also provides interesting challenges when examining social capital. This is because New Zealand is a nation with both a large immigrant population and a domestic population with a range of cultural values and social norms. This chapter has highlighted the importance of considering the appropriateness of different proxy measures of social capital for different cultural groups, as well as considering the differences between urban through to isolated rural areas, where particularly with New Zealand's highly urbanised population rural social capital may be under-estimated.

CHAPTER 4

Homeownership and Social Capital Formation⁸

4.1. Introduction

Homeownership has increasingly attracted the attention of socio-economic researchers and policy-makers as interest in the impacts that such investment has on outcomes for nations, regions and individuals grows. Recent studies have attempted to measure whether there are benefits to homeownership, such as improved outcomes for children (Aaronson, 2000; Mohanty and Raut, 2009; Haurin et al., 2002), for immigrants (Sinnings, 2010), crime (Sampson et al., 1997), labour markets (e.g., Borjas, 1985; Oswald, 1996) and general wellbeing (Cobb-Clark and Hildebrand, 2006). Stillman and Liang (2010) examined the roll of homeownership in improving satisfaction with their home, satisfaction with their local community and overall life satisfaction. They found a positive relationship between homeownership and each of these dimensions.

Many of these benefits relate to community interaction. The theory behind this relationship is that when someone purchases a home and becomes the owner-occupier, this investment reduces geographic mobility due to the transactions costs associated with a subsequent move. Moreover, if resale is desired at a future date, the owner-occupier will endeavour to act in ways that maximise the future net return. Longer duration of residence plus concern regarding the dwelling asset value increase the incentive for an individual or family to invest in their community, through engagement in local decision-making (Boehm and Schlottmann, 1999) as well as through interactions with other members of the community (networks) and through participation in

⁸ An earlier version of this chapter was published as Roskrug et al. (2013).

community activities (DiPasquale and Glaeser, 1999; Glaeser et al., 2002; Sampson et al., 1997).

Working against these positive benefits of homeownership for social capital accumulation is the argument from Oswald (1996, 1997a, 1997b, 1999) that the reduced geographic and labour mobility associated with homeownership raises unemployment, which in turn may have a negative impact on social capital if unemployment is seen as a negative predictor of social capital formation, as is suggested by the international literature. However, the evidence for these negative effects of homeownership is rather less conclusive than for the former positive impacts (e.g. Green and Hendershott, 2001; Munch et al., 2006). An alternative hypothesis that may reconcile this is that limited labour mobility increases the risk of losing employment, incentivising individuals to invest in local social networks to mitigate the risk of unemployment.

This chapter seeks to investigate the effects of homeownership on social capital by testing a model of individual social capital using a range of dependent and explanatory measures obtained by merging two samples (2006 and 2008) of New Zealand's Quality of Life survey. The pooled cross-sectional dataset enables this study to control for personal characteristics that, if omitted, could bias the estimated relationship between homeownership and social capital. This dataset is combined with regional data from Statistics New Zealand in order to estimate the impact of regional effects.

In a similar vein to DiPasquale and Glaeser (1999), it is hypothesised that homeownership gives individuals an incentive to improve their community while it also increases duration of stay due to the transaction costs of mobility. However, an argument will also be developed which suggests that owner-occupiers demand greater accountability of local government than tenants. Dissatisfaction of homeowners with local government performance can impact negatively on community social capital. Hence these two dimensions of housing-

related social capital work in opposite direction from each other. While a potential impact of homeownership on local government performance was noted by Dietz and Haurin (2003), the two opposite effects have not been directly compared previously. These two opposing impacts are tested using both regression and propensity score matching (PSM) techniques.

When trying to establish a causal link from homeownership to social capital, it must take into account that, unlike in a randomized trial, there are certain selection mechanisms that draw households into homeownership. Conventionally such selection effects are partially addressed by instrumenting by means of historical or geographical information, group averages or by controlling for individual effects with panel data. Such approaches never fully overcome the selection problem associated with non-experimental data (as noted in the present context by DiPasquale and Glaeser, 1999).

Of course, a field experiment can provide a truly exogenous instrument, as the recent work by Engelhardt et al. (2010) shows. These authors exploit randomization of eligibility in an incentive savings scheme to assist low-income households in Tulsa, Oklahoma, into subsequent home purchase. They show that this experimental approach suggests a negative impact of homeownership on political involvement, as well as volunteering. Their tests of other social benefits of homeownership were statistically insignificant. As noted by the authors, the smallness of the sample (just over 200 observations in the treatment group and a similar number in the control group) undoubtedly contributed to some unexpected and inconclusive results. Consequently the experimental approach with small samples, and possibly limited external validity (as noted by Engelhardt et al., 2010), does not substitute for, but complements, modern quasi-experimental approaches such as PSM.

In this application, benefits arise particularly from the large and representative random sample (close to 15,000 observations) and information

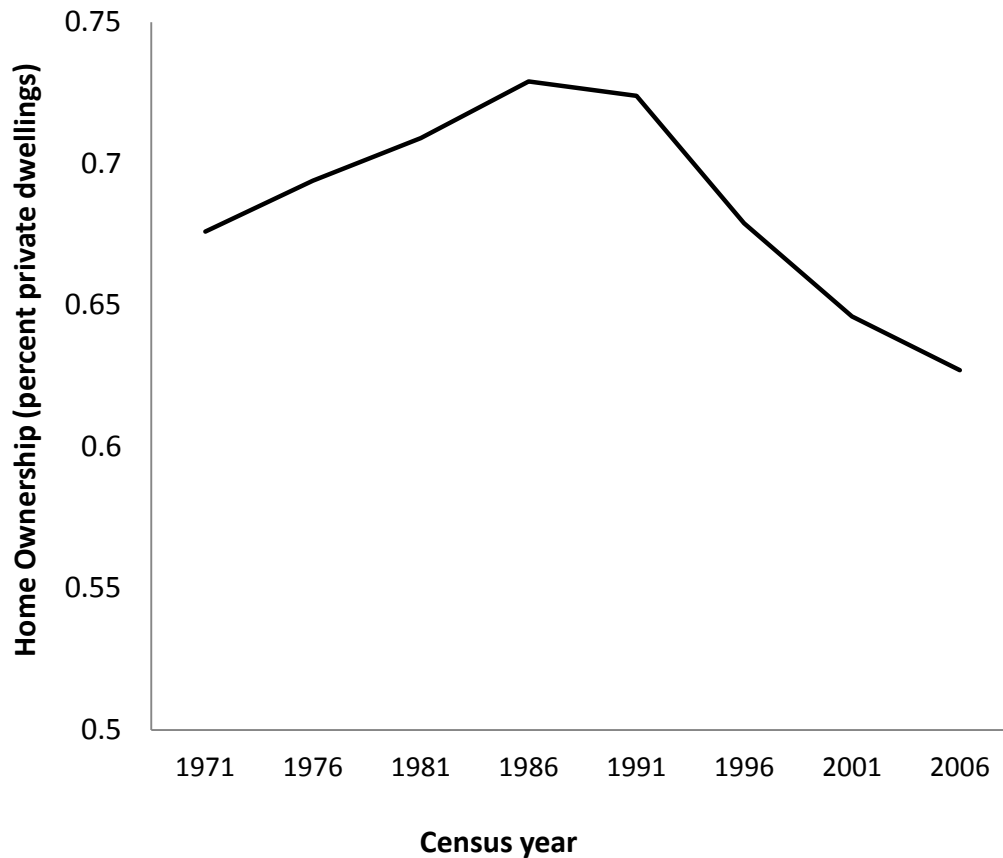
on personal traits that are not normally observed. Nonetheless, the PSM approach is not a panacea for the selection issues and, for example, the choice of covariates remains critical (see Steiner et al. 2011). However, the method has now been used widely to identify causal effects in other micro-econometric studies (e.g., Angrist and Pischke, 2009) and the results presented in this chapter represent the first application to estimating the impact of homeownership on social capital. In addition, to better control for unobserved variable bias, trust in others is included as an explanatory variable to control for unobserved characteristics of the individual which are correlated with that individual's inherent level of trust.

After controlling for the selection effects that draw households into homeownership the results find that variables relating to participation, sense of community and trust in others are positively related to homeownership whereas attitudes towards local government are negatively related to homeownership. Thus, three dimensions or manifestations of social capital are positively related to homeownership whereas one is negatively related to homeownership. Importantly, as Putnam (1993) originally argued, it is attitudes towards local government which are the critical link between social capital and the efficacy of governance. The fact that these are found to be negatively related to homeownership suggests that the relationships between social capital and institutional performance are far more complex than previously understood.

The suggested relationship between social capital and homeownership is particular concern in New Zealand due to falling rates of homeownership and low housing affordability (Cochrane and Poot, 2007; Morrison 2008;). Morrison (2008, p.14) shows that the proportion of households living in owner occupied dwellings has declined from a peak of 72-73 percent in 1986 and 1991 to 68 percent in 1996, 65 percent in 2001 and 63 percent in 2006. This is shown in Figure 4.1. If the relationship between homeownership and social capital indicated by the international literature holds in the New Zealand, then falling

homeownership may also be related to falling social capital, which in turn may be related to poorer outcomes as described in chapter 2, such as increases in crime, poorer health outcomes and reduced economic development.

Figure 4-1 The homeownership rate in New Zealand, 1971-2006.



Source: Morrison (2008, p.14).

The chapter is organised as follows. Section 4.2 discusses the theoretical framework for analysis. Section 4.3 describes the methodology used in this chapter, including a detailed description of the PSM procedure. Section 4.4 presents the data while Section 4.5 reports the empirical results of the regression and PSM analyses. The final section presents conclusions and suggests avenues for further research.

4.2. Analytical Framework

As discussed in chapter 2, both interpersonal trust and community participation are commonly used measures of the stock of social capital, primarily due to their inclusion in both the World Values Survey and the General Social Survey. These surveys are conducted in many nations and researchers such as Zak and Knack (2001) have provided theoretical links which validate their use. Higher levels of trust relate to increased ease in establishing linkages with others, while participation in community activities facilitates the formation and strengthening of linkages.

Measures of a sense of community and attitudes towards local government are less commonly applied as proxies for social capital. The rationale for their inclusion stems from the work of Putnam (1993, 1995) which suggested that social capital is, in part, expressed in community interaction. Using Putnam's theory, it is assumed that individuals who have a positive sense of community are more engaged in that community, and therefore experience greater social capital through stronger network linkages. Both Putnam (1993, 1995) and Dietz and Haurin (2003) propose that homeowners with high levels of social capital will also be more fully engaged in local political processes. One result of this is that they are likely to hold their local council more fully to account. This may make them feel more or less positive towards their council than non-homeowners, depending on council performance. Indeed, to the extent that council services benefit all residents while property taxes (rates) are paid directly only by property owners, it is quite likely – given this theory – that homeowners will have a less favourable attitude towards local government than renters.

Based on the discussion in chapter 2 and drawing on variables used in analysis on Happiness and Life satisfaction carried out by Morrison (2007) using the Quality of Life dataset, four distinct groupings of social capital determinants have been identified in prior literature for inclusion in a micro-econometric

model of social capital: (i) demographic variables, (ii) geography and location-specific variables, (iii) human capital variables, and (iv) homeownership.

(i) Demography.

Of an individual's demographic characteristics, a person's age and gender appear to be consistently associated with social capital (e.g. Glaeser et al., 2002; Putnam, 2000; van Emmerik, 2006). Household composition is also an important consideration, particularly the presence of children (Kleinhans et al., 2007). Additionally, ethnicity matters. As noted in chapter 3, Spellerberg (2001) and Williams and Robinson (2001) find that analysis of social capital in New Zealand needs to account for differences between ethnic groups, including Māori and Pacific Island ethnic groups, as there are cultural differences in social beliefs and attitudes which may influence social capital formation.

(ii) Geography.

Geography and location have also been identified as important issues. European studies have shown that social capital formation in rural settings is significantly different from that in urban areas, with more "bonding" rather than "bridging" social capital evident in the former. This effect can be examined using population density as a proxy for urbanization and through use of regional fixed effects.

(iii) Human Capital.

As noted in chapter 2, Human capital has been consistently found to be related to social capital (e.g. Huang et al., 2009; Glaeser et al., 2002; Helliwell and Putnam, 2007), although the exact relationship is under debate. Bowles and Gintis (2001) argue that social skills are a product of education, and as such, social capital could be considered a subcomponent of human capital. This is in

contrast to the standard approach which views social capital as related to, but separate from, human capital. The latter approach is adopted in this chapter and measures of individual human capital are included in the final model.

(iv) Homeownership.

Homeownership has been shown, inter alia by DiPasquale and Glaeser (1999) and Glaeser (2001), to have a significantly positive effect on variables related to social capital. However, homeownership is not randomly assigned. It is likely that those who own their homes also have higher incomes, higher educational attainment, to be older and have a partner who shares the mortgage. These selection effects, if unaccounted for, may cause bias in the estimates as those who own homes are likely also to be those who possess other characteristics commonly associated with social capital; therefore the effect of owning the home on social capital may be overstated (Dietz and Haurin, 2003). Among those who do not own homes, there may be differences in contributions to social capital between those who live rent free in a home owned by family, those who rent from a private landlord, and those who rent from a public landlord.

In summary, assuming that individual i 's social capital (K_{Si}) is determined by that individual's personal characteristics (P_i), the geographic variables of the individual's region r (G_{ir}), human capital (K_{Hi}) and homeownership status (HO_i), The framework for a regression model can be specified as follows:

Equation 4-1
$$K_{Si} = K(P_i, K_{Hi}, G_{ir}, HO_i)$$

This framework is used to aid selection of variables from the available micro data.

4.3. Methodology

When participants in a study are not randomly assigned into control and treatment groups, then researchers do not have an experimental setting to separate the causal effects of a treatment (in this case homeownership) from the selection effects which may arise. A number of options can be considered to estimate the effect of an intervention on a dependent variable. One approach to dealing with selection bias in these circumstances is to use a standard non-experimental estimator such as OLS regression and control for as many other influences as possible, arguing that potential omitted variable bias is thereby reduced. Such estimates may then be compared with those that address reverse causality by instrumental variable estimation. An alternative and increasingly popular method is the use of a matching methodology in order to control explicitly for potential selection bias. The latter method is preferred here given that homeownership is not randomly assigned.

4.3.1 Regression Analysis

Initially, the results of OLS regression of the association between homeownership and the four proxies for social capital is reported. Controls for demography (age, gender, ethnicity, household size and composition), human capital (years of schooling, employment status and income) and geography (years resident in the region) are then included. The equation also includes spatial and time fixed effects. However, because the data consist of two pooled cross-sectional surveys, panel estimators that account for unobserved time-invariant individual effects are not appropriate. The resulting equation is:

Equation 4-2
$$K_{Sirt} = \alpha + \beta_0 HO_{irt} + \mathbf{X}_{irt} \boldsymbol{\beta} + R_r + D_t + \varepsilon_{irt}$$

where K_{Sirt} is the outcome of interest (the proxy for social capital) of individual i in region r at time t , HO_{irt} is a dummy representing the treatment, in

this case whether the individual is a homeowner or not, \mathbf{X}_{irt} are observations on a set of explanatory variables pertaining to geography, demography and human capital, R_r and D_t are the coefficients for the spatial and time fixed effects respectively and ϵ_{irt} is a residual.

The regression model in equation 4-2 is estimated for each of the four social capital proxies: trust in others (trust), participation in community activities (participation), sense of community (community) and attitudes towards local council (council). These variables are further defined in Table 4-1. As trust is a binary variable, a logit model is used to adjust for the binomial distribution. Due to truncation of the values that the participation index can exhibit, this proxy was analyzed using tobit regression techniques. As community is an ordinal Likert-scale type of variable (with a higher score representing a 'better' outcome), an ordered logit regression is appropriate. The council variable was created by taking the first principal component of three binary variables relating to an individual's attitude towards local government. The resulting variable has a normal distribution with zero mean and 1.25 standard deviation, so (ignoring selection issues) ordinary least squares regression is appropriate.

A major concern with cross-sectional regressions is that certain unobservables in relation to individuals may bias the estimated coefficients in regressions of a social capital proxy on a set of observable explanatory variables. Furthermore, omission of unobservables makes interpretation of causality problematic. These problems can be substantially mitigated where: (a) there are multiple proxies for social capital; (b) one of the proxies is theoretically related to exogenous personal characteristics; and (c) that proxy is not a function of the explanatory variables of interest for determining another form of social capital. If (c) does not hold, one can still use a proxy that meets condition (b) to test robustness of results.

As a particular example, take the two social capital proxies that emerged from the discussion in chapter 2: *trust* and *participation*. The psychological literature on attachment theory (Bowlby 1982) indicates that early life experience affects subsequent personal relationships throughout life, including the likelihood that an individual trusts others. Thus there is an unobserved personal element to *trust* that is additional to the impact of observable factors such as ethnicity, age and geographical location. Despite not having longitudinal data, use can be made of the unobservable component affecting trust in order to control for individual unobservables in a regression of the determinants of participation. To see how, consider the following structural system of equations:

$$\text{Equation 4-3} \quad \text{trust}_i = \beta X_i + \alpha \text{home}_i + \mu_i$$

$$\text{Equation 4-4} \quad \text{participation}_i = \gamma X_i + \delta \text{home}_i + \phi \mu_i + \varepsilon_i$$

where: i refers to an individual; X_i is an observable variable affecting both trust_i and participation_i ; home_i is homeownership status; μ_i reflects unobservable personal characteristics; ε_i is a random error term; trust_i and participation_i are defined as before; and (consistent with subsequent results) each of $\alpha, \delta, \phi > 0$.

If the individual unobservables (μ_i) that contribute to high trust are positively correlated with home_i , then estimation of equation 4-4, with μ_i excluded, will result in omitted variables bias with an over-estimate of the effect of home_i on participation_i . From equation 4-3:

$$\text{Equation 4-5} \quad \mu_i = \text{trust}_i - \beta X_i - \alpha \text{home}_i$$

Substitution of equation 4-5 into equation 4-4 yields:

$$\text{Equation 4-6} \quad \text{participation}_i = (\gamma - \phi\beta)X_i + (\delta - \phi\alpha)\text{home}_i + \phi\text{trust}_i + \varepsilon_i$$

Equation 4-6 shows that by including *trust* in the *participation* equation individual unobservables, μ_i , can control be for. However, the coefficients on X_i can no longer interpret structurally but given that the interest is in δ , this is not a major concern. If $\alpha = 0$ (so that homeownership does not affect *trust*), δ can be interpreted structurally as the effect of homeownership on *participation* after controlling for both observable (X_i) and unobservable (μ_i) characteristics of individuals. If $\alpha > 0$ then, by including *trust* in the equation for *participation*, the coefficient on *home* in equation 4-6 will now provide an under-estimate of the effect of homeownership on *participation*. It should be acknowledge that, while the inclusion of the variable *trust_i* acts as a proxy for unobservables that are correlated with an individual's inherent level of trust, unobservables which are not correlated with trust are still uncontrolled for using this approach. As is common, therefore the assumption must be made that those remaining unobservables are uncorrelated with the other variables included in the model.

Following this logic, the impact of homeownership on participation, community and council is estimated in two ways. The first omits trust in the regression, while the second includes *trust_i* as an explanatory variable. The two resulting estimates of the homeownership coefficient provide bounds for the impact of homeownership on three of the social capital proxies, variously controlling for (or not controlling for) individual unobservables reflected in an individual's level of personal trust. Both sets of equations also include a variable that measures the respondent's belief in the importance of community generally (irrespective of the actual situation in the community they reside in); this exogenous variable also assists in controlling for otherwise unobservable character traits of the individual.

4.3.2 PSM Methods

An alternative to regression estimation is to use a quasi-experimental method in the form of propensity score matching in order to compare individuals

who are observationally similar, except with respect to the treatment. In a randomized experiment, the randomization procedure itself would ensure that a sufficiently large control and treatment group would be on average observationally similar, as well as having on average the same unobserved attributes (Bryson et al., 2002). A quasi-experimental design differs from an experimental design because in the former the data have not been generated by a random assignment of individuals into the treatment or control group. The estimation process for the treatment effect needs to take into account that there may be underlying reasons why individuals are likely to fall into the treatment or control group. Several quasi-experimental methods have been developed (see Greenstone and Gayer, 2009). Given that suitable longitudinal data available on an individual is not available to measure before and after treatment outcomes while taking into account heterogeneity in the population in terms of unobserved personal attributes. Given the data available for this study, the only way that it is possible to account for selection is through the use of matching methods.

The Propensity Score Matching methods involve the process of matching observations in a treatment and control group based on observed characteristics such that two or more individuals are compared who are observationally similar but happen to belong to either one or the other group. The result is that researchers can gain an estimate of the effect of the treatment while removing the underlying bias that self-selection into the treatment group (on the basis of observables) may have caused.

The specific technique of PSM was introduced by Rosenbaum and Rubin (1983) who proposed that matching individuals on a set of observable characteristics would reduce the bias present in observational studies which lacked randomization. (Rosenbaum and Rubin, 1983). This application of PSM is estimated using PSCORE which is a package for use with Stata (Becker and Ichino, 2002). PSM takes a set of characteristics shared by both treatment and control

groups, and creates a single-index variable rather than having a large matrix which would be difficult to match on. The propensity score can then be used to match observations such that those with a similar propensity score possess similar characteristics. While this may not completely remove the selection bias, it provides improved estimation through the reduction in bias resulting from having matched individuals. Propensity score matching requires individuals who have the same propensity score to have the same likelihood of being selected for the treatment group.

Dehejia and Wahba (2002) suggest that for PSM to successfully reduce selection bias, observations for both treatment and control groups must be at the same location (and date) and have used the same questionnaire. The dataset must contain a rich set of variables which are relevant to both the intervention (homeownership) and the outcome (social capital). Using these variables, the method generates an index score which represents the vector of characteristics of the individual. PSM requires scores to be “balanced” between treatment and control groups in terms of their representation within propensity score blocks. Balancing reflects the idea that exposure to the treatment effect is random for any given propensity score. Therefore, treated and controlled observations should be, on average, observationally identical (Becker and Ichino, 2002). This requires control and treatment groups to have means which are not significantly different given the variables they are matched on. The balancing property is satisfied by dividing the propensity scores into ‘blocks’ and testing to see whether the control and treatment groups within each block are on average identical. Further discussion and formal proofs can be found in Rosenbaum and Rubin (1993), Imbens (2000) or Becker and Ichino (2002).

Once propensity scores are obtained, there are several different methods of matching in order to obtain treatment effects. They include stratification, nearest neighbour, radius and kernel matching. Each method matches treatment

and control groups based on their propensity score, using different matching criteria.

The stratification method divides the propensity scores into ranges such that within each range, treatment and control groups have the same PSM score on average, essentially the same as the blocks used for balancing the PSM scores. The average treatment effect is then calculated by taking the average effect from each block and weighting it by the number of treated observations.

The nearest neighbour matching method compares treated observations with observations that have not been treated but that are observationally the nearest. The pair-wise difference between the outcomes of the treated and their non-treated neighbours is then calculated and the average difference reported. However, it is possible that with nearest neighbour and stratified methods, observations in the treated group or the control group will be compared with very different observations from the opposite group in terms of propensity scores.

To overcome this problem, both radius and kernel matching methods can be implemented. Radius matching is similar to nearest neighbour matching, but matched observations are constrained to be within a given proximity to each other. Kernel matching compares the treated with weighted averages of all those in the control group, where the weights are inversely proportional to the distance between the propensity scores of the treated and the controls.

For the purposes of this analysis, both nearest neighbour and kernel matching algorithms were used. Two matching algorithms were used, “nearest neighbour” (that matches each treated dwelling to the nearest control dwelling in terms of propensity score) and “kernel matching” (that matches each treated dwelling to a weighted average of control dwellings, with weights reflecting closeness of scores). For each matching algorithm, two sets of estimates are

provided. The first uses the treatment of whether or not an individual owns the home they live in compared with all non-homeowners, while the second compares homeowners to private renters only. The dependent variables are the three proxies for social capital specified earlier, with trust included as one of the variables on which individuals are matched. Balanced blocks for homeownership have been obtained using variables relating to: trust, com_imp (which is a measure of how important the individual believes it is to feel a sense of community), age, ethnicity, education, income, employment status, relationship status and regional population density which acts as a proxy for the regional fixed effects.

4.4. Data Overview and Descriptive Statistics

The analysis in this chapter uses pooled cross-sectional micro data obtained by merging the 2006 and 2008 samples of the New Zealand Quality of Life (QoL) survey⁹. The QoL survey is a national survey, sponsored by the local government, with data available on eight New Zealand cities. Data can be accessed from the Quality of Life Research Team after approval of a formal proposal. The survey is designed with the aim of measuring aspects relating to an individual's quality of life, living situation, community interactions and aspects of health and wellbeing, in order to assist local government decision making and provide insight into regional issues, particularly for people living in urban areas.

Four QoL surveys have been completed to date (in 2003 and then biennially from 2004). However, due to changes in the questionnaire and coding only the 2006 and 2008 surveys were selected for use in this analysis. The 2006 and 2008 surveys have consistent questions across the two years. The merged dataset has a sample size of 15,700, with 7,545 participants in the 2006 survey and 8,155 in the 2008 survey. Surveying was conducted using computer assisted

⁹ See <http://www.qualityoflifeproject.govt.nz> for more details.

telephone interviewing (CATI) and the sample was drawn from New Zealand residents aged 15 and over, with quotas for age, gender and ethnicity. The final sample was restricted to those aged 18 and over at the time of the survey. Participants were drawn at random from the electoral roll and were notified by mail prior to the phone interview. Response rates were 22% in 2006 and 37% in 2008. Because actual levels of social capital are not directly observable, suitable proxy variables which represent individual social capital are required. As noted earlier, quotas for age, gender and ethnicity were used to address possible sampling bias and checks confirm that the sample appears representative of the underlying New Zealand population. The four proxy measures of social capital, namely: trust in others, participation in social networks, sense of community and attitude towards local government – are all obtained from the data available through the quality of life survey. Data regarding regional demographics for New Zealand were obtained from the Statistics New Zealand 2006 Census of Populations and Dwellings. A full list of the variables obtained through these datasets using the framework specified earlier is presented in Table 4-1.

Table 4-2 shows means of the variables reported in the regression equations. The combined and cleaned dataset was largely representative of the underlying New Zealand population, although males were slightly under-represented in the sample (44%) compared with 48% in the New Zealand population aged 18 and over. The age distribution was similar to the New Zealand distribution; however there was an under-sample of those aged 20 to 29 and 75 to 84, particularly amongst women. Those aged 45 to 49 were the only group largely over-represented in the sample.

Dealing with ethnicity can be problematic in New Zealand following the introduction within many surveys of the category, 'New Zealander' (which can be interpreted as a statement of national identity rather than ethnicity), in addition to the traditional European, Māori and other ethnic groups. The prior for this is that this group should be combined with 'European' and 'Pakeha' (Māori term

for people of European decent) to form a single group, European. After making this assumption, the resulting dataset is almost perfectly representative of the underlying ethnic distribution of New Zealand, primarily due to the survey methods of the QoL survey.

The sample is not particularly representative of the underlying geographical distribution between New Zealand's regions. Rural regions are consistently under sampled and while New Zealand's major city, Auckland, appears to be accurately represented there is a strong oversample in the urban and peri-urban regions around South Island regions are under-sampled, while Wellington, the capital city, with 21% of the sample coming from Wellington and the surrounding regions compared to 9% of the population. The regions of the South Island are also under-represented, with 18% of the sample residing in the South Island compared to 25.5% of the actual population. is over-sampled. However, New Zealand's largest city, Auckland, is accurately represented.

Table 4-1 Definition of variables.

	<i>Variable</i>	<i>description</i>
Attitudinal variables	participation†	Index of activities individuals are an active participant in
	community†	Reported sense of community at the current locality
	council†	Index of attitudes towards council
	trust†	0= 'cannot be too careful' 1= 'most people can be trusted'
	com_imp†	Reported belief in the importance of community
Demographics	euro*	Identified as ethnic European
	maori	Identified as ethnic Māori
	pacific	Identified as ethnic Pacific Islander
	asian	Identified as ethnic Asian
	other	Identified as belonging to another ethnic group
	foreign	Not born in New Zealand
	male	0= female, 1=male
	age	Age in years
	hhsz	Size of household, truncated at 6.
	children	Child under 15 currently living in same residence
partner	Partner currently living in same residence	
Homeownership	ho_owner*	Owner of house
	ho_fam	Living in house owned by family
	ho_renter	Living in privately rented accommodation
	ho_state	Living in a state owned house
Human capital	education	Years of formal schooling
	income q1-q4	Quartile of New Zealand income distribution
	fulltime*	1= currently in full time employment
	part-time	1= currently in part time employment
	unemployed	1= currently not in labour force
retired	1= currently retired	
Geographic	reg0_10	Number of years living in region, up to 10
	reg10+	0= less than 10yrs, 1= 10yrs+
	popdens	Population per km ² in territory individual resides in
	Regional dummies	51 dummies created from 72 New Zealand territorial authorities.

*Indicates baseline variables, † indicates dependent variables

The sample earned more than the underlying population, with each census income quartile above the first containing more than 25% of the observations in the sample. The regressions reported in section 4.5 are based on unweighted data, as appropriate weighting remains somewhat arbitrary and weights are not transferable to the PSM. Nevertheless, exploratory regressions weighted by age and location using census frequencies yielded very similar results. Participants who indicated they were foreign born comprised 24.4% of the sample, close to the proportion of foreign born aged 18 and over in the New Zealand 2006 census, of 26%.

In comparing the proxy variables for social capital for foreign and New Zealand born participants, foreign born participants were almost identical to New Zealand born participants in all measures with the exception of the attitudes towards local government. Foreign Born participants scored a mean first component value of 0.038 compared to -0.012 for New Zealand born participants.

In comparing the descriptive statistics across the four homeownership categories, males were over-represented in family housing and under-represented in (subsidised) state-provided housing relative to their sample proportion. All non-European ethnic groups are under-represented as homeowners. Those identifying as having Māori or Pacific Island ethnicities were much more likely to be living in state housing than their share of the population would suggest, while those identifying as Asian were more likely to live in family accommodation. A high proportion of those in lower income quartiles are accommodated in state housing, while those in the top income quartile are under-represented in private rentals and very strongly under-represented in family housing and state housing. The family housing result is consistent with the low mean age of those in family housing, indicating that this category is likely to comprise a significant number of young adults still living with parents.

Table 4-2 Means and percentages of variables used in multivariate analysis

Variable	Full sample	Homeowners	Family housing	Private Renters	State housing
N	15,056	10,861	1,930	1,734	531
Dependent var.					
participation	2.87	2.85	3.12	2.77	2.67
community	3.62	3.69	3.39	3.39	3.71
council	0.00	-0.05	0.14	0.09	0.34
trust	0.77	0.79	0.73	0.74	0.70
Explanatory var.					
com_imp	0.70	0.73	0.62	0.63	0.74
male	0.44	0.43	0.51	0.43	0.41
age	46.25	51.02	27.28	37.73	45.52
foreign	0.24	0.24	0.29	0.23	0.26
maori	0.13	0.11	0.15	0.19	0.30
pacific	0.05	0.03	0.12	0.07	0.19
asian	0.08	0.06	0.16	0.13	0.04
other	0.04	0.05	0.02	0.06	0.05
education	13.46	13.53	13.16	13.60	12.54
income q2	0.32	0.30	0.37	0.34	0.45
income q3	0.27	0.28	0.23	0.30	0.23
income q4	0.27	0.31	0.09	0.20	0.11
part-time	0.21	0.19	0.29	0.21	0.23
unemployed	0.15	0.12	0.24	0.21	0.28
retired	0.11	0.14	0.02	0.03	0.12
hhsiz	3.12	2.95	3.94	3.23	3.31
children	0.52	0.55	0.24	0.55	0.60
partner	0.76	0.88	0.22	0.64	0.64
reg0_10	1.44	1.34	1.22	2.25	1.48
reg10+	0.71	0.74	0.76	0.46	0.68
popdens	466.33	448.62	527.45	501.79	490.59

4.5. Results

To examine the impact of homeownership on social capital, including attitudes towards local government, standard regression techniques are first used to estimate the model specified earlier using the four separate dependent variables. PSM analysis is then used to estimate the impact of homeownership on attitudes towards local government and other manifestations of social capital.

4.5.1 Regression Results

The determinants of each of the four separate dependent variables are estimated by means of regression methods that are appropriate to the type of dependent variable. To conduct this analysis, a standardized model with a fixed set of explanatory variables chosen using the theoretical framework developed in section 4.3 is used, with consideration of the available data introduced in section 4.4. The variables are described in Table 4-1 and Table 4-2. All variables are related to one of the four categories specified in the framework: either geographical, demographic, human capital or homeownership.

The binary trust variable is examined using a logit regression, while the participation index is examined using tobit regression due to the truncation of the index. Sense of community (measured according to a Likert scale) is examined using ordered logit regression while attitude towards council (which is a continuous variable) is examined using ordinary least squares. As discussed in the methodology section, the trust variable may be used as a proxy for unobservable personal traits of an individual gained through early childhood. In order to utilise this information, each of the other three proxies for social capital is estimated using first the model of equation 4-2 and secondly the model of equation 4-6, i.e. including the variable “trust” to control for the influence of these unobservable character traits. The regressions include all explanatory variables listed in the Table 4-1.

While the discussion concentrates on the homeownership impacts, it should be noted that the full results reveal that the relationships in terms of previous literature between the social capital outcomes and each of the personal, geographic and human capital variables are consistent with research presented in chapter 6 on the determinants of trust and participation, using a different dataset, the World Values Survey. For instance, people with higher human capital tend to display higher social capital across a range of outcomes, while females, those with children, Māori and Pacific people participate more actively in community activities. Population density is also found to have a significantly negative impact on social capital formation. This is in line with the findings of Brueckner and Largey (2008) who propose that the cause is unobserved attributes of those who choose to live in densely populated areas. For example, the highest density areas may have highly mobile university student populations as well as immigrants who have arrived recently. Finally, the personal trait measured by the response to the question whether the respondent considers community in general to be important (irrespective of their actual community) is also statistically significant in all models.

Table 4-3 Regression estimates of factors influencing social capital formation.

VARIABLES	(1) trust_net	(2a) participation [†]	(2b) participation ^{††}	(3a) Community	(3b) Community	(4a) Council	(4b) Council
trust			0.287*** (0.029)		0.315*** (0.038)		0.260*** (0.024)
com_imp	0.316*** (0.044)	0.448*** (0.027)	0.432*** (0.027)	2.354*** (0.039)	2.340*** (0.039)	0.291*** (0.022)	0.275*** (0.022)
male	0.073* (0.043)	-0.128*** (0.026)	-0.131*** (0.026)	-0.050 (0.033)	-0.053 (0.033)	0.037* (0.022)	0.035 (0.022)
age	0.014 (0.009)	-0.023*** (0.006)	-0.026*** (0.006)	0.029*** (0.007)	0.027*** (0.007)	-0.015*** (0.005)	-0.017*** (0.005)
age ² x100	-0.008 (0.010)	0.023*** (0.006)	0.025*** (0.006)	-0.014* (0.008)	-0.013* (0.008)	0.020*** (0.005)	0.022*** (0.005)
foreign	-0.070 (0.057)	-0.118*** (0.034)	-0.114*** (0.034)	0.048 (0.044)	0.049 (0.044)	0.004 (0.028)	0.005 (0.028)
maori	-0.002 (0.063)	0.294*** (0.038)	0.298*** (0.038)	0.333*** (0.049)	0.336*** (0.049)	0.019 (0.032)	0.017 (0.032)
pacific	-0.179** (0.091)	0.448*** (0.058)	0.461*** (0.058)	0.278*** (0.076)	0.303*** (0.076)	0.236*** (0.048)	0.245*** (0.048)
asia	-0.420*** (0.083)	-0.178*** (0.052)	-0.164*** (0.052)	0.179*** (0.067)	0.200*** (0.067)	0.245*** (0.044)	0.263*** (0.043)
other	0.037 (0.105)	0.036 (0.063)	0.035 (0.062)	0.137* (0.080)	0.137* (0.080)	0.061 (0.052)	0.059 (0.052)
ln (education)	1.474*** (0.128)	1.608*** (0.074)	1.555*** (0.075)	-0.203** (0.095)	-0.254*** (0.096)	0.351*** (0.062)	0.293*** (0.062)
income q2	-0.043 (0.067)	-0.025 (0.041)	-0.026 (0.041)	0.039 (0.052)	0.041 (0.053)	0.044 (0.034)	0.045 (0.034)

Table 4-3 continued.

income q3	-0.025 (0.078)	-0.005 (0.047)	-0.005 (0.047)	0.078 (0.060)	0.073 (0.060)	0.032 (0.039)	0.030 (0.039)
income q4	0.068 (0.085)	0.059 (0.051)	0.050 (0.051)	0.059 (0.065)	0.054 (0.065)	0.081* (0.042)	0.080* (0.042)
Part-time	0.249*** (0.063)	0.216*** (0.037)	0.203*** (0.037)	0.219*** (0.047)	0.208*** (0.048)	0.033 (0.031)	0.025 (0.031)
unemployed	0.163** (0.071)	-0.018 (0.043)	-0.034 (0.043)	0.211*** (0.055)	0.202*** (0.056)	0.045 (0.036)	0.040 (0.036)
retired	0.060 (0.115)	-0.010 (0.067)	-0.012 (0.067)	0.293*** (0.086)	0.297*** (0.086)	-0.042 (0.056)	-0.051 (0.056)
ho_fam	-0.058 (0.083)	-0.009 (0.051)	-0.007 (0.051)	-0.017 (0.066)	-0.019 (0.066)	0.156*** (0.043)	0.155*** (0.043)
ho_renter	-0.157** (0.067)	-0.107** (0.042)	-0.103** (0.042)	-0.115** (0.053)	-0.108** (0.054)	0.121*** (0.034)	0.129*** (0.034)
ho_state	-0.289*** (0.106)	-0.240*** (0.068)	-0.216*** (0.068)	0.034 (0.087)	0.038 (0.088)	0.385*** (0.056)	0.409*** (0.057)
hhsiz	0.055*** (0.019)	0.096*** (0.011)	0.090*** (0.011)	0.069*** (0.015)	0.066*** (0.015)	0.032*** (0.009)	0.030*** (0.009)
children	-0.072 (0.050)	-0.062** (0.030)	-0.051* (0.030)	-0.024 (0.039)	-0.017 (0.039)	-0.055** (0.025)	-0.053** (0.025)
partner	0.133** (0.056)	0.033 (0.034)	0.025 (0.034)	0.080* (0.044)	0.075* (0.044)	-0.044 (0.028)	-0.053* (0.028)
reg0_10	-0.025* (0.015)	0.010 (0.009)	0.012 (0.009)	0.046*** (0.011)	0.047*** (0.011)	-0.017** (0.007)	-0.015** (0.007)
reg10+	-0.146* (0.088)	0.188*** (0.053)	0.202*** (0.053)	0.342*** (0.068)	0.361*** (0.068)	-0.149*** (0.044)	-0.143*** (0.044)
constant	-3.517*** (0.417)	-1.699*** (0.247)	-1.689*** (0.247)	-1.032*** (0.319)	-0.980*** (0.321)	-1.331*** (0.204)	-1.313*** (0.204)

Table 4-3 continued.

Observations	14,860	14,980	14,860	14,911	14,799	14,841	14,935
Pseudo R-squared	0.0349	0.0304	0.0324	0.130	0.132	0.075	0.067
Log likelihood	-7663	-26593	-26307	-18114	-17939	-23803	-24015
Chi squared	553.7	1667	1760	5415	5445	N/A	N/A

Notes: Time period and spatial fixed effects included; standard errors in parentheses; Significant at: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Sigma is [†]1.460*** and ^{††}1.453*** and is equivalent to the standard error of estimate in OLS regression; # Standard R-squared. Cut points for ordered logit 3a: -1.03, 0.92, 2.79, 4.99. 3b: -0.98, 0.98, 2.86, 5.06.

4.5.2 Trust

The results for the logit regression of trust can be seen in column (1) of Table 4-3. Four categories of housing tenure are distinguished: homeowner, renting from a family member (or house provided rent free), renting from a private landlord and renting from the State. The default category in the regression is homeowner. Those renting from a private landlord or from the state are found to be significantly less trusting than homeowners. Those living with a family member show no significant difference in trust than homeowners.

The results show that males, those with a partner and people with higher education report higher trust, while people of Asian and Pacific ethnicity report lower levels of trust. Working part time was significantly related to higher trust. This variable also has a positive impact, where significant, on the other social capital variables of participation, sense of community and attitudes towards local government. Being unemployed was also positively related to trust and sense of community. It is possible that these two variables pick up that lower, or zero, hours of work reflect a high reservation wage and greater productivity in the non-market sector, particularly given that unemployment was amongst the lowest in the OECD during this period, averaging 3.85% in 2006 and 4.175% in 2008. Non-participation and part-time paid work are associated with higher rates of voluntary work (for New Zealand, see e.g., Clark and Kim, 2009).

4.5.3 Participation

Columns (2a) and (2b) in Table 4-3 report the results for the determinants of the participation index using a tobit regression respectively excluding and including trust as an explanatory variable. The participation index ranged from 0 to 8, where zero had the participant engaged in no activities and 8 where the participant engaged in all activities surveyed in the QoL questionnaire. The two models are very similar, indicating that controlling for an unobservable trait

(through the inclusion of trust) provides additional explanatory power in explaining participation, but its omission does not bias the impact of homeownership. The trust variable is a strong and significant predictor of participation.

The positive impact of homeownership on social capital is confirmed in each of regressions (2a) and (2b). Renting from a private landlord and living in a state owned house both yield a negative impact on social participation, significant at the 5% and 1% level respectively, relative to people who are homeowners. Again, those renting from a family member show no significant difference in trust relative to homeowners.

The effect of age is non-linear, with minimum participation in social activities at around age 50. This reflects the opportunity cost of time devoted to such activities. The typical concave age earnings profile suggests that this cost is indeed the highest around age 50. Māori, Pacific Island and females, reported higher levels of participation in social activities, consistent with those groups having on average lower hourly labour market earnings. However, those with Asian ethnicity participate less, as do those who were born overseas. This is possibly because many are recent immigrants who may be less integrated in New Zealand society. The coefficient on the years of schooling is significant. There is also strong evidence that residing in a region longer than 10 years is associated with increased participation. Plausibly, larger households participate more in social activities.

4.5.4 Impact on Sense of Community at the Locality

Columns (3a) and (3b) in Table 4-3 report the results for homeownership and other factors on an individual's sense of community at their current locality. The two models are again consistent, with no changes in significance as a result

of introducing the trust variable. The trust variable is significant and positive at the 1% level.

The relationships between homeownership status and this proxy for social capital are somewhat more complex than for the prior two proxies. Renting from a private landlord is associated with a lower sense of community than for homeowners (or those living with family), significant at the 5% level in each equation. However, there is no statistically significant difference in senses of community at their current locality between homeowners and people living in state owned housing. One of the purposes of state housing provision is to provide more deprived families with stable housing tenure, so providing a more stable community especially for children in these families (Murphy, 2003; Schrader, 2005); thus many of these tenants will have long-term relationships with their community. This policy intention is reflected in the lack of a significant difference in sense of community between homeowners and those with a state tenancy. This finding lends weight to the argument by Forrest and Kearns (2001) that people residing in poor or deprived communities may rely more on neighbourhood level social capital while those in wealthier communities can maintain more spatially diffused networks.

Growing older raises the sense of community. This relationship is concave and reaches a maximum at the top end of the age range of the survey respondents. All ethnic minorities have a more positive sense of community than do Europeans, reflecting the strong networks that operate within such communities. Those who are retired, in part time employment, unemployed and in larger households also report a greater sense of community. Moreover, as might be expected, there is an increase in the sense of community for additional years of living in a region. Interestingly, increased education had a significant negative impact on an individual's sense of community.

4.5.5 Impact on Attitudes Towards Local Government

Columns (4a) and (4b) present the results of an ordinary least squares regression model that tests for factors influencing attitudes of residents towards the activities of their local government, with the latter represented by a real-valued index. The two models are again consistent, and trust is significant at the 1% level.

Each of the three housing measures (private renting, state renting and living with family) is significant and positive at the 1% level when compared to homeowners. Thus homeowners have a more negative view of their local government's performance than do non-owners. This reflects that homeowners hold local politicians to account more stringently than do other residents (see also Dietz and Haurin, 2003). Of course both owner-occupiers and landlords have a vested interest in keeping local authorities to account because they would want to avoid a Tiebout effect in which inefficient local government leads to outward migration and lower property values (Tiebout, 1956).¹⁰

Furthermore, homeownership in New Zealand brings with it the obligation to pay local property taxes, while those who are renting have these costs incorporated into their rent and therefore do not face these costs directly. All residents, however, benefit from the services provided by local government. Together, these considerations indicate that some homeowners, in holding their local council to account, may consider that they are not getting value for money (at least relative to the views of other residents) from their councils. Consistent with the homeownership result, the attitude towards the local council declines with increasing duration of residence (i.e. a significant negative coefficient on the variable "number of years living in region" in the attitude towards council

¹⁰ Since owner-occupiers are likely to benefit more from local services than absentee landlords, the accountability effect may be stronger for the former group than for the latter, but this difference cannot be tested with the available data.

equation is found). A longer stay in a region therefore appears to make residents even less satisfied with the performance of their local council.

4.5.6 Comparison of Homeownership Effects across Models

Comparing the models, both trust (when it is included as an explanatory variable) and a stated belief in the general importance of community are found to be significant associated with each of the other proxies for social capital. Thus the results are robust to the inclusion of controls for individual unobservables about a person's underlying traits. Compared to homeowners, those who rent from either a private or state landlord are significantly less likely to trust others or participate in social activities, and private renters are also less likely to feel a sense of community at their current locality. However, when considering attitudes towards local government, those living in family, private rental and state rental housing are all significantly more likely to have a positive attitude towards local government compared to those who own their own homes. This result may in part be due to the fact that local government rates and levies are paid for explicitly by home owners, while those who are renting have these costs incorporated into their rent, and therefore they do not face these costs directly. All residents, however, benefit from the services provided by local government. As homeowners are faced with a bill for local government services, they have a stronger incentive to hold local government to account and are therefore more critical of council actions. They may also experience an increased sense of "ownership" over the local council, and therefore demand better services. The positive coefficients for people who are not owner-occupiers suggest that those groups are less actively involved in holding local authorities to account.

In summary, the regression estimates show that homeownership has a significant positive effect on three of the proxies for social capital. An exception occurs with respect to attitudes to local government performance, where

homeownership is associated with less positive attitudes, consistent with a greater involvement by homeowners in holding their local government to account.

4.5.7 PSM estimates

In estimating the PSM model of the impacts of homeownership on three proxies for social capital (excluding trust), homeownership is categorised as a treatment for two separate control groups. The first compares homeowners to all non-homeowners pooled, while the second compares homeowners to private renters only. For each approach both kernel and nearest neighbour matching are used to estimate the effects with bootstrapped standard errors obtained with 150 repetitions. 150 repetitions was chosen as it yielded qualitatively similar outcomes to estimations with 100 repetitions and therefore there was no gain in running additional repetitions. The results of each of the models for the three proxies are presented in Table 4-4. To ensure balancing (at the 0.01 level), a more parsimonious model than that used in the regressions is adopted, matching on the following variables: trust, belief in the importance of community, age, age squared, Māori, Asian, other, log(education), income from quartiles 2, 3 and 4, employed full-time, unemployed, living with a partner and the log of regional population density. The inclusion of trust and belief in the importance of community as matching variables means that the results are matching not just on standard observable characteristics of individuals but also on often unobservable personal traits.

Table 4-4 ATT estimates using propensity score matching

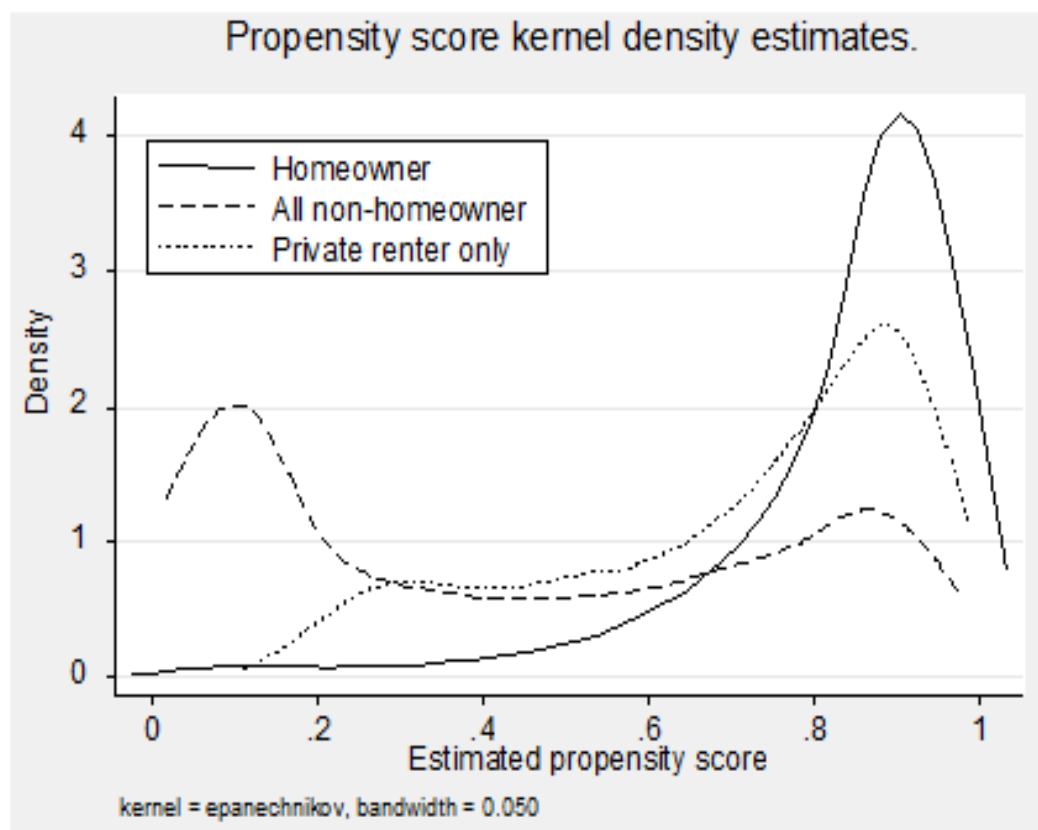
	N. Treated	N. Control	ATT	Std. Err.	t-stat
Participation; homeowners versus non-homeowners					
Nearest Neighbour	10721	1956	0.138	0.061	2.25***
Kernel	10721	4123	0.136	0.044	3.06***
Community; homeowners versus non-homeowners					
Nearest Neighbour	10721	1946	-0.001	0.032	-0.03
Kernel	10721	4123	0.042	0.032	1.34*
Council; homeowners versus non-homeowners					
Nearest Neighbour	10721	1954	-0.195	0.048	-4.03***
Kernel	10721	4123	-0.205	0.040	-5.17***
Participation; homeowners versus private renters only					
Nearest Neighbour	10721	1301	0.222	0.070	3.17***
Kernel	10721	1710	0.133	0.049	2.73***
Community; homeowners versus private renters only					
Nearest Neighbour	10721	1296	0.027	0.050	0.53
Kernel	10721	1710	0.093	0.034	2.70***
Council; homeowners versus private renters only					
Nearest Neighbour	10721	1300	-0.117	0.051	-2.29***
Kernel	10721	1710	-0.152	0.042	-3.57***

Notes: Bootstrapped standard errors in parentheses with 150 replications; one-tailed *t* statistic significant at: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Matched on: trust, com_imp, age, age squared, Māori, Asian, other, log(education), income Q2, Q3 and Q4, fulltime, unemployed, partner and the log(popdens). ATT is the average treatment effect for the treated (i.e. for homeowners relative to the reference category).

Figure 4-1 presents the kernel densities of the propensity scores for homeowners, non-homeowners and private renters using the control variables specified above. The figure suggests that while there is considerable overlap in the distributions, the kernel density for homeowners has considerable density for high propensity scores, with a strongly negative skew. The distribution for non-owners has one overlapping mode in the same range (between 0.8 and 0.95) but another mode between propensity scores of 0 and 0.2, reflecting the influence of state house tenants. The distribution of private renters much more closely resembles that of homeowners. This is reflected in the very different means between the groups, with the mean propensity score for homeowners

being 0.83, 0.7 for private renters and 0.43 for all non-homeowners combined. Therefore more emphasis is placed on the results that compare homeowners just with private renters than with all non-homeowners combined.

Figure 4-2 Kernel density estimate for each ownership group



The estimates of the average treatment effect of homeownership on the treated (ATT) are reported in Table 4-4 for the three proxies of social capital, the two matching methods and the two comparator groups. When considering homeowners compared to all non-homeowners or compared to private renters only, the effect of homeownership is positive and significant for participation. However, there is weaker evidence for homeownership impacting on the sense of community at the current locality. For this social capital proxy, the treatment effect is not significant using nearest neighbour matching but is significant (at the 10% and 1% levels for the comparison to all non-homeowners and private

renters respectively) using kernel density matching for the two samples. Both matching methods and both samples provide clear evidence that homeowners have less positive attitudes towards local government than do other tenure groups (significant in each case at the 1% level).

The average treatment effects provides some understanding of the likely effect that owning a home has on participation, sense of community and attitudes towards local government for observationally similar individuals, where similarity includes their stated attitude towards trust in others. For participation, the interpretation is that the average number of social activities is 0.13 to 0.22 higher for homeowners than for non-owners. For the sense of community, even the statistically significant estimates show only a very small effect size. The findings for attitudes towards local government are strongly significant and negative when compared to both all non-homeowners and renters only.

Across the PSM results, there is therefore considerable evidence showing an impact of homeownership on at least two of the proxies for social capital. Specifically, homeownership status impacts positively on participation in community activities and negatively on attitudes towards local government performance. These results, which are consistent with the prior regression results, are obtained after controlling for both observable and unobservable individual characteristics that are embodied in an individual's stated attitude towards trust and importance of community.

4.6. Conclusions

By applying regression and matching techniques to survey data collected in New Zealand, this chapter has estimated the impacts of homeownership on four separate proxies of individual social capital, after controlling for other observable, and some often unobservable, factors.

Using regression methods, this study finds that when an individual owns the home they live in, they report significantly higher levels of social capital than those who do not own their own home. Specifically, they have higher trust in others, participate more in local activities and have a more positive sense of their local community. It is plausible that, conditional on personal characteristics, those who personally invest in their community through networks and participation in community activities will see a return to that investment in property values that will internalize such externalities, irrespective of whether they also have altruistic motives. Homeowners, however, have a less positive attitude towards local government performance than do people in other forms of housing tenure. This outcome may reflect a stronger involvement in the governance of their community by owner-occupiers and this involvement may make them less satisfied with the performance of their local representatives. The impact of homeowners on the community's social capital will be stronger than compared to members of the community who are ambivalent to the political process (Purdue, 2001), but the local political participation impact of homeowners works opposite to that of trust, sense of community and participation in social activities.

The PSM estimates of the average treatment effect of homeownership yield similar results. Homeowners participate in more social activities than non-homeowners. However, once like individuals are matched, there is weaker evidence that homeownership increases the sense of community individuals feel at their current locality.

Again, strong evidence is found that homeownership leads to a less positive attitude towards local government performance and this dimension or manifestation of social capital works in the opposite direction to the other dimensions or manifestations of social capital. This is the first time that these dimensions of social capital have been observed to work in the opposite direction to each other, and the implications of this finding are potentially very

significant. Putnam's (1993) original argument was based on the importance of trust in local government as a critical element of institutional and market performance. If homeownership reduces this trust, while at the same time promoting other dimensions of social capital, it becomes clear that the relationship between having a (real estate) stake in the local economy and the performance of local governance is rather more complex than has previously been understood.

The results of this chapter may have implications for policy, particularly for those areas where there are low levels of owner-occupied dwellings. In such areas, a range of social 'bads' may arise from lower levels of social capital associated with the lack of homeownership. The PSM results (on which most reliance is placed) imply that increasing levels of homeownership improves participation in community activities, but may not engender a material increase in the sense of community. Thus whether or not homeownership should be encouraged depends on the outcome that is being sought. If a greater sense of community is desired, a policy favouring homeownership may have little effect. If policy-makers wish to increase participation in local activities, they may wish to consider policies that enhance homeownership rates. In addition, if central government wishes to raise the incentives on residents to hold local government to account, a policy that raises homeownership levels may be an effective means of engendering extra scrutiny of local government performance.

Future work could expand on the definition of homeownership to test whether single-occupier dwellings are significantly different from couple, family or communally occupied dwellings. It could also be worthwhile to investigate the type of social capital which is formed through homeownership. This would be particularly interesting when considering the difference between bridging and bonding social capital and how that impacts new arrivals' integration into a community.

CHAPTER 5

Immigrant Integration and Social Capital Formation.

5.1. Introduction

Do migrants invest in local social capital after their arrival into their new host country, and if so, what are the factors which influence the rate and form of this formation? Both immigration and social capital are topics which have attracted a great deal of attention in recent academic literature, however very little econometric analysis has been done on their interrelationship. This chapter examines the nature of social capital formation both in terms of investment and stock held by migrants after they move to New Zealand during the process of settlement, with a particular focus on the role of migrant clustering on investment in either bridging or bonding social capital.

The core hypothesis of this chapter is that due to migrants entering their new country with low stocks of local social capital, they have a greater incentive to invest in building social capital in their new locations compared to native-born individuals, and that this rate of investment declines and converges with native born as migrants integrate into the host country due to rising stocks of social capital.

Using theoretical insights from the existing body of literature on immigrant integration and social capital, combined with micro data from New Zealand, the stock and investment in social capital made by migrants at various stages of settlement is examined. Special interest is also taken in the form of investment by dividing social capital investment into bridging and bonding groups, concepts already introduced in chapter 2. In addition, the impact of migrant clustering within regions is tested through the use of two indices, measuring migrant clustering both between and within New Zealand regions.

This hypothesis is tested using detailed cross-sectional data obtained from two separate surveys. These are the New Zealand General Social Survey (NZGSS) conducted in 2008 and the 2006 Adult Literacy and Life Skills survey (ALL)¹¹. Two separate datasets are used to both check for robustness in these findings and to allow depth in the range of variables under examination. The datasets include information at the individual level on year of arrival into New Zealand, as well as on country of origin. To proxy for stock of social capital, responses to questions on feelings of isolation, personal safety and sufficiency of interpersonal contact are used. Individual responses to questions on participation and volunteerism were used to proxy for investment in social capital.

Investment is then further split between bridging and bonding activities to test whether migrants are more likely to prefer one form of social capital investment over another. Geographic variables examining the clustering of migrants between and within New Zealand Territorial Authorities are also examined at this stage of the analysis. Finally, a set of results testing the robustness of bridging and bonding categories are included.

The results of these tests provide the ability to be able to gauge not only the factors that influence stock and investment in social capital but also the form of social capital investment undertaken by migrants. By using the range of variables across the two datasets this analysis provides insights into the reliability of the proxy measures and controls for the possibility that there are different pathways that a migrant might choose to invest in social capital during settlement. Each of the proxy variables is tested using several different regression methods depending on the form of the dependent variable.

This analysis of immigrant integration and social capital both complements and contributes to the existing body of literature on the topic. The

¹¹ See <http://www.educationcounts.govt.nz/topics/research/all> for more information on the ALL survey and <http://www.stats.govt.nz/nzgss/> for more information on the NZGSS.

effect of additional years since migration on migrant social capital is examined; a first using New Zealand data and one of only a handful of published studies internationally. The findings suggest that compared to native born individuals who identify as ethnic Europeans, migrants from Asia have the lower stocks of social capital than other migrant groups, with the exception of migrants from MELAA regions are more likely to report feeling isolated.

Migrant stock of social capital is lowest when migrants arrive; however, this disparity with the New Zealand born becomes insignificant between five and nine years after arrival in New Zealand. Investment in social capital is also lowest for those born in Asia while those born in the Pacific Islands show slightly greater investment in social capital than other migrant groups. Behaviours linked to investment in social capital are lowest from migrants in the first five years since migration and greatest after 15 to 19 years, suggesting rising investment to build and maintain stocks of social capital.

Finally, investment in social capital through bridging and bonding is investigated, with migrants from the Pacific showing the greatest propensity to invest in both bridging and bonding activities amongst migrant groups. Regions that have a larger share of migrants from the same region of birth were likely to have lower investment in bridging social capital while greater clustering of migrants within a region resulted in greater investment in bonding social capital.

Overall, these findings suggest that migrants invest in social capital increasingly over the first five years of settlement. In addition, the research shows and that investment encouraging bonding social capital is more prevalent in more segregated regions, while bridging social capital is invested in less in regions with a comparatively high number of migrants from the same birth region.

A further important observation is that different policy objectives may be required for different migrant groups. In particular, as migrants from Asia in general have the lowest stocks of social capital, encouraging social capital formation is likely to have the greatest impact on improving this groups outcomes. Conversely, as migrants from the Pacific Islands tend to have high stocks of social capital a more appropriate policy objective for this group may be encouraging the utilization of social capital to improve wellbeing.

The chapter is arranged as follows. Section 5.2 provides a survey of the academic literature relating to linkages between social capital and immigrant integration and also highlights gaps in the present understanding of this relationship. Section 5.3 discusses the methods used in this analysis and presents a theoretical framework for analysis. Section 5.4 introduces the datasets and provides summary statistics. Section 5.5 presents the statistical results for all of the models, which are then discussed and conclusions are drawn along with suggestions for further research in Section 5.6.

5.2. Social Capital and Migration.

Roughly 225 million of the world's seven billion population live in a country other than their country of birth, and this number has been increasing at an increasing rate with the share of migrants in the population of high income countries doubling between 1970 and 2010 (McCann et al., 2010). It is no surprise therefore that there is growing interest in the impacts of migration, both in terms of the impacts on the native born population, on the countries of origin and on migrants and their families.

The success of migrants in their new host countries may also provide a close parallel to the success of the country itself. Alesina and la Ferrara (2005) examined the literature regarding ethnic heterogeneity and economic development. They found that increasing heterogeneity has a negative impact on

economic development; however this was primarily due to fractionalisation, competition over resources and income inequalities. These authors found some evidence that overcoming these issues mitigated the negative impact on economic development. Maré and Stillman (2009) tested New Zealand data for an impact of migrant density on labour outcomes, finding little impact of additional new migrants on native born wages, while there was some evidence of a clustering out effect between new migrants.

A further consideration is that migrants not only form social linkages in their new host country, but also maintain social capital in their country of origin. This is particularly true as modern global travel and communication networks allow for a mobile and integrated world, with the cost of maintaining social networks over distances reduced (McCann et al., 2010).

It appears clear, therefore, that migrant success is important for successful economic and social wellbeing, and that this success depends on a number of aspects. Of the aspects which are associated with successful settlement of migrants that have been examined, one which has attracted a modest but growing level of interest is the role of social capital.

There are now several papers which specifically address the impact of social capital on migrant wellbeing. Li (2004) suggests that the interest in linking social capital and migration or migrant settlement stems from the policy and social justice concerns around improving the outcomes for migrants and assisting their integration into society. Both Li (2004) and Germain (2004) raise the issue of bridging and bonding social capital within migrant groups, suggesting that it is important to encourage and facilitate bridging social capital to assist in integration while supporting bonding social capital in order to encourage local social support and community development, while being mindful of the potential downside to unbalanced formation.

Mouw (2006) writes that social capital is important for migrants in both facilitating migration and in assisting in the integration of migrants into their new host country. Palloni et al. (2001) and Massey and Aysa-Lastra (2011) examined the role social capital plays in influencing migration from Latin American countries into the United States. Both studies found that having existing social capital in the forms of networks in the United States increases the likelihood of migration into the States. Massey and Aysa-Lastra (2011) also conclude that it is possible that social capital may act as a substitute for human capital, where migrants with lower human capital instead rely on informal networks obtained through social capital formation to gain access to resources and improve outcomes.

It is also important to consider that most papers on social capital regard only local social capital as beneficial to the migrant. This may not always be the case. Some studies (e.g. Basch et al., 1994) have suggested that ties between migrants and people remaining in the homeland may contribute to the formation of transnational social capital. Eckstein (2010) suggests that there may also be backwards social capital formation by migrants between individuals and their home country. Some migrant groups may migrate to a new country in order to achieve higher incomes, and send remittances to their home country. Eckstein goes on to suggest that these remittances could be seen as investments in transnational social capital and that additional years since migration where remittances are sent home increase the linkages between individuals and the networks in their birth regions.

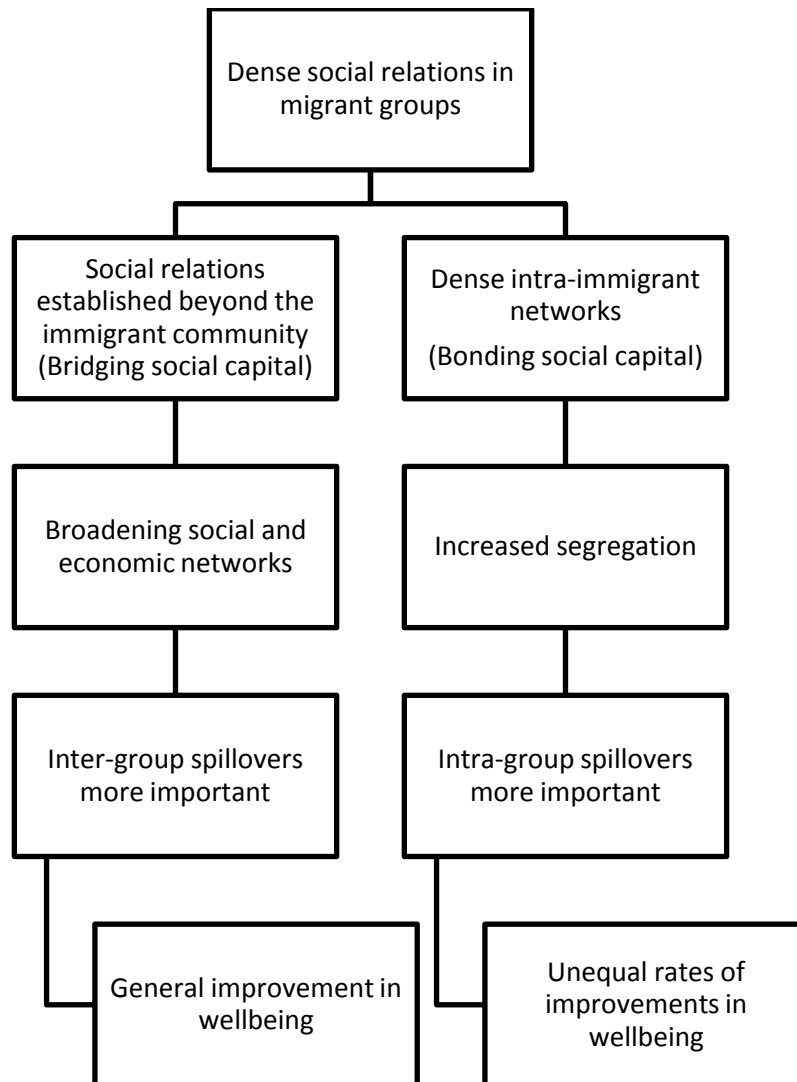
The form of social capital that is invested in is also important, particularly in relation to bridging or bonding social capital, as discussed in chapter 2. Within migrant groups, bonding social capital could be thought of as a migrant participating networks with other migrants from similar culture or ethnicity, while bridging social capital would involve participation in networks with actors from different ethnic and cultural backgrounds, including either native born or

other migrant groups. Galbraith et al. (2007) suggest that migrants may invest specifically in 'ethnic' social capital which behaves as a club good, with the benefits and costs associated with this as discussed in chapter 2.

While bonding social capital is important for maintaining cultural identity and traditions, there is some evidence that it is also important for migrants to build and maintain bridging social capital. A study by Lancee (2010) compared labour market outcomes of bridging and bonding social capital for a sample of migrants in the Netherlands. This study found a significant and positive relationship between bridging social capital and both employment and income, while no significant relationship was found for bonding social capital. Results similar to Lancee (2010) were found by Aguilera (2002, 2005) who analysed the labour market outcomes for Puerto Rican and Mexican immigrants in the United States, and also found significant positive effects from increased bridging social capital.

Migrants investing in bridging social capital may also allow for additional spillovers or positive externalities to be generated. Friessen (2003) developed a model to explain alternative outcomes as a result of either bridging or bonding social capital, arguing that dense intra-migrant groups (bonding social capital) could increase segregation, reducing the positive spillovers (externalities) to society as a whole, while dense relations beyond the immigrant community allowed the spillovers to be captured by a broader society. A generalised adaptation of Friessen's model is presented in Figure 5-1. It is important to remember, however, that bonding social capital may also provide beneficial spillovers to wider society through facilitating the maintenance and intergenerational communication of cultural and traditional practices and identities which may otherwise be lost.

Figure 5-1 Alternative social outcomes from bridging and bonding social capital



Source: Adapted from Friessen (2003, p. 187)

As cited in Pendakur and Mata (2012), Bloemraad and Ramakrishnan (2006) suggest that due to discrimination and exclusion of migrant groups, migrants often have lower levels of community participation and group membership when compared to similar native born individuals. This means that while immigrants may wish to invest in social capital to improve their outcomes, they face social barriers to participation which are overcome through bridging social capital formation. This is supported by findings of Cheong (2006) who conclude that minority groups score lower on measures such as trust and participation.

5.2.1 Findings from New Zealand.

New Zealand provides an interesting context for examining the role of social capital in immigrant integration. Firstly, New Zealand consistently ranks as one of the world's most open, cohesive and institutionally stable societies (McCann 2009) meaning that regional institutional variation and mobility factors which may impact social capital formation are less of a concern for bias in the New Zealand context. Secondly, New Zealand is a relatively young country with a large first generation migrant population (22.9% according to the 2006 census).

This has led to immigration being of intense interest both politically and socially in New Zealand. There are however relatively few empirical studies on the adjustment and integration of migrants into New Zealand. Two early examples of empirical analysis into immigrant integration in New Zealand are Poot et al. (1988) and Poot (1993). These studies examined the integration of immigrants into the labour market and found that the economic impacts for native born of migration were either positive or neutral, and immigrants were found to have successfully integrated into the New Zealand labour market (Hodgson and Poot, 2011).

Later work by Woolf (2010) expanded this work to examine the integration of children. This study used the NZGSS to examine if there was a difference in outcomes between children of native born parents compared to migrant parents. She found that while economic outcomes were not significantly impacted by the origins of parents, there were some negative social outcomes, in particular those with migrant parents felt less belonging or connectedness to New Zealand. A survey by Hodgson and Poot (2011) which examined several New-Zealand based studies found broad support for the economic integration of migrants, however social outcomes were not discussed.

As mentioned earlier, discrimination is argued to have a negative effect on social capital formation (Bloemnraad and Ramakrishnan, 2006). New Zealand studies have revealed that New Zealanders have in general a positive attitude toward immigrants and that they endorse multiculturalism (Ward and Masgoret, 2008; Ward et al., 2011). However, discrimination issues experienced in other countries are also common in New Zealand, especially for those migrant groups that are culturally different from the European and Maori host population (Girling et al., 2010).

Daldy et al. (2013) examined the causative factors of self-reported discrimination in the work place for migrants in New Zealand. They found that migrants were significantly more likely than New Zealand-born workers to report that they experience discrimination in the workplace. However, the likelihood that migrants report discrimination decreased with the number of years a migrant has lived in New Zealand and reaches parity with the New Zealand born after approximately 20 years, with the highest likelihood of discrimination is found amongst migrants from Asian and Pacific regions.

As revised in detail in chapter 3, social capital formation in New Zealand has been examined qualitatively by the Victoria University Institute of Policy Studies (IPS) in a series of publications by Robinson (1997, 1999 and 2002). These along with a Statistics New Zealand paper written by Spellerberg (2001) explore social capital in with a focus on the New Zealand context. They highlighted the importance of considering the varying native born ethnic groups, particularly indigenous Māori and Pacifica groups.

A further paper by Grimes et al. (2011) examines voter turnout in local school board elections. They found that participation was no different between migrants and non-migrants, but found some support for ethnicity, age and the socio-economic status of the schools catchment area to be significant predictors. Hence the existing literature suggests that any analysis of social capital in New

Zealand must consider the relationship ethnicity and birthplace play in the New Zealand context as well as controlling adequately for individual socio-economic status.

5.3. Methods

In this analysis, an approach similar to the earnings “catch up” function first specified by Chiswick (1978) is used as a foundation for the development for modelling both stock and investment in social capital by migrants. The earnings function suggests that for an individual migrant i , earnings (Y) are a function of education (S), experience in the labour market (T), the number of years since they first migrated (YSM) and a number (n) of other personal characteristics such as gender and ethnicity (X). Following Mincer (1974) the earnings function assumed to be normal, hence this function is specified in equation 5-1:

Equation 5-1
$$\ln Y_i = \beta_1 S_i + \beta_2 T_i + \beta_3 YSM_i + \beta_n X_i + \varepsilon_i$$

In order to develop this function for use in estimating the social capital investment for migrants, the first step is to determine the dependent variable, which in this case will be a proxy of the form of social capital of interest (K_s). To examine this dependent variable, control variables are included which are deemed relevant as suggested by the literature in chapter 2. The strong positive link between human capital (S) and social capital (K_s) is a robust finding in the literature, and therefore requires inclusion. Age is also a strong positive predictor of social capital as well as other demographic indicators including gender, household composition and employment status, and these are all included in X . In addition, controlling for heterogeneity amongst New Zealand ethnicities is important (see chapter 3), and can be achieved using a number (z) of dummies for ethnicity membership that apply only to native born (nb_eth). Hence, for native born participants, the equation for both an individual's stock of social capital as well as investment follows the general form presented in equation 5-2:

Equation 5-2
$$Ks_i = \beta_1 S_i + \beta_n X_i + \beta_z nb_eth_i + \varepsilon_i$$

However, migrants have several specific characteristics which may also be related to social capital formation. One of these is birthplace which is included in both datasets. For migrants, individuals are placed into one of four categories indicating their region of birth. This allows for examination of cultural differences which may influence social capital stocks and formation. Alongside group membership variables for overseas birth region ($rob_{1...4}$), the number of years since migration (YSM) are also included as a measure of how much opportunity a migrant to New Zealand has had to accumulate social capital. Including these controls, the form for estimating social capital formation is shown in equation 5-3:

Equation 5-3
$$Ks_i = \beta_1^\alpha S_i + \beta_n^\alpha X_i + \beta_2 YSM_i + \beta_z^\alpha rob_i + \varepsilon_i$$

By pooling native born with migrants, differences between native born and migrants can be tested for. To estimate the pooled function, it is assumed that $\beta_1 = \beta_1^\alpha$ and $\beta_n = \beta_n^\alpha$, in addition, *forborn*, a dummy representing if the migrant was born overseas, can now be specified as $forborn = rob_1 + rob_2 + rob_3 + rob_4$. Importantly, the variable YSM is now interacted with *forborn* such that native born individuals equal 0 for YSM . In addition, YSM will be divided into categorical 5 year groupings (t) This function is defined in equation 5-4. The region of birth variables should now be interpreted as the effect of coming from a given rob and being overseas born migrant with YSM_t relative to being New Zealand European.

Equation 5-4
$$Ks_i = \beta_1 S_i + \beta_n X_i + \beta_z nb_eth_i + \beta_t (forborn * YSM_t)_i + \beta_z^\alpha rob_i + \varepsilon_i$$

Function 5-4 is the base model used to estimate both the stock of and investment in social capital. Each estimation uses regression techniques

particular to the form of the dependent variable. Bridging and bonding social capital are estimated using migrant sub-sample only, and therefore take the form from equation 5-3 with the addition of clustering indices (SI and LQ) for each region r as described later in this section.

The pooled sample is used to test for differences in stock and investment in social capital between migrant and non-migrant groups. However, to test for differences in the form of investment in social capital native-born will be excluded as the research question is no longer concerned with examining differences between different native and overseas born groups. Instead, this analysis investigates the factors which are related to different investment strategies, namely bridging or bonding social capital, which in chapter 2 are suggested to relate to different outcomes.

Both the bridging and bonding categories are the amalgamations of responses to ten separate questions on volunteering or participation. These activities were divided into either bridging or bonding categories with five activities in each as shown in Table 5-1. Individuals could therefore participate in a maximum of five activities for either category if they participated in all activities and a minimum of zero where they participated in none. This distribution is both ordinal and constrained. Both ordered probit and tobit regression technique could be deemed appropriate, with the ordered probit technique controlling for the ordinal distribution and the tobit technique controlling for the upper and lower constraints. For these estimations, the tobit technique was deemed the most appropriate as it controls for the upper and lower bounds on the values of each category. Other techniques such as ordered probit and standard ordinary least squares regression were tested and provided qualitatively similar results.

Table 5-1 Categorization of Bridging and Bonding.

BONDING	BRIDGING
Participating in politics	Participating in sport
Participating in school activities	Participating in hobbies
Participating in religious activities	Participating in community services
Volunteering to fundraise	Volunteering as a coach
Volunteering on a board	Volunteering in a charity

The literature reviewed in section 5.2 also suggests that the geographical distribution of migrants may have an impact on the form of social capital they choose to invest in. In particular, the clustering of migrants from the same birthplace between different New Zealand regions as well as the level of segregation within that region, have important implications for both outcomes and in the form of social capital the migrant chooses to invest in, be it bridging or bonding social capital.

This analysis will test for a relationship between the way migrants are dispersed and the form of social capital they invest in using two geographic indices. Both of these indices were created using the 2006 census administered by Statistics New Zealand with population data coded to the Territorial Authority and area unit level for each of the four overseas birth regions. At the time this data was collected, there were 74¹² Territorial Authorities within New Zealand¹³, representing administrative boundaries which are similar broadly similar to

¹² Chatham Islands Territory, a small island with a population of 650, was not sampled and is henceforth excluded.

¹³ Following the amalgamation of several Territorial Authorities in 2011, there are now 68 Territorial Authorities.

counties in the United States and United Kingdom geographical hierarchies (see Figure 5-2 and 5-3). Each Territorial Authority is comprised of area units, which are statistical units usually comprising of between 3,000 and 5,000 individuals but with several exceptions¹⁴. There are over 1900 defined area units for the 2006 census data however only mainland area units were used in this analysis.

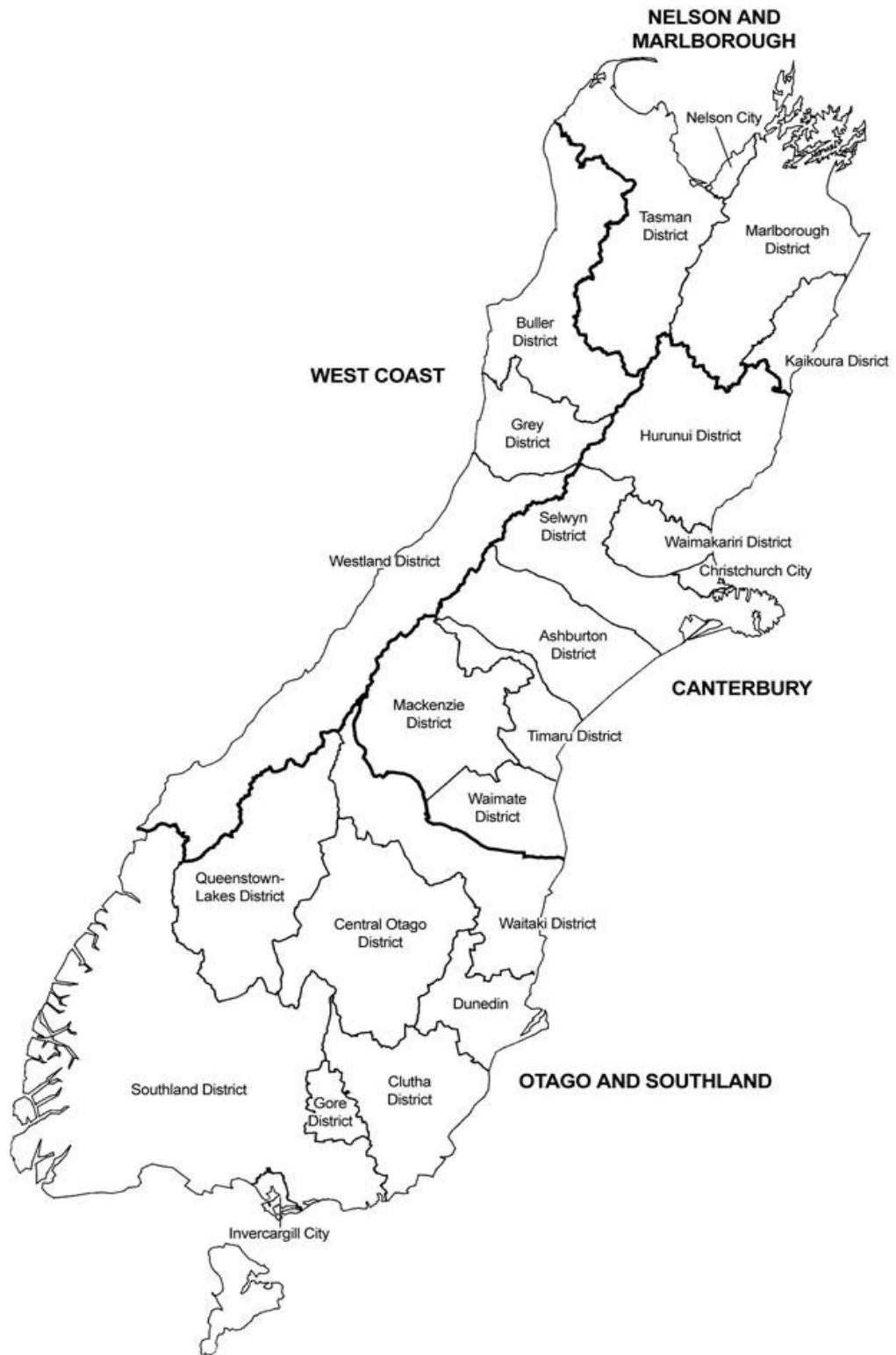
¹⁴ See http://www.stats.govt.nz/surveys_and_methods/methods/classifications-and-standards/classification-related-stats-standards/area-unit/classification-and-coding-process.aspx

Figure 5-2 New Zealand Territorial Authority Boundaries, North Island.



Source: Ministry for Primary Industries (2013).

5-3 New Zealand Territorial Authority Boundaries, South Island.



Source: Ministry for Primary Industries (2013).

The first index takes the form of a modified location quotient as shown in equation 5-4. Here the location quotient (LQ) is a measure of how clustered populations (P) from the same birthplace (g) are between Territorial Authorities (r) and New Zealand as a whole (n), by comparing the proportion in a region to the national average. This is achieved by dividing the Territorial Authorities population of migrants born from a particular region (P_{gr}) by the overall population of that migrant group in New Zealand (P_n). Taken away from this is regional population total (P_r) divided by the total New Zealand population (P_n).

Equation 5-4
$$LQ_{gr} = \left(\frac{P_{gr}}{P_{gn}} / \frac{P_r}{P_n} \right)$$

The result of this is that where the proportion of migrants from a particular group in a particular Territorial Authority is exactly equal to national proportion of migrants from that group in New Zealand, the corresponding LQ_{gr} for that region will equal 0. When the proportion in the Territorial Authority is greater than the national proportion, $LQ_{gr} > 0$, and if there are less than the expected amount of migrants from that group within the region given the regions share of the national population the $LQ_{gr} < 0$. The higher the value for the LQ_{gr} the greater the clustering of migrants within that Territorial Authority compared to other regions.

The second index created is a Duncan segregation index (SI) that refers to the birthplace segregation within each region. This is derived from work by Duncan and Duncan (1955) which examines how clustered migrants from each group are within a territorial authority (r) by examining the number in each area unit (a) within the Territorial Authority. The Duncan segregation index was created by first finding the population of a migrant group in an area unit (P_{ga}) and dividing this by the population of that group in the corresponding Territorial Authority for that area unit P_{gr} . Subtracted from this total is then the sum of the population in the area unit (P_a) minus P_{ga} defined earlier, divided by the regional

population (P_r) minus P_{gr} . The result for each area unit within a territorial authority is then summed and multiplied by 0.5 to achieve the Duncan segregation index for that territorial authority.

Equation 5-5

$$SI_{gr} = 0.5 \sum_{a=1}^A \left| \frac{P_{ga}}{P_{gr}} - \frac{(P_a - P_{ga})}{(P_r - P_{gr})} \right|$$

To interpret the SI for each Territorial Authority, if $SI=0$, there is no segregation or clustering of the migrant group within that region, with the migrants from that group being equally dispersed across the region. As SI approaches 1, migrants from that group become more clustered within the regions area units and if $SI=1$ then migrants are completely clustered in a single area unit within that Territorial Authority. The SI value can also be interpreted as the percentage of the migrant group population that would have to be relocated within that territorial authority in order to achieve the distribution of non-migrants from that group in each area unit.

The final equation for bridging and bonding social capital when including these two indices will therefore take the following form presented in equation 5-6 where investment in bridging or bonding social capital (KS) for individual i belonging to birth region group g and living in region r is determined by their years of schooling, individual demographic factors, region of birth, years since migration and the clustering of people born from the same group overseas as the individual between region of domicile and other New Zealand regions (LQ) as well as the clustering of migrants from the same birth group within the region of domicile for the migrant (SI). As the indices vary by region rather than by individual clustering by region will be conducted to correct the standard errors.

Equation 5-6

$$KS_{igr} = \beta_1 G_i + \beta_2 YSM_i + \beta_3 LQ_{gr} + \beta_4 SI_{gr} + \beta_5 S_i + \beta_n X_i + \varepsilon_{igr}$$

Given the findings in section 5.2, the hypothesis is that individuals from regions which have a greater LQ score for their migrant group will invest more in bonding over bridging social capital, as individuals from that region will have contact with a greater number of migrants from the same group, increasing the benefit of within group networks while decreasing the advantage of external networks. Also, individuals from regions with a higher SI score will also experience more bonding over bridging social capital due to the clustering of migrants into ethnic enclaves.

5.4. Data Overview and Descriptive Statistics

This study uses data from two separate unit record datasets collected in New Zealand, the 2008 New Zealand General Social Survey (NZGSS) and the New Zealand wave of the Adult Literacy and Life Skills Survey (ALL). The ALL survey was conducted between May 2006 and March 2007. The New Zealand component of the ALL survey collected data from an area based representative sample of 7,131 respondents aged between 16 and 65 via face to face interviewing, with a response rate of 64 percent. One eligible member from each randomly selected private household was chosen at random to partake in the interview. Validation procedures have been undertaken against official statistics to ensure the ALL survey is a true representation of the New Zealand population.

The ALL survey collected information at the individual level on demographics, education, immigration status, language skills, parental characteristics, labour force activities, literacy and numeracy practices, participation in education and learning, well-being, access to and use of information and communication technologies (ICT), health status, household characteristics and income. The survey also contains information on whether an individual is active in several types of social participation and volunteering which is used as a measure of investment in social capital. The ALL survey collects information on the year of migration which allows the number of years spent in

New Zealand to be computed. In addition to this individuals are able to report their ethnicity and first language learned. This information is used to derive area of birth which provides an exogenous and stable variable compared to ethnicity. The ALL survey also contains information on the area that individuals live in at the Territorial Authority level. This information is used to test the second stage of this analysis looking of the effect of clustering of migrants within the urban areas of these Territorial authorities.

In addition to the ALL, the NZGSS is also utilized as part of the first stage of analysis. The NZGSS was conducted by Statistics New Zealand in 2008. A total of 8,721 individuals were interviewed within households that were recruited as a representative and random sample of the New Zealand population. The survey used in the interviews has two components: one consists of questions relevant to the whole household, and the other is a personal questionnaire. There are 14 topics covered by the survey, including housing, health, human rights, knowledge, work and skills.

Alongside these two datasets, data regarding the regional and sub-regional demographics for New Zealand were obtained from the Statistics New Zealand 2006 Census of Populations and Dwellings. A full list of the variables obtained through these datasets using the framework specified earlier is presented in Table 5-2. After cleaning both datasets, 6,818 observations remained in the ALL dataset and 8,698 remained in the NZGSS dataset reflecting 95.6% and 99.7% of the original sample respectively. The age of respondents was then restricted to between 20 and 65 in order improve comparability between the two those datasets, leaving a sample of 6605 (92.6%) for the ALL and 6278 (72%) for the GSS. Breakdowns for the means and percentages of variables used in the multivariate analysis as well as a comparison to the New Zealand 2006 census findings (where available) are reported in Table 5-3 with definitions provided in Table 5-2.

Table 5-2 Definition of variables

Variable	Definition
Dependent var.	
participation	Equals 1 if the individual indicates they participate in any community activity, otherwise equal to 0.
volunteering	Equals 1 if the individual indicates they do any volunteering, otherwise equal to 0.
contact	Equals 1 if the individual indicates they feel they have sufficient interpersonal contact, otherwise equal to 0.
safe	Equals 1 if the individual indicates they feel safe in their local neighbourhood after dark, otherwise equal to 0.
inclusion	Equals 1 if the individual indicates they do not feel isolated from others, otherwise equal to 0.
bridging	Equals 1 if the individual indicates they participate or volunteer in an activity related to bridging social capital, otherwise equal to 0.
bonding	Equals 1 if the individual indicates they participate or volunteer in an activity related to bonding social capital, otherwise equal to 0.
Explanatory var.	
male	Gender of individual (0=female, 1=male)
children	Flag for dependent children living in household (0= no, 1=yes)
age	Age in years (20-65)
yos	Years of schooling completed by individual
employed	Flag for if the individual is employed (0=not employed, 1=employed)

Table 5-2 continued.

forborn	Equals 1 if individual was born overseas.
rob-western	Equals 1 if individual was born in Western country (e.g. Europe, Canada, USA, Australia), otherwise equal to 0.
rob-asia	Equals 1 if individual was born in Asia, otherwise equal to 0.
rob-pacific	Equals 1 if individual was born in the Pacific Islands, otherwise equal to 0.
rob-melaa	Equals 1 if individual was born in the Middle East, Latin America or Africa, otherwise equal to 0.
nzeuropean	Equals 1 if individual is New Zealand born and identifies as ethnically European/New Zealander, otherwise equal to 0.
nzmaori	Equals 1 if individual is New Zealand born and identifies as ethnically Māori, otherwise equal to 0.
nzpacific	Equals 1 if individual is New Zealand born and identifies as ethnically Pacifica, otherwise equal to 0.
nzother	Equals 1 if individual is New Zealand born and does not identify with other ethnic categories (includes Asian and MELAA ethnicities), otherwise equal to 0.
ysm0_4	Equals 1 if individual migrated to New Zealand between 0 and 4 years ago, otherwise equal to 0.
ysm5_9	Equals 1 if individual migrated to New Zealand between 5 and 9 years ago, otherwise equal to 0.
ysm10_14	Equals 1 if individual migrated to New Zealand between 10 and 14 years ago, otherwise equal to 0.
ysm15_19	Equals 1 if individual migrated to New Zealand between 15 and 19 years ago, otherwise equal to 0.
ysm20plus	Equals 1 if individual migrated to New Zealand 20 or more years ago, otherwise equal to 0.
LQ	Location Quotient of birthplace between Territorial Authorities.
SI	Segregation Index of birthplace within Territorial Authorities.

Five separate proxies for social capital were identified in the datasets, two were common to both the ALL and NZGSS which asked participants if they had participated or volunteered in several different community activities over the past twelve months in the case of the ALL or three months in the case of the NZGSS. These measures are used to proxy investment in social capital, as they represent the use of time and resources to engaging in social activities, either building (if the gains from investment is greater than the depreciation of social capital) or maintaining (if the gains are equal to or less than the depreciation of the stock of social capital) the individuals current stock of social capital.

Within the ALL, 70% of respondents indicated they participated and 57% volunteered in an activity in the last twelve months, while for the NZGSS 40% participated and 32% volunteered in the last three months. Rates were remarkably similar between New Zealand born and overseas born individuals. Due to the binary nature of these variables logit regression techniques are appropriate.

From the NZGSS three attitudinal variables were created which examine the individual's feelings of isolation, lack of contact and lack of safety within their local neighbourhood. These are related to the stock of social capital an individual has as individuals who feel like they are lacking interpersonal contact or feel unsafe in their local neighbourhood are unlikely to have a stock of social capital that is lower than desirable. Again these three variables are coded into binary form and logit methods are used for their analysis. 6% of the NZGSS sample indicated they had insufficient interpersonal contact, while 19% indicated they had occasional or more frequent feelings of isolation and 33% reported feeling unsafe in their local neighbourhood after dark.

The dependent variables used in the final stage of analysis include the division of the investment group of participation and volunteering from the ALL only into two categories which represent the different forms of investment in

social capital, either bridging or bonding. Table 5-1 presented in section three shows the breakdown of the different types of participation and volunteering into their respective categories. This breakdown is based on extensive use of existing literature and expert opinion¹⁵, with logic testing using examination of correlations¹⁶ and other mathematical indicators. These regressions are coded so that they form an index, with zero representing an individual who does not participate in any bonding or bridging activities while a five represents an individual who participates in all items in a category. This variable is tested using tobit methods to allow for constraints to the upper and lower bound of the index, being five and zero respectively. The mean value for both bridging and bonding is 1.16 activities in the last twelve months from each category. As a robustness check, regressions examining these dependent variables are repeated so that each variable moves from one category to the other, one at a time, creating a series of 10 regressions to see if moving any one makes a significant difference on another.

Those foreign born in both surveys are self-identified. Overseas born individuals are then allocated into one of four broad regions of birth; Western, Asia, the Pacific and MELAA. Due to the limited sample size, some of these regions are very large and hence include immigrants with potential language and culture differences. For example, among those from the Western region there would be native English speakers from Australia, the United Kingdom, the United States and Canada, plus Dutch, German or other European nationalities. There is information on native language, but this variable did not turn out to be significant as a separate factor after controlling for ethnicity and region of birth.

Across the cleaned and restricted dataset, 25% of the ALL sample and 23% of the NZGSS sample were born overseas, almost exactly the same as population

¹⁵ Including testing the division at several conference presentations and consultation with academics, supervisors and policy experts.

¹⁶ The only variables not significantly and positively related at the 0.001 level were participation in church activities and participation in sports activities.

proportion for those between 20 and 65 years old of 25% according to the 2006 census. Within this group, Western group migrants made up 13% of the ALL sample and 11% of the NZGSS sample, both similar to the population rate of 11%. Both samples had a slight under sample of Asian born migrants while the rates for MELAA and Pacific groups were both similar to the census rates. Both the ALL and NZGSS surveys are comparable in the length of time the migrants they have surveyed having resided in New Zealand, 41% having resided here for ten years or less in both surveys, around 50% for ten to twenty years and around 9% for twenty years or more.

Table 5-3 shows the descriptive statistics of the final variables reported in the regression equations. These statistics suggest that the combined and cleaned datasets are largely representative of the underlying general New Zealand population aged 20 to 65. Regarding gender, males were under represented in both the ALL and samples, as 49% of the New Zealand population aged between 20 and 65 are male compared to 43% in the ALL and 46% in the NZGSS sample. The age distribution was fairly consistent with the New Zealand mean ages with both the ALL and NZGSS being slightly greater, by 0.2 years to 41.7 for the ALL and 1.8 years to 43.3 for the GSS.

Those born overseas were almost identical to the native born in terms of age distribution for both samples. Living with children was consistent between surveys. Years of schooling is slightly lower on average in the NZGSS compared to the ALL survey, and this is carried over to the migrant sample. In both datasets migrants have a higher average number of years of schooling compared to New Zealand born by 0.8 of a year on average in both surveys. There are fewer employed sampled in the GSS, with 87% of the ALL survey employed compared to 80% of the NZGSS however both of these are above the number employed in the 2006 census (76%). Migrants were less likely to be employed by 2% in the ALL and 3% in the GSS. Various occupation and education variables are available,

but when jointly included in the models led to multicollinearity. Instead, the number of years of schooling was used to indicate education.

As discussed by several authors including Spellerberg (2001), it is important when considering social capital within the New Zealand context not to examine all New Zealand born individuals collectively as different native born groups may treat social capital differently depending on their culture, values and norms. In order to overcome this, all individuals born in New Zealand are assigned ethnicities based on their responses in the questionnaires. Ethnic categories are not mutually exclusive and individuals may belong to more than one.

Dealing with ethnicity is problematic in New Zealand following the introduction within many surveys of a new ethnic category, 'New Zealander', in addition to the traditional European and Māori and other ethnic groups. The prior is that this group should be combined with 'European' and 'Pakeha' which is a Māori term for people of European descent to form a single group, European. When comparing the ethnic distribution using this assumption, it appears that the datasets are more consistent with the comparable underlying New Zealand population.

Between samples, there are slight inconsistencies, with the NZGSS having a greater sample of NZ Europeans compared to the ALL (68% compared to 61%). In turn, the ALL is dominant in all other New Zealand born ethnic groups, particularly the NZ born other category which is below 1% for the NZGSS and 2% for the ALL. Both the NZGSS and ALL include rounded replicate weights to calculate confidence intervals for population characteristics. However, as this chapter tests for significance of differences in a multivariate regression context only using a subset of the overall datasets, the benefits of sampling weights are not certain (Winship and Radbill, 1994). Because of this, probability weights are not applied in these regressions.

Table 5-3 Descriptive Statistics

Variable	ALL Pooled	GSS Pooled	ALL NZ born	GSS NZ born	ALL Foreign born	GSS Foreign born	2006 NZ census
N	6,605	6,278	4949	4832	1,656	1,446	2,364,570
<i>Dependent var.</i>							
participation	70%	40%	70%	40%	72%	41%	na
volunteering	57%	32%	59%	32%	52%	31%	na
contact	na	94%	na	94%	na	93%	na
inclusion	na	81%	na	82%	na	77%	na
safe	na	67%	na	66%	na	70%	na
bridging	1.16	na	1.19	na	1.09	na	na
bonding	1.16	na	1.14	na	1.21	na	na
<i>Explanatory var.</i>							
male	43%	46%	42%	46%	44%	47%	49%
children	40%	41%	40%	40%	38%	43%	ukn
age	41.7	43.3	41.8	43.4	41.3	43.2	41.5
yos	13.5	12.7	13.2	12.4	14.3	13.5	ukn
employed	87%	80%	88%	81%	85%	77%	76%
forborn	25%	23%	0%	0%	100%	100%	25%
rob-western	13%	11%	na	na	50%	47%	11%
rob-asia	7%	6%	na	na	27%	26%	8%
rob-pacific	5%	3%	na	na	20%	15%	4%
rob-melaa	1%	3%	na	na	3%	2%	2%
nzeuropean	61%	68%	81%	88%	na	na	ukn
nzmaori	16%	12%	21%	16%	na	na	ukn
nzpacific	5%	2%	6%	3%	na	na	ukn
nzother	2%	<1%	3%	<1%	na	na	ukn
ysm0_4	4%	4%	na	na	17%	18%	ukn
ysm5_9	6%	5%	na	na	24%	23%	ukn
ysm10_14	3%	3%	na	na	12%	11%	ukn
ysm15_19	10%	9%	na	na	38%	40%	ukn
ysm20plus	2%	2%	na	na	9%	8%	ukn

Notes: na = not available, ukn = unknown.

5.5. Results

To examine the formation of social capital by migrants to New Zealand both stock and investment are analysed using logistic regression techniques to estimate the models presented earlier. Tobit regression techniques are then used to further analyse the formation of social capital by separating investment into bridging and bonding groups. Finally, a robustness check of the bridging and bonding categories is conducted.

5.5.1 Migrant - Non Migrant stocks of social capital.

Three separate proxies for the stock of social capital are estimated by means of logistic regression methods due to the binary nature of the dependant variables. The models are constructed using the framework specified in section three. Variables are described in Table 5-2 and Table 5-3. All variables are drawn from the NZGSS survey.

Each of these questions was estimated using a five-point likert scale question in the NZGSS survey. The results of these questions were condensed into binary form to improve balancing. Basic transformations were also conducted such that the direction of each variable is uniform, with 1 representing a positive outcome and 0 a negative outcome. Sense of contact is equal to one if the individual feels they are satisfied or very satisfied with the level of contact they have with other people, with a significant positive coefficient showing an increase in the likelihood an individual feels they have sufficient interpersonal contact and a significant negative coefficient showing a decrease in that likelihood, and therefore less likely to hold a greater stock of social capital. Sense of security is coded so that a value of zero represents a person who feels unsafe while a value of one is a person who feels safe. Isolation is coded such that a value of zero indicates feelings of isolation while a value of

one indicates that the individual feels included, and the variable is labelled as *inclusion*.

Each variable is tested using the model specified in equation 5-3. The regressions include all explanatory variables listed in the Table5-2 other than the two regional clustering variables LQ and SI as these could only be constructed using the ALL as the NZGSS does not provide spatial data at the Territorial Authority level. Full regression results are presented in Table 5-4 below.

5.5.2 Interpersonal Contact

The results for the logit regression of interpersonal contact can be seen in column (1) of Table 5-4. In comparison to New Zealand born, migrants are less likely to feel they have sufficient contact in the first five years of migration but this becomes insignificant beyond five years suggesting the migrants have built sufficient social capital linkages over this period to catch up to native born. New Zealand born individuals who identify as ethnically Pacifica or other are also significantly likely to report lacking interpersonal contact. Of the regions of birth, only being born in Asia has a significant effect compared to New Zealand born Europeans, and this group is significantly less likely to feel like they have sufficient contact with other people.

Of the other variables, both living with dependent children, employed and additional years of schooling provide significant positive coefficients, suggesting that it is statistically likely that individuals with dependent children at home or who have additional years of schooling will be more likely to feel they have sufficient interpersonal contact. There is no significant effect for gender or age.

Table 5-4 Results for Contact, Safety and Isolation.

EQ. VARIABLES	(1) Contact GSS-Logit	(2) Safe GSS-Logit	(3) Inclusion GSS-Logit
male	-0.032 (0.110)	1.615*** (0.065)	0.097 (0.067)
children	0.228** (0.113)	-0.002 (0.064)	0.028 (0.069)
age	-0.003 (0.004)	0.000 (0.003)	0.013*** (0.003)
yos	0.137*** (0.029)	0.071*** (0.014)	0.037** (0.015)
employed	0.669*** (0.118)	0.302*** (0.077)	0.576*** (0.077)
rob-western	-0.192 (0.212)	0.336*** (0.124)	-0.154 (0.131)
rob-asia	-0.697*** (0.265)	-0.573*** (0.181)	-0.367** (0.177)
rob-pacific	-0.438 (0.269)	-0.042 (0.201)	-0.144 (0.192)
rob-melaa	-0.275 (0.366)	0.008 (0.229)	-0.433** (0.208)
nzother	-2.016*** (0.521)	0.685 (0.761)	-0.539 (0.521)
nzpacific	-0.686** (0.291)	0.228 (0.204)	-0.075 (0.211)
nzmaori	-0.254 (0.158)	0.215** (0.097)	-0.220** (0.099)
ysm0_4	-0.728*** (0.269)	0.353* (0.205)	-0.407** (0.181)
ysm5_9	0.199 (0.310)	0.235 (0.186)	0.035 (0.184)
ysm10_14	0.129 (0.358)	0.157 (0.228)	-0.226 (0.210)
ysm15_19	0.531 (0.484)	0.438 (0.278)	0.116 (0.278)
Constant	0.738* (0.443)	-1.150*** (0.239)	0.016 (0.254)
Observations	6,257	5,844	6,250
r2_p	0.038	0.112	0.023

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.5.3 Sense of Safety in Community after dark.

Column (2) in Table 5-4 report the results for testing the model in equation 5-3 against the dependant variable measuring feelings of safety in their local neighbourhood after dark using a logistic regression. Migrants who were born in Asia are significantly less likely to feel safe and migrants from western countries are significantly more likely to feel safe compared to New Zealand born Europeans. Those born in the Pacific and MELAA were no different from native born Europeans. Interestingly, those who had migrated between zero and four years ago were significantly more likely to feel safe than those who had been in New Zealand for more than four years. This finding could suggest that migrants to New Zealand felt less safe in the country they previously lived in, and this may have acted as a push factor to migrate or lowered the cost of migration if it reflects low social capital ties to the community they migrated from.

Of the non-migrant specific variables, the human capital and work variables were significant and positive, with additional years of schooling and employed both increasing the likelihood an individual will report feeling safe. This may reflect the safer communities these groups were able to access due to the additional resources they possess. Of the other variables, males were significantly more likely to feel safe, as were New Zealand born individuals who identify as ethnically Māori.

5.5.4 Feelings of Inclusion

Feelings of inclusion are examined in column (3) of Table 5-4. Migrants in the first four years since their move to New Zealand are again the least likely to report feelings of inclusion, and again there is no significant difference beyond five years. This suggests that migrants are successful in forming sufficient social capital to feel included in New Zealand society within the first five years after migration., migrants who were born in Asia or the MELAA regions were

significantly less likely to report feelings of inclusion while those born in Western regions and the Pacific were not significantly different when compared to New Zealand born Europeans.

Here the results for the other characteristics suggest that older individuals are more likely to feel included, and again the human capital and work variables are significant and positive, with additional years of schooling and those who are employed more likely to report feeling included. Those who identify as ethnically Māori are the only group who have a significantly lower likelihood of reporting feelings of inclusion compared to native-born Europeans.

5.5.5 Comparison across Models

Comparing the models, only those born in Asia reported lower stocks than New Zealand born Europeans across all measures of social capital stocks, suggesting that migrants from Asia may face the greatest barriers to social capital formation into New Zealand, potential due to these migrants being 'salient' or identifiable, making them victims of discrimination. There may also be additional cultural, religious or linguistic barriers that these migrants face which are not true for other migrant groups. Those born in the Pacific region were no different in any measure than New Zealand Europeans while those born in Western countries were less likely to feel unsafe and those from the MELAA region more likely to feel isolated, though not lacking in contact.

All of these findings control for the number of years since migration, and in all models the only group where YSM was significant was the group who migrated between 0 and 4 years prior to the survey, suggesting that migrants successfully invest and build up a stock of local social capital over the first five years since migration. This group reported lower satisfaction with interpersonal contact and lower levels of inclusion.

The relationship between feelings of safety and years since migration is particularly interesting, with new migrants feeling more safe compared to native born Europeans over the first five years post migration, suggesting that migrants may come from comparatively unsafe countries, and become accustomed to New Zealand safety levels, or alternatively feeling unsafe or having low stocks of social capital in the previous country of residence may act as a push factor to encourage migration to New Zealand. There appear to be mixed results for demographic determinants, however years of schooling and being employed the two consistent predictors, suggesting that these two factors are particularly important in understanding the stocks of social capital.

5.5.6 Migrant - Non migrant differences in Investment in Social Capital.

Participation and volunteering activities an individual engages in are used as proxies for investment in social capital. Both the ALL and NZGSS surveys contain information on participation in community and group activities as well as volunteering. For ease of analysis, participation and volunteering for both surveys is collapsed into a binary variable where zero means that an individual does not participate/volunteer while one indicates the person has taken part in at least one of these activities. Logistic regression techniques are again used to model the binary outcomes and results for all four models are presented in Table 5-5.

Table 5-5 Results for Participation and Investment in Social Capital

VARIABLES	(4.A) Participation ALL-Logit	(5.A) Volunteering ALL-Logit	(4.B) Participation GSS-Logit	(5.B) Volunteering Logit
male	-0.030 (0.056)	-0.306*** (0.052)	-0.062 (0.054)	0.047 (0.057)
children	-0.081 (0.058)	-0.459*** (0.054)	0.109* (0.057)	0.471*** (0.061)
age	0.019*** (0.002)	0.017*** (0.002)	0.010*** (0.002)	0.026*** (0.003)
yos	0.152*** (0.011)	0.133*** (0.010)	0.166*** (0.012)	0.153*** (0.012)
employed	0.164** (0.083)	0.152* (0.078)	0.142** (0.068)	0.035 (0.073)
rob-western	-0.196* (0.109)	-0.159 (0.100)	-0.017 (0.104)	-0.154 (0.110)
rob-asia	-0.282* (0.162)	-0.608*** (0.152)	-0.336** (0.151)	-0.214 (0.164)
rob-pacific	0.785*** (0.158)	-0.052 (0.133)	0.259 (0.158)	0.320* (0.165)
rob-melaa	-0.039 (0.417)	-0.519 (0.363)	-0.081 (0.182)	-0.183 (0.199)
nzother	0.535** (0.216)	0.427** (0.187)	-0.226 (0.465)	-0.053 (0.499)
nzpacific	0.695*** (0.145)	0.408*** (0.127)	0.413** (0.177)	0.476*** (0.184)
nzmaori	0.192** (0.078)	0.326*** (0.074)	0.053 (0.084)	0.194** (0.088)
ysm0_4	-0.011 (0.177)	-0.368** (0.165)	-0.175 (0.161)	-0.299* (0.177)
ysm5_9	0.062 (0.162)	-0.129 (0.151)	-0.083 (0.154)	-0.247 (0.171)
ysm10_14	0.154 (0.202)	0.312* (0.182)	-0.118 (0.189)	-0.038 (0.198)
ysm15_19	0.465** (0.224)	0.335* (0.192)	0.076 (0.220)	0.237 (0.233)
Constant	-2.110*** (0.199)	-2.022*** (0.183)	-3.062*** (0.209)	-4.098*** (0.229)
Observations	6,605	6,605	6,257	6,254
r2_p	0.040	0.048	0.029	0.037

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The estimates from the ALL survey show some inconsistencies between participation and volunteering. Being male and having dependent children both decrease the likelihood an individual will volunteer while having no impact on the likelihood of participation in community activities. Age is a consistent positive predictor across both models as is years of schooling and being employed. Those who were born in New Zealand and identified as ethnically non-European all reported higher levels of both participation and volunteering. Migrants who were born in western countries or Asia reported significantly lower levels of participation while those born in Asia were also less likely to volunteer. Pacific born migrants were significantly more likely to participate in community activities but not more likely to volunteer.

Years since migration was pronounced in predicting volunteering with lower levels of volunteering relative to those who migrated more than twenty years ago for those in New Zealand less than five years, and those in New Zealand between ten and nineteen years having the greatest likelihood of investment. While the direction of the coefficients are similar for the participation model only those who have been in New Zealand fifteen to twenty years were significantly different with a greater likelihood of participation.

The NZGSS results were more consistent between participation and volunteering than the ALL results, with having dependent children, age and education all related to increased participation and volunteering. Employment was not significant for volunteering but was a positive predictor for participation. For the migrant birthplace dummies, being born in Asia significantly decreased the likelihood an individual would participate in community activities while being born in the Pacific increased the likelihood of volunteering. Years since migration had no significant impact on the likelihood of participating in the NZGSS but migrants were less likely to volunteer during their first five years in New Zealand.

Across the two surveys, age and education remain significant positive predictors of volunteering and participation, as does being a native born individual who identifies as having a Pacific ethnicity. Being employed and being a New Zealand born Māori both increase participation and volunteering in three of the four models. Of the migrant specific variables, being born in Asia resulted in lower levels of participation and volunteering in the ALL survey and lower participation in the NZGSS. There was also some evidence that those born in the Pacific region have higher levels of participation (ALL) and Volunteering (NZGSS).

There was a significant impact from years since migration in three of the four models, with participation using NZGSS data showing no effect. The other three models appear to show lower social capital investment in the first five years since migration and/or higher investment after fifteen years. It is interesting that over the first five years since migration, investment in social capital appears lowest while stocks of social capital rise to levels insignificantly different from New Zealand Europeans over this period. This may be due to the measures of social capital investment used in this study, being only a small subset of social capital investment methods, not capture the actual methods used by new migrants during the first five years of settlement.

5.5.7 Bridging and Bonding

In order to further understand the investment of social capital amongst migrants, it is important to examine the type of investment being undertaken. Bridging and bonding social capital are two forms of social capital investment which are discussed earlier in section two, where bridging relates to social capital investment that is between different groups while bonding social capital is investment which is within the groups. In order to distinguish between these two groups, individual items within the ALL survey for participation and volunteering are divided into categories where items within that group are likely to be

primarily bridging or bonding activities. A breakdown of the items in each group is presented in Table 5-1.

Firstly, Table 5-3 shows the differences between bridging and bonding between native born and overseas born individuals. The mean number of bridging items a migrant participates in is 1.08 while non migrants participate in 1.19 activities on average. In contrast, native born participate in an average of 1.13 bonding activities while migrants participate in an average of 1.21 activities. A two sided t-test suggests that both these differences are significant, with native born participating in more bridging activities, ($P < 0.01$) level, while migrants are more likely to participate in bonding activities than native born ($P < 0.05$). Full results are presented in Table 5-6.

Rather than using the pooled dataset, these estimations are conducted on the migrant only sample to allow for better interpretation of the impact of the two clustering variables on migrants only. Factors are selected using the model specified in equation 5-6 and the regression is conducted using tobit methodology to control for the truncation of observations at the lower and upper bounds, being zero and five respectively. The results of these regressions are presented in 5-7.

The results for the formation of bridging social capital examined using regression techniques are presented in column (1) of Table 5-7. Here the demographic controls are significant and positive for age and years of schooling only, while all other factors are insignificant. As this test is conducted on migrants only, the base region of birth is Western countries. In comparison to those born in Western countries, Migrants born in the Pacific reported the highest overall levels of bridging social capital investment, and were the only group significantly different from those born in Western countries. Bridging social capital investment is lowest for those who arrived in the first five years and highest for those who arrived between 15 and 19 years prior to the survey, with

migrants from a similar birth region are found in a labour market, migrants could use ethnic-specific networks to increased employment opportunities, and may also face lower discrimination by native-born or other migrant employers. This in turn would reduce the need for bridging social capital to improve employment opportunities.

Bonding social capital results are presented in column (2) of Table 5-7. Both being male and having dependent children at home results in an individual being less likely to invest in bonding social capital, while age and years of schooling are both significant and positive. Compared to western born individuals, those born in the Pacific are more likely to invest in bonding social capital while those born in Asia and MELAA regions are no different from western born individuals. Relative to those who have been in New Zealand twenty or more years, investment in bonding is lowest amongst those who arrived between zero and four years prior, with increasing investment in bonding social capital with additional years in New Zealand from five to nine years, rising again from ten to fourteen before peaking at fifteen to nineteen years.

Those who live in rural regions are more likely to engage in bonding activities than those in urban areas. In addition, migrants who live in regions where migrants from the same birth region are clustered together within that region are also significantly more likely to invest in bonding social capital. A potential explanation for these findings is that migrants who locate closer together are able to form within-group networks with lower transactions costs than dispersed groups. There may also be a selection effect where migrants who prefer bonding social capital locate closer together.

Table 5-7 Bridging, Bonding and Regional Clustering.

VARIABLES	(1) Bridging ALL-Tobit	(2) Bonding ALL-Tobit
male	0.051 (0.080)	-0.307*** (0.081)
children	-0.034 (0.102)	-0.327*** (0.126)
age	0.013*** (0.004)	0.025*** (0.003)
yos	0.114*** (0.017)	0.091*** (0.013)
employed	0.050 (0.099)	0.028 (0.069)
rob-asia	-0.182 (0.153)	-0.040 (0.146)
rob-pacific	0.408* (0.214)	0.888*** (0.188)
rob-melaa	-0.107 (0.236)	-0.580 (0.362)
ysm0_4	-0.312** (0.153)	-0.217** (0.106)
ysm5_9	-0.179 (0.118)	0.247* (0.136)
ysm10_14	0.024 (0.148)	0.383** (0.157)
ysm15_19	0.219* (0.131)	0.566*** (0.145)
rural	0.109 (0.204)	0.400** (0.165)
LQ	-2.385*** (0.480)	-0.788 (0.544)
SI	0.266 (0.777)	1.182** (0.571)
Sigma	1.737*** (0.051)	1.674*** (0.036)
Constant	-1.530*** (0.406)	-1.855*** (0.321)
Observations	1,656	1,656
r2_p	0.022	0.036

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Across the two models, it appears that those born in the Pacific invest strongly in both bridging and bonding social capital relative to other migrants. Age and years of schooling continue to be positive predictors of social capital investment in both forms for migrants. Lower levels of investment for both forms are found in the zero to four years since migration group however for bonding additional years beyond four in New Zealand increases the likelihood that they will engage in bonding activities relative to the twenty plus group. Bridging social capital appears to be discouraged in Territorial Authorities where there is a greater than average number of migrants of the same birth region as the individual while bonding is encouraged when migrants are clustered together within the Territorial Authority they reside in.

In order to test the robustness of these findings, additional estimations presented are conducted, with the results presented in Table 5-8. Each of these estimations takes either bridging or bonding social capital and adds a variable from the other group, for a total of six items in each estimation. These are tested again using tobit regression methods to control for truncation, with the upper limit raised to six to accommodate the extra activity in each category.

These findings show consistency within the bridging groups while the bonding group appears slightly less stable, particularly with the introduction of sporting activities into bonding as well as participation in community activities. Overall however it appears these findings, particularly in regards to the geographic clustering variables, remain relatively robust to moving a single variables between groups. This finding supports the use of the categories suggested in Table 5-1 and used in the regressions conducted in Table 5-7.

Table 5-8 Robustness testing of Bridging and Bonding overseas born only.

VARIABLES	(1.A) Bridging + Politics	(1.B) Bridging + School	(1.C) Bridging + Church	(1.D) Bridging + Board	(1.E) Bridging + Fundraising	(2.A) Bonding + Sports	(2.B) Bonding + Hobbies	(2.C) Bonding + Community	(2.D) Bonding + Coaching	(2.E) Bonding + Charity
male	0.101 (0.084)	-0.031 (0.086)	-0.032 (0.081)	0.049 (0.090)	-0.073 (0.082)	-0.065 (0.075)	-0.386*** (0.101)	-0.295*** (0.080)	-0.270*** (0.073)	-0.390*** (0.096)
children	0.003 (0.115)	-0.119 (0.106)	-0.121 (0.109)	-0.037 (0.126)	-0.178 (0.122)	-0.231** (0.111)	-0.271** (0.127)	-0.319** (0.145)	-0.398*** (0.139)	-0.378** (0.159)
age	0.013*** (0.005)	0.017*** (0.005)	0.021*** (0.004)	0.018*** (0.005)	0.013** (0.005)	0.017*** (0.004)	0.026*** (0.003)	0.029*** (0.003)	0.026*** (0.003)	0.030*** (0.004)
yos	0.118*** (0.017)	0.140*** (0.020)	0.108*** (0.013)	0.141*** (0.019)	0.129*** (0.021)	0.098*** (0.016)	0.120*** (0.013)	0.101*** (0.015)	0.122*** (0.015)	0.099*** (0.015)
employed	0.031 (0.100)	0.026 (0.101)	0.076 (0.099)	-0.009 (0.102)	0.076 (0.115)	0.122 (0.089)	0.011 (0.087)	0.045 (0.075)	0.035 (0.076)	-0.010 (0.081)
rob-asia	-0.187 (0.151)	-0.170 (0.175)	-0.011 (0.121)	-0.260 (0.181)	-0.261* (0.158)	-0.274* (0.157)	0.017 (0.143)	-0.050 (0.149)	-0.117 (0.155)	0.067 (0.170)
rob-pacific	0.476** (0.238)	0.588** (0.259)	0.850*** (0.151)	0.449* (0.246)	0.546*** (0.185)	0.706*** (0.177)	0.998*** (0.183)	0.904*** (0.190)	1.011*** (0.198)	1.048*** (0.199)
rob-melaa	-0.087 (0.246)	-0.159 (0.299)	-0.111 (0.253)	-0.262 (0.254)	-0.353 (0.263)	-0.561 (0.397)	-0.353 (0.298)	-0.609* (0.331)	-0.682 (0.430)	-0.547 (0.420)
ysm0_4	-0.326* (0.175)	-0.325** (0.149)	-0.145 (0.119)	-0.403** (0.174)	-0.487*** (0.180)	-0.241** (0.101)	-0.258** (0.128)	-0.226** (0.112)	-0.286** (0.140)	-0.252* (0.135)
ysm5_9	-0.181 (0.132)	-0.079 (0.121)	0.026 (0.115)	-0.193 (0.141)	-0.258* (0.147)	0.128 (0.143)	0.196 (0.151)	0.244* (0.139)	0.138 (0.163)	0.248 (0.164)
ysm10_14	-0.006 (0.169)	0.231 (0.206)	0.059 (0.143)	0.111 (0.194)	0.118 (0.174)	0.297 (0.192)	0.391** (0.163)	0.373** (0.172)	0.362** (0.179)	0.396** (0.192)
ysm15_19	0.226 (0.142)	0.342** (0.155)	0.361*** (0.124)	0.298* (0.158)	0.293 (0.183)	0.514*** (0.148)	0.551*** (0.158)	0.598*** (0.150)	0.613*** (0.167)	0.664*** (0.160)

Table 5-9 continued.

rural	0.162 (0.199)	0.194 (0.210)	0.016 (0.209)	0.246 (0.241)	0.217 (0.220)	0.413** (0.197)	0.367* (0.192)	0.374** (0.169)	0.351* (0.183)	0.426** (0.178)
lq	-2.386*** (0.515)	-2.829*** (0.581)	-1.179** (0.476)	-2.897*** (0.578)	-2.413*** (0.556)	-0.888 (0.541)	-1.209** (0.587)	-0.916 (0.570)	-1.332** (0.662)	-1.089* (0.607)
si	0.228 (0.834)	0.356 (0.942)	0.781 (0.555)	0.393 (0.922)	0.252 (0.725)	1.044* (0.587)	1.238** (0.544)	1.283** (0.620)	1.071* (0.632)	1.287** (0.611)
Sigma	1.801*** (0.061)	1.933*** (0.057)	1.741*** (0.038)	2.017*** (0.056)	1.975*** (0.057)	1.757*** (0.028)	1.866*** (0.045)	1.784*** (0.038)	1.914*** (0.040)	1.932*** (0.051)

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, n=169

5.6. Discussion and Conclusions

By applying regression techniques to two separate New Zealand unit record cross sectional datasets, the factors which influence both the stocks and investment in social capital by migrants to New Zealand have been estimated, and further examined the investment in social capital by separating out activities which primarily invest in bonding social capital from those which primarily invest in bridging social capital.

This study found that migrants from Asia hold the lowest stocks of social capital compared to migrants from other regions. Stocks of social capital are lowest for migrants in their new host country when they first migrate and this disadvantage appears to decrease over the first five years since migration. This is a plausible outcome and it appears that education and employment are the main predictors for migrant social capital stocks that are not directly attributed to their process of integration.

Other findings here include those born in the MELAA regions showing lower rates of inclusion than all other groups despite not being significantly different in the other models and those born in Western regions being the least likely to feel unsafe in the region they move to of all the birthplace and ethnic groups. Investment in social capital was less conclusive, with migrants from Asia appearing to have the lowest investment in social capital and migrants from the Pacific having the highest. There was mixed evidence of an effect from years since migration, with some evidence of integration from three of the four models through this mechanism. Age and education appear to be very strong positive predictors as does employment.

For the bridging and bonding estimates, the t-tests suggest that migrants are more likely to invest in bonding social capital than native born, while native born are more likely to invest in bridging social capital. This has implications in that if the goal of social capital formation for migrants is integration, the pathway they appear to choose is to integrate with others of the same migrant group as opposed to other groups, which may have negative externalities in terms of ethnic isolation and poor social cohesion. Those born in the Pacific invested strongly in both bridging and bonding social capital relative to other migrants. Years since migration appeared was only significant in the first five years for bridging social capital while bonding social capital showed clear evidence of increasing investment during integration with the highest investment after fifteen to nineteen years in New Zealand. Bridging social capital appears to be discouraged in Territorial Authorities where there is a greater than average number of migrants of the same birth region as the individual while bonding is encouraged when migrants are clustered together within the Territorial Authority they reside in.

These results have several implications for policy. Of the migrant groups, those born in both Western and MELAA regions appear to be very similar to New Zealand born Europeans in terms of the social capital stocks and investments while those born in Asia have lower levels of social capital and those born in the Pacific have higher levels. This means that policy interventions aimed at improving social capital outcomes for migrants should be targeted such that migrants from Asia are encouraged to invest in and build stocks in social capital while migrants from the Pacific should be targeted by programs aiming to teach individuals how to make the best use of their social networks to improve their personal and community outcomes.

The first five years of migration appear to be the most important for individuals building social capital stocks, while investment in social capital seems to reach a zenith after about fifteen to twenty years since migration, therefore

policies which encourage individuals to engage in social networking and building stocks of social capital within the first year or so of arrival to New Zealand is clearly of importance. For social policy interventions, the positive and significant coefficients on education and work variables suggest that encouraging adult education and ensuring employment for migrants also appears to have a significant impact on their social capital formation.

Finally, in terms of locating migrants there is some evidence to suggest that migrants who are in regions with a greater than average number of migrants from the same birth region face a lower incentive to invest in bridging social capital while migrants in rural areas and those where migrants are clustered together within the region are more likely to form bonding social capital. Depending on the policy goals, this may mean that additional effort needs to be placed in encouraging bridging social capital in clustered communities or areas where the proportion of similar migrants is particularly high.

Future work in this area would benefit from analysis using a panel dataset in order to understand further the deterministic pattern amongst the explanatory variables. To control for unobserved heterogeneity among individuals, additional information on the qualities of the neighbourhood and communities migrants move to may also be of value. It would also be particularly interesting to further develop and refine the bridging and bonding distinctions through the aid of qualitative research and interviewing to determine categories.

As always with cross sectional research amongst migrants there is no way of knowing what happened to unsuccessful migrants to New Zealand and whether they chose to on-migrate or return to their home country. It would be of clear value to policy to undertake further work examining the impact social capital investment and formation has on the success of migrants to determine whether it has a role in aiding us to retain migrants and in aiding their outcomes while they are here.

In addition while this study tested the formation of social capital in the host country only, it would be of interest to examine the impact of social capital formation in the country of origin, including the subsequent impact this has on social capital formation in the new host country, the impact of country of origin social capital on success in the host country and also whether social capital in the country of origin can be considered a compliment or substitute to host country social capital. Also, the nature of the externalities generated by either domestic or overseas social capital could be explored in this research.

CHAPTER 6

Social Capital and Regional Social Infrastructure Investment¹⁷

6.1. Introduction

Glaeser and Redlick (2009) argue that expenditures on social infrastructure may be important for relatively distressed regions to discourage out-migration and thereby encourage residents to invest in social capital. Yet, although there have been many attempts to understand the economic determinants and the economic impacts of social capital, there remain many aspects of the concept which are still poorly understood. This lack of understanding stems primarily from the intangible nature of social capital, which means that measurement relies on observable proxy variables and investigator interpretation.

As discussed in chapter 3, New Zealand provides a unique opportunity to examine the non-institutional regional effects on social capital formation. This opportunity stems from a combination of the characteristics of New Zealand. Firstly, New Zealand consistently ranks as one of the world's most open, cohesive and institutionally stable societies (McCann 2009; World Bank 2008); secondly, sub-national institutions and governance are largely homogenous at the policy level; finally, given its geographical isolation, it is unlikely that social capital is influenced by institutional spillovers from neighbouring countries. This means that New Zealand studies into regional-level variation on individual-level social capital can be conducted with reduced concern over the heterogeneity between regional institutions or governance.

¹⁷ This chapter is an extended version of Roskrugue et al. (2011).

In this chapter, the determinants of social capital within New Zealand is estimate by means of the national results of two waves of the World Values Survey (WVS) combined with data from Statistics New Zealand and a specially constructed dataset containing detailed information on local government expenditure. The major innovation in this chapter is the combination of two micro survey data on self-reported indicators of social capital with local government data on the types of social infrastructure expenditure which the literature suggest are likely to enhance social capital. Both probit and tobit models are then used to estimate the likelihood of participation in social capital-building activities, the range of activities people participate in and also the impacts of social infrastructure expenditure on this participation. This is the first time that such an empirical analysis has been undertaken of the relationship between individual social capital and regional social infrastructure investment.

The chapter is organized as follows. Section 6.2 discusses briefly what is currently known about the links between social capital and economic growth and development and also highlights the gaps in the present understanding of these issues. Section 6.3 presents the theoretical framework for analyzing the determinants of individual social capital. Proxies for social capital, interpersonal trust and community participation are outlined in detail, and these proxies for social capital are then related in a general framework to four areas that the literature suggests may determine individual social capital, namely: demographics, human capital, geography and local social infrastructure investment. Section 6.4 describes and summarizes the individual datasets compiled from a variety of sources, as well as the final combined dataset used for this analysis. The combined dataset enables the testing of a specification of four econometric models based on the theoretical framework discussed in section 6.3. Section 6.5 presents the results of the probit and tobit models of the likelihood and range of social participation. The models are examined to see if the factors which influence the overall level of participation differ from those that influence the extent to which people participate in a range of social

activities. Section 6.6 provides a detailed discussion and interpretation of the results and section 6.7 offers some conclusions.

6.2. The Determinants of Social Capital

Due to the underlying stock of social capital being both intangible and unobservable, researchers are forced to look for suitable alternative measures in order to estimate social capital stocks at various levels. The result has been the adoption of a wide range of proxy variables where a theoretical link exists between that variable and the underlying stock of social capital. In this analysis, two commonly used proxies for social capital in developed democratic societies will be used, namely interpersonal trust and community participation. Both interpersonal trust and community participation have become generally accepted in the international literature as valid indicators of the underlying stock of social capital. While their widespread adoption was initially due to their inclusion in the World Values Survey and the General Social Survey, researchers such as Zak and Knack (2001) have provided robust theoretical links which validate their use.

Based on the literature review in chapter 2, four significant groupings of determinants of social capital have been identified for inclusion in the theoretical model. They are: demographic variables, geography and location-specific variables, variables relating to human capital and measures of social infrastructure investment. Because this analysis considers social capital at an individual level, demographic aspects of the individuals should be controlled for as these are consistently shown to be related to social capital, specifically age, gender and ethnicity (Glaeser et al. 2002; Putnam 2000, van Emmerik 2006). With respect to ethnicity, there is currently no existing economic study on social capital in New Zealand which incorporates ethnicity as a factor. However, there are strong grounds for believing that the ethnic composition of New Zealand's population and in particular the cultural differences between the indigenous

Māori, the population of European origin, the population of various Asian origins, as well as the Pacific Island communities, may lead to ethnic distinctions in social beliefs and attitudes which could influence social capital formation (Spellerberg 2001; Williams and Robinson 2001).

Geography and location have also been identified as important considerations for social capital formation. In particular, several European studies have shown social capital formation in rural settings to be significantly different from that in urban areas, with more 'bonding' rather than 'bridging' social capital in evidence in the former. In the case of New Zealand, there is a geographical break between the North Island and the South Island. While the land mass of the South Island is larger than that of the North Island, it is both more sparsely populated, with only 24% of the New Zealand population, and also much more ethnically homogeneous, with 90% of the population primarily identifying themselves as being European in the 2006 census, as compared with only 71% in the relatively more urbanized and densely populated North Island (Statistics New Zealand 2006). These demographic and geographic differences may impact on social capital formation and will therefore need to be controlled for in the statistical analysis.

Human capital has been consistently found to be related to social capital (Huang et al. 2009; Glaeser et al. 2002; Helliwell and Putnam 2007), although the exact relationship is still the subject of much debate. Bowles and Gintis (2002) argue that social skills are a product of education and as such, social capital could be considered to be a sub-component of human capital. This is in contrast to the standard approach which treats social capital as being related to, but also separate from, human capital. As the connection between social capital and human capital is one of the most robust and consistent findings in the social capital literature, controls for individual human capital are included in the analysis.

While the role of geographic, demographic and human capital variables have been widely studied in the context of social capital formation, there are few publications examining the role of social infrastructure, with even fewer still examining the role that social infrastructure investment plays in the formation of social capital. Social infrastructure refers to the provision, both by the public and private sectors, of areas for actors to connect to others and develop the interpersonal linkages which are regarded as the essence of social capital. While private investment in social capital is difficult to measure, public investment can be inferred from regional and national accounts. Examples of social infrastructure in New Zealand include community facilities, leisure facilities, parks and other landscaped areas, and regional networks such as the Auckland Chamber of Commerce¹⁸ or the Christchurch City Community Boards¹⁹. By including public expenditure on social infrastructure in this analysis, the role that spending by local government has on social capital can be identified.

On the basis of the current social capital literature it can therefore be assumed that the self-reported indicators of social capital (K_{Si}) are determined by an individual i 's personal characteristics (C_i), geographic variables (G_i), human capital (K_{Hi}) and by the social infrastructure in individual i 's region (I_{ri}). As such, in very general terms the structure of the social capital model can be specified as: $K_{Si} = K(C_i, G_i, K_{Hi}, I_{ri}) + \epsilon_i$, with the functional form and the error term properties determined by the nature of the social capital proxies employed. This general model specification provides the framework for the selection of the variables from the micro datasets available from the dataset.

¹⁸ See <http://www.aucklandchamber.co.nz> for additional information.

¹⁹ See <http://www.ccc.govt.nz/thecouncil/communityboards/Index.aspx> for additional information.

6.3. Data and Methodology

The analysis uses pooled individual cross sectional data obtained from the World Values Survey (WVS)²⁰. The WVS organization is a not-for-profit international sociological organization which has conducted worldwide surveys since 1981 in five separate waves via a network of social scientists, with over eighty countries having now participated in at least one wave. These surveys focus on sociological and political variables, and the results for each country are made freely available via their website. The data are available at the individual level and include all items asked in the standardized survey, including individual values, attitudes, political opinions, trust, participation and demography. The WVS data is collected for New Zealand by Massey University, as part of the 1994-1999 waves (World Values Survey, 2006) and the 2005 List B data collection (World Values Survey, 2008). Observations pertaining to countries other than New Zealand were removed.

New Zealand has participated in two separate waves of the WVS, in 1998 and 2004. Both data collections were conducted by Massey University via postal surveys, with the sample drawn at random from New Zealand citizens aged between 18 and 90 registered on the New Zealand Electoral Roll. A summary of the sampling can be seen in Table 6-1. For both surveys there was an oversampling of citizens who identified as Māori, in both cases around double the proportion identified on the electoral roll. This was to correct for the often observed lower response rates in New Zealand of Māori compared to the general population.

The pooled dataset consisted of 2,155 observations. However, 128 observations were dropped when the sample is restricted to those people for whom a region or residence could be identified, resulting in a final pooled

²⁰ See <http://www.worldvaluessurvey.org/> for more information.

dataset of 2,027 individual observations, of which 1,129 were from the 1998 survey and 898 were from the 2004 survey.

Table 6-1 World Values Survey: New Zealand postal sampling outcomes

Year of Survey	1998	2004	Pooled
Total sent	2,024	1,979	4,003
Completed	1,201	954	2,155
Response rate	59.3%	48.2%	53.8%

In addition to the data made available through the WVS, data was also included from the 2001 New Zealand Census of Populations and Dwellings, as well as two independent data series created by Motu Economic and Public Policy Research, a Wellington-based research institute, namely the Local Authorities Finance Data series and the Regional and Unitary Authorities Finance Data series. These latter two series provide detailed breakdowns of annual local government spending at two regional levels within New Zealand, namely Regional Councils (RC's) and Territorial Authorities (TA's), from 1991 to 2008. The WVS data are coded to Regional Council level, the largest level of local governance in New Zealand. Local government in New Zealand comprises 16 regional councils and 69 separate territorial authorities. As both RC's and TA's fund social infrastructure development over the same areas, the Statistics New Zealand 2001 Census of Populations and Dwellings is used to allocate TA expenditures to RC's by population, creating total expenditure within the RC by all constituent local authorities. Two of the smaller RC's are aggregated to create 15 regions.

Prior to 2001, local governments in New Zealand were not required to provide standardized accounts of their expenditure. Hence the Motu datasets have had to be constructed from a range of reports, including three separate tables made available by Statistics New Zealand, and large portions of the data

were collected via requests directly to the authorities concerned. Both the RC and TA data contain series which show the levels of expenditure on “Parks and Community Facilities and Services”. This reported spending is primarily in areas which encourage or facilitate community or social interaction, such as community halls, libraries, parks and reserves. It also includes spending on activities which encourage volunteerism and community interaction, such as supporting volunteer civil defence or rural fire services. There is however a small amount of noise in the data, where spending is directed at servicing the community in ways which do not directly encourage community interaction, such as support in promoting local businesses, hazard mitigation and some non-commercial maritime safety expenses. This is not expected to impact on the results. Robustness was tested by removing the relatively noisier RC spending and running the regressions using the TA spending only. The results are highly consistent with the combined results, reinforcing these expectations. The data vary significantly year on year within councils, primarily due to variability of funding one-off large investments. In order to smooth the series, the average annual expenditure by each RC over the six year period leading up to the survey is used, so 1993-1998 for the 1998 WVS observations and 1999-2004 for the 2004 observations. As by far the majority of the spending by councils in this series is related to either encouraging or facilitating community interaction or volunteerism, it is reasonable to expect that this spending will directly encourage social capital accumulation within the region.

The definitions of all variables used in this chapter are given in Table 6-2. Along with the three dependent variables used as proxies of social capital, there are twenty explanatory variables relating to demography, human capital, geography and social infrastructure.

Table 6-2 Definition of variables

Variable label	Definition	Mean
Dependant		
Trust	0= 'cannot be too careful' 1= 'most people can be trusted'	0.501
Participation	index of activities individuals are actively participating in	1.521
Yes_part	0= not an active participant in any social activity, 1= active in at least one social activity	0.710
Explanatory		
Male	0= female, 1= male	0.452
Couple	0= single, 1= married or living in the nature of a marriage	0.696
Children	number of dependent children in household	2.073
Age	age in years	48.1
NZ/euro*	1= ethnicity primarily identified as European or Pakeha, Otherwise =0.	0.896
Māori	1= ethnicity primarily identified as Māori, Otherwise =0.	0.072
Pacific	1= ethnicity primarily identified as Pacific Islander, Otherwise =0.	0.016
Asian	1= ethnicity primarily identified as Asian, Otherwise =0.	0.016
Foreign	0= NZ born, 1= Born overseas	0.176
Postsec	1= Received post secondary education, Otherwise =0.	0.631
High_occu	1= Occupation involves high autonomy, responsibility or human capital, Otherwise =0.	0.385
Med_occu*	1= Occupation involves moderate autonomy, responsibility or human capital, Otherwise =0.	0.343
Low_occu	1= Occupation involves low autonomy, responsibility or human capital, Otherwise =0.	0.215
Income	Household income, in 2004 New Zealand dollars.	57,509
South	0= primary residence in North Island, 1= primary residence in South Island	0.268
Rural	1= primary residence in location with a population lower than 10,000, Otherwise =0.	0.385
Provincial*	1= primary residence in location with a population between 10,001 and 99,999, Otherwise =0.	0.343
Urban	1= primary residence in location with a population greater than 100,000, Otherwise =0.	0.372
RCpop	Population of Regional Council in the year survey was conducted	529,141
PCSI	Annual local government per capita spending on community facilities, operations and management, in 2004 New Zealand dollars.	288.24

Notes: *indicates baseline variables

The dependent variables 'Trust' and 'Participation' are both drawn from the World Values Survey. The Trust variable is binary and equal to one where the respondent answered affirmatively to the question "In general, can most people be trusted?". The World Values Survey also asked participants to indicate whether they considered themselves to be active, inactive or non-members of community organizations. The participation index used in this analysis was created using a series of nine questions asking participants if they were an active member, an inactive member, or not a member of nine separate types of community organization. There were eight named forms of organisation (religious, sport or recreational, arts, environmental, union, political, professional, charity) with the ninth being 'any other'. This measure used only participants who indicated that they were 'active' members as inactive membership is unlikely to indicate social networking. The number of times a participant indicated they were an active member of an organization is summed, resulting in a variable which ranged from zero where an individual indicated they did not participate in any community organizations to nine where a participant was actively involved in all organizational types polled in the survey. The truncation of this data makes a tobit regression appropriate as discussed in chapter 5.

The combined and cleaned dataset was largely representative of the underlying general New Zealand population; however males and people between 18 and 34 were slightly under represented. Measuring ethnicity is problematic in New Zealand following the introduction of a new ethnic category, 'New Zealander' in surveys, in addition to the traditional European and Māori ethnic groups. In this sample, 49% of participants indicated that their ethnicity was 'New Zealander', providing very little information on the actual ethnicity of the individual and being more likely an indicator of an individual's sense of nationhood or beliefs. The WVS did not offer participants the option of selecting an 'other' category, and this may have inflated the 'New Zealander' category as well. There was also an under-sampling of both Māori and Pacific Island participants. Geographically the survey participants are generally distributed in

line with the general population, but Auckland – New Zealand’s primate city containing over one quarter of the country’s population – was slightly underrepresented.

Participants who indicated they were foreign born comprised 17.6% of the sample. This is slightly lower than the total percentage foreign born in New Zealand which was approximately 21% at the time of the second survey. In comparing the proxy variables for social capital for foreign and New Zealand born participants, there is very little difference: 49% of foreign born participants indicated that most people could be trusted, which is almost identical to the 50% of New Zealand born participants who indicated that most people could be trusted. Foreign born participants were slightly less likely to participate in community activities, with foreign born participants being on average active in 1.44 organizations compared to a mean of 1.54 for New Zealand born. Foreign born participants were more likely to be an active member in a religious organization (29% compared to 16% of New Zealand born) while they were less likely to be active in sports or recreational organizations (27% compared with 40% New Zealand Born) or actively involved in a labour union (3.4% compared with 6.8% New Zealand born).

The analysis in this chapter is broken into three separate stages. The first is a probit regression on levels of interpersonal trust; the second is a tobit regression on the index of participation in community groups. Thirdly, the participation variable is deconstructed into the decision to participate, and the range of social activities that individuals engage in among those individuals who do participate in such activities. These variables are then tested using the full model specification with probit and tobit regressions, respectively.

With the probit regression using ‘Trust’ as the dependent variable, and the tobit regression using ‘Participation’ as a dependent variable, a standardized model is then used with a fixed set of explanatory variables chosen based on the

discussion in section 3, with consideration of the available data introduced in section 4. The variables are all described in Table 6-2, and are all related to one of the four categories specified in the framework: geographical, demographic, human capital or social infrastructure.

6.4. Models and Results

The results for the probit regression of Trust are shown as Model 1 of Table 6-3. Standard errors for all the regressions are calculated after clustering on regions for each year. This is necessary because the social infrastructure variable is measured at the regional rather than the respondent level for each of the two years.

Of the demographic variables related to trust, there is no evidence of a gender effect in the levels of trust, or an effect of marital status or the presence of children. However, log age is found to be positive and significant. This reconfirms a common finding in the international literature that reported levels of trust are higher among older people. In terms of the three dummy variables for ethnicity which represent non-dominant groups in New Zealand (the omitted variable being the dominant European or New Zealander ethnicities), the results show that identifying as Māori or Pacific Islander has a negative impact on reported trust, while there is no significant difference between the European and the Asian populations. Moreover, the dummy variable representing migrants (foreign born) is also statistically insignificant.

Table 6-3. Results for 'Trust' and 'Participation'

VARIABLES	(1) Trust Probit (n=1,971)	(2) Participation Tobit (n= 1,971)
Male	0.008 (0.061)	-0.065 (0.090)
Couple	-0.079 (0.069)	-0.255** (0.103)
Children	0.007 (0.021)	0.127*** (0.032)
Log Age	0.476*** (0.099)	0.505*** (0.147)
Māori	-0.263** (0.116)	0.565*** (0.169)
Asian	0.061 (0.238)	0.421 (0.361)
Pacific	-0.498* (0.257)	1.421*** (0.352)
Foreign	-0.007 (0.085)	-0.349*** (0.128)
Postsec	0.195*** (0.069)	0.687*** (0.103)
High_occu	0.291*** (0.070)	0.624*** (0.104)
Low_occu	0.035 (0.080)	-0.389*** (0.122)
Log income	0.223*** (0.050)	0.089 (0.074)
South	0.162** (0.071)	-0.008 (0.105)
Rural	0.141* (0.074)	0.184* (0.110)
Urban	0.132 (0.083)	0.004 (0.123)
Log RCpop	-0.012 (0.045)	0.017 (0.068)
Log PCSI	0.146 (0.134)	-0.212 (0.200)
Constant	-5.184*** (0.970)	-1.432 (1.436)
Sigma		1.824*** (0.037)
Pseudo R ²	0.047	0.031

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; the statistic Sigma is equivalent to the standard error of the estimate in OLS regression.

Among the human capital variables, postsecondary education and higher level occupations are both significantly and positively related to trust at the 1% level, as is the log of household income. These findings are consistent with international findings such as those of Helliwell and Putnam (2007) and in the meta-analysis of Huang et al. (2009). With respect to geography, there is evidence that both the South Island and rural areas in general experience greater levels of trust, which supports the findings of Morrison (2011) who found negative density effects and strengthening impact of social capital in determining subjective wellbeing in more southerly regions of New Zealand. Finally, the regression results show that the coefficient on the social infrastructure expenditure variable is positive, but is not statistically significant at the 10% level.

Model 2 presented in Table 6-3 reports the results for determinants of the participation index. The participation index is truncated both at zero, where the individual participates in no community activities, and at nine, where the individual participates in all nine activities listed in the WVS questionnaire. Due to this double truncation, the data were analyzed by means of a tobit regression. In this model, gender is again insignificant, but being a couple (rather than a single person) is found to be negatively related to social participation at the 1% level. In other words, single persons are more likely to participate in community activities than couples. However, when couples have children, participation increases again as parents become more actively involved in community activities connected to their children; the number of dependent children in the household is significant at the 1% level. The significance of age in the participation model is consistent with the results for the trust equation.

With respect to ethnicity there is a contrast between its impact on trust and participation: the Māori and Pacific communities reported lower levels of trust but higher levels of participation in community activities. The coefficient of the Asian ethnic group is once again not statistically significant at conventional levels. Being foreign born has a significantly negative impact on participation in

community activities, which are of course likely to be often culturally aligned with the host European and Māori communities. In terms of the human capital variables, again post-secondary education and a high level occupation are positive and significant, while having a low level occupation is now also significant, with a negative coefficient. Hence, besides a positive effect of a high level of education on participation in community activities, the results show that people with high autonomy and responsibility in their jobs are more likely to participate (and perhaps provide leadership roles) in community activities. Interestingly, participation does not have statistically significant income elasticity. Geographic factors have only a minor impact on participation (via a positive rural effect) while per capita public spending on social infrastructure has no apparent influence on participation in community activities.

However, the equation may hide a selection mechanism in which there is a two-stage process operating: there are factors which influence the decision to participate in community activities or not (a binary variable) and then, conditional on positive participation, there are factors that influence the diversity of participation, i.e. the numbers of different types of community activities a person engages in. Hence, the social participation index was re-examined to see whether the decision to participate is different from the diversity of participation for those who do participate. In order to investigate this, the index is split into two dependent variables. The first variable, a binary variable 'yespart', indicates whether an individual is a participant in a community activity, while the second variable is the number of different community activities for those individuals who actually do participate in at least one activity. The variable 'yespart' was analyzed using a probit regression, while the truncated 'participation' variable was estimated using a tobit regression with a lower bound of 1 and an upper bound of 9. For comparison, and to avoid omitted variable bias, in each case the model is the same as that specified for the two earlier regressions. Table 6-4 presents the results of these participation regressions.

Model 3 presents the results of the probit regression model which tests for the influencing factors on the decision to participate in social activities and networks. For the demographic, human capital and geography variables, the results are very similar to those of equation 6-2, in terms of sign, magnitude and statistical significance of the coefficients. The most interesting result is an inverse relationship between participation in community activities and the *per capita* spending on social infrastructure. In principle, there is no joint endogeneity problem as current participation in community activities is explained by past social infrastructure spending. However, if there is temporal persistence in the spatial distribution of social capital, it is likely that local and regional governments have increased social infrastructure expenditure in those communities where the participation in community activities was low. If so, this would be consistent with the negative coefficient in the pooled micro data. Unfortunately the number of regions (15) is insufficient to estimate a two-period regional-level panel model that could provide insight in the impact of an increase in regional social infrastructure expenditure on participation in community activities.

Model 4 presents the results of the tobit regression model which tests for the factors influencing the diversity of participation in community activities among those who participate in such activities. The statistic Sigma is equivalent to the standard error of the estimate in OLS regression, and as it is significant suggests a reduction in the standard deviation of the amount of participation. These results now show a significant gender effect, with males having a lower diversity of participation. While marital status is insignificant, the diversity of participation in community activities increases with the number of children, as one would expect. However, age is not significant. All of the minority ethnicities included in the model show a significantly greater diversity of participation than European-origin New Zealanders, but this is only the case for those who are New Zealand born, because the foreign born not only have a lower prevalence of participation in community activities but also engage in a lower range of

activities. The human capital variables show that increasing human capital is related to increased diversity of participation and income is again insignificant. With respect to the geographical variables, regional population size has a significantly negative effect on diversity of participation at the 10% level. This is highly plausible because in regions with smaller populations the range of social activities may be limited, since the set-up costs of particular types of social infrastructure may be high and regions with small populations may not have reached the thresholds at which set-up costs for such activities can be recovered through private or public contributions. This interpretation is reinforced by the observation that the regional per capita expenditure on social infrastructure is now positively and significantly related (at the 1% level) to an individual's range of participation in community activities. The greater social infrastructure expenditure per capita may facilitate a larger range of activities being available.

Table 6-4. Decomposed participation results.

VARIABLES	(3) Yespart Probit (n=1,971)	(4) Participation (where >1) Tobit (n=1,399)
Male	0.015 (0.064)	-0.259** (0.114)
Couple	-0.229*** (0.074)	-0.052 (0.130)
Children	0.057** (0.023)	0.147*** (0.039)
Log Age	0.318*** (0.104)	0.193 (0.188)
Māori	0.298** (0.130)	0.455** (0.203)
Asian	0.106 (0.246)	0.785* (0.461)
Pacific	1.221*** (0.365)	0.850** (0.397)
Foreign	-0.160* (0.091)	-0.295* (0.163)
Postsec	0.365*** (0.073)	0.557*** (0.133)
High_occu	0.317*** (0.076)	0.557*** (0.130)
Low_occu	-0.206** (0.082)	-0.362** (0.165)
Log income	0.074 (0.053)	0.072 (0.095)
South	0.067 (0.076)	-0.158 (0.133)
Rural	0.145* (0.079)	0.118 (0.139)
Urban	0.044 (0.087)	-0.055 (0.158)
Log RCpop	0.043 (0.048)	-0.144* (0.086)
Log PCSI	-0.437*** (0.139)	0.694*** (0.255)
Constant	0.136 (1.026)	-2.683 (1.800)
Sigma		1.881*** (0.051)
Pseudo R ²	0.056	0.027

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;

6.5. Discussion

Taken together these four models suggest that the demographic, human capital and geographical factors all have subtle relationships with social capital formation that are in line with the discussion had in chapter 2. For example, in terms of household composition, there appears to be little evidence of a gender effect, a surprising result given much of the literature, whereas an additional child increases the likelihood of both participating and the range of social activities to participate in, as expected. However, women participate in a wider range of social activities than men. These results suggest that the gender effect widely discussed in the literature is more subtle than is often implied (Bureau of Transport and Regional Economics, 2005), and point to something of a selection process operating. Similarly, the effect of belonging to an ethnic minority such as Māori or Pacific Island groups is not straightforward, in that this increases the likelihood of participation and the variety of social activities, while at the same time lowering trust. Being of foreign birth is significantly negative in both measures and may reflect difficulties in assimilation among immigrants found in chapter 5 or participation in informal migrant networks, rather than clubs etc. Finally, as expected from the findings of other research, higher levels of human capital are found to be consistently and positively related to both trust and participation. As a whole, therefore, while the results for the relationships between demographic and human capital characteristics and social capital are consistent with much of the literature, they suggest that these relationships are more subtle and complex than much of the literature implies.

Similarly, in terms of spatial aspects, living in the sparsely populated South Island and also in rural areas in general increases levels of trust, while social participation appears less directly related to geography, although participation in social capital forming activities is somewhat more prevalent in a rural environment. Moreover, the range of social activities people participate in is inversely related with the scale of population. As such, the findings are broadly

consistent with the literature (Bureau of Transport and Regional Economics, 2005), but again imply more subtle roles of the commonly suggested determinants.

Finally, in terms of public policy, expenditure on regional social infrastructure itself plays no significant role in predicting trust at the broadest level or in predicting an individual's participation in community activities in general. However, when the participation index is deconstructed this reveals more complex interactions. Expenditure on social infrastructure is now found to increase the range of social activities among those who do participate, whereas the decision to participate is itself negatively correlated with the level of social infrastructure expenditure.

There are two possible explanations for these observations. One possibility is that the direction of causality is reversed, as alluded to in the previous section. Under this scenario, local governments in areas with low community participation may attempt to increase participation by raising social infrastructure levels, generating the negative association between participation and infrastructure expenditure in the first stage regression. However, in doing so, these councils raise the opportunities for participation in additional forms of community organization, and this is reflected in the significant positive relationship in the second stage regressions.

The second possible explanation is that as social capital is in part a public good, there is the potential for free riding or social loafing. Under this scenario, increasing social infrastructure expenditure increases the range and intensity of participation for those already participating, suggesting that increasing spending on social infrastructure increases the benefits of participation such as social capital accumulation. If however social capital is a public good, then individuals who were already barely participating now have even less incentive to participate, as they can free-ride off those in their social networks who have

higher social capital as a result of the improved returns to their individual participation. This then may result in marginal individuals substituting their time away from participation towards alternate uses for their time. Therefore by increasing public funding of social infrastructure, the incentive to privately invest time in social capital forming activities may actually fall. These types of perverse outcomes are not uncommon where the provision of public goods is concerned. With the data at hand it is not possible to distinguish between these two explanations. Nevertheless, this observational equivalence problem again underlines the fact that the relationships between social capital formation and social infrastructure investment are very subtle and complex, as is also the case with the relationships between social capital, demographic, human capital and geographic characteristics. The implications of these findings for public policy in general, and the promotion of 'third sector' institutions in particular (Kendall 2009), therefore needs further careful consideration.

6.6. Conclusions

The analysis in this chapter has two major novel features to it. Firstly, it is undertaken in a country with very high levels of social capital, a high quality institutional context, which can also be considered as one of the most self-contained national case studies possible, given its geography and isolation. This allows the ruling out the effects of many external influences which will complicate the analyses in other cases. The second novelty of this chapter lies in the unique combination of individual level social capital data allied with local public expenditure on social infrastructure. These data allow the uncovering of some of the complex and subtle interactions which exist between social capital, demographic, human capital, geographical and public policy features.

The results imply that there is clearly something of a positive relationship between social capital and local public expenditure on infrastructure related to social capital formation. However, as with all relationships between individual

behaviour, social behaviour and the provision and formation of intangible public goods, the actual mechanisms are likely to involve complex free rider and selection issues, which are rather more subtle than much of the social capital literature currently suggests.

The findings of this study could be further enhanced through the testing of the impact of one-off social infrastructure investments either through public funding such as building a new sports venue or community hall, or through the private construction of social infrastructure such as a bowling alley or members-only clubrooms. Using a natural experiment design, the impact on the changes in proxies for social capital could be tested both before and after the investment.

CHAPTER 7

Summary, Discussion and Conclusions

7.1. Summary

This thesis has examined the formation of social capital in New Zealand. The concept of social capital has been explored in detail (chapter 2) and provided a New Zealand context (chapter 3). The empirical research has focused on location-specific investments, namely local government investment in individual homeownership (chapter 4), migrant settlement (chapter 5) and social infrastructure (chapter 6). This has been conducted using a range datasets and econometric techniques, and has resulted in findings which provide insights into social capital formation for each specific research question and more generally by considering the findings across the three empirical chapters. This research has added to the understanding of social capital formation in New Zealand in several ways.

Firstly, it provides original research into the international body of evidence regarding the formation of social capital, and the role of the location-specific investments of homeownership, migrant settlement and social infrastructure. Secondly, this international understanding is applied to the New Zealand context: the first attempt to do so since Spellerberg (2001), over a decade prior to this research, and the first to use econometric methodology to test for the theoretical relationships. The testing within the New Zealand context is important as international results may differ significantly from those of New Zealand's unique socio-economic context.

This final chapter will discuss some of the findings across the three empirical chapters, thereby reiterating the conclusions of each and discussing their interrelationships. This chapter will also draw conclusions from the findings

related to demography and social economic status where variables involving these factors were used as estimators of social capital across the empirical chapters. Implications of these conclusions will also be discussed, with suggestions for their ramifications to policy included. Finally, additional avenues for research into social capital suitable both for exploration in New Zealand and using international datasets will be suggested.

7.2. Discussion

Chapter four examined the relationship between homeownership and social capital formation. Along with providing new evidence for the role of homeownership in social capital formation in New Zealand and adding to the international literature on the topic, the chapter introduced two new innovations to the understanding of social capital formation using two waves of the New Zealand QoL survey.

The first of these was the use of trust as both a dependent variable, as is common within the literature on social capital, and also as an explanatory variable, controlling for potential bias introduced by unobservable attributes of the individual such as innate propensity to trust others as a result of early life or traumatic experiences. The second innovation is the use of propensity score matching techniques to create a quasi-experimental setting to further estimate the impacts of homeownership on social capital formation. This is the first time this technique has been applied to the estimation of social capital and attempts to lessen the problems commonly encountered, namely the lack of an equivalent control group.

The main finding of this chapter is that homeowners appear to be more likely to feel a sense of community, and trust in others. They also participate more in community activities than observationally equivalent renters. Further, the a central finding of this chapter is that homeowners have a more strongly

negative attitude towards their local council than other groups, suggesting that homeownership encourages participation and critique in the local political process. This is the first time that this observation has been confirmed by econometric modelling.

Chapter five investigated the factors influencing social capital formation amongst migrants using two separate datasets, the ALL and NZGSS. This chapter investigated social capital formation using three separate aspects of social capital: stock, investment and bridging compared with bonding social capital. This chapter is of particular relevance to New Zealand given the high number of migrants and the policy goal of assisting integration of these migrants into New Zealand to achieve the best possible outcomes for both migrants and native born individuals.

As well as providing the first analysis of migrant social capital formation within the New Zealand context, this chapter also contributes to the international understanding of the topic, both through providing focused research on social capital formation by migrants, an area with only a handful of papers internationally, and through the division of social capital formation into stocks, investment and bridging and bonding categories, which has not previously been done within the context of migrant settlement. The results of this chapter suggest that migrants build their stocks and invest in social capital successfully over the first five years since migration. However, there are differences between migrant groups. The observation that migrants are more likely to invest in bonding social capital rather than bridging is a first and important finding given the potential negative externalities associated with bonding social capital. In addition, bridging social capital is observed to be lower in regions where migrants are over-represented.

The analysis in chapter six has two major novel features to it. Firstly, it is undertaken in a country with very high levels of social capital. This is a high

quality institutional context, which can also be considered as one of the most self-contained national case studies possible, given its geography and isolation. This allows the preclusion of the effects of many external influences which will complicate the analyses in other cases.

The second novelty of this chapter lies in the unique combination of individual level social capital data allied with local public expenditure on social infrastructure. These data allow the uncovering of some of the complex and subtle interactions which exist between social capital, demographic, human capital, geographical and public policy features. The results imply there is a positive relationship between social capital and local public expenditure on infrastructure related to social capital formation. However, as with all relationships between individual behaviour, social behaviour and the provision and formation of intangible public goods, the actual mechanisms are likely to involve complex free rider and selection issues, which are more subtle than much of the social capital literature currently suggests.

Across the chapters, the studies reveal several socio-economic and demographic themes amongst explanatory factors that have important implications for social capital formation in New Zealand. Table 7.1 presents a summary of the key social, economic and demographic variables and their significance across the models in this thesis.

The gender effect is not particularly distinct across the models. There is weak evidence of males being more trusting, while participating and volunteering less, although this does not appear conclusively across the models. Aging is positively related to social capital formation in most models; however, in Table 4.3, age predicts poorer social capital formation early on. This is offset by positive aging (age^2), meaning the effect is non-linear but also non-decreasing.

Living with a partner appears to show increased social capital formation in all cases other than where the effect is neutral or negative. The impact on having children, in contrast, depends on whether the variable is constructed as a binary or a count of the number of dependent children in a household. Where a binary indicator of dependent children is used, the outcome is insignificant or negative. When a count of the number of children was used, the outcome is positive, suggesting a marginal increase in the probability of participation as the number of children in a household increase.

The models also find that education is the most common positive predictor of social capital formation, significant and positive in sixteen of the twenty models. However, education was a significant negative predictor regarding feelings of community in Table 4.3. This is potentially due to traditional neighbourhood-based communities being less relevant to those with higher skills, who may engage with more dispersed communities, due to greater access to resources and smaller, dispersed peer groups. Additional hours of work is associated with lower levels of social capital formation, while very high levels of income are associated with increased social capital formation. However, income does not appear to be a good predictor of social capital using these proxies. This is potentially due to income being endogenous to social capital.

Compared to ethnic Europeans, the other measured ethnic groups all indicated they had lower trust levels in others and were generally less likely to feel they had sufficient interpersonal contact or feel safe after dark. They were more likely to feel lonely (less integration), according to the findings reported in chapter 5. By comparison, those identifying as Māori or Pasifika were significantly more likely to both participate and volunteer across the different models, particularly when considering the frequency of participation for those who do (Table 6.4). Māori, Pasifika and Asian ethnicities all were more likely to report feeling a sense of community than their European counterparts.

These differences in findings across ethnicities highlight the importance of using the correct social capital proxy for the particular group of interest. For example, using trust as the sole proxy of social capital in New Zealand would suggest that minority ethnic groups do not invest in social capital, whereas when more communal activities, such as participation, volunteering and sense of community are included, the minority groups appear to invest in the most social capital. These findings also begin to suggest that communal social capital and social networks are more common amongst Māori, Pacific Island and Asian ethnic groups, while European ethnic groups place more emphasis on personal social capital networks. It is also interesting to note the positive attitudes to governance that are held by Pacifica and Asian individuals, compared to individuals from Māori and European ethnicities, which may suggest cultural differences.

Overall, the comparison across the demographic and socio-economic models suggests that there is a strong, positive relationship between years of education and social capital formation, although the dynamics of this relationship were not tested in this thesis. Age is also a positive predictor of social capital, while gender, work and income appeared to have a less obvious relationship. It is also clear from the results summarised in Table 7.1 that particularly in New Zealand, when considering social capital, it is important to consider different cultural and ethnic groups and ensure that the proxy variable selections for social capital take into account the varying methods different ethnic groups use to build their social capital stock.

Table 7-1, Findings for social capital formation across chapters.

Table no	4.3						5.4			5.5				6.3		6.4		
Dep. Var	trust	part	part (trust)	com	com(trust)	council	council(trust)	Contact	safe	integrated	part-all	vol-all	part-gss	vol-gss	trust	part	y.part	freq.part
Indep. Var.																		
Male	+ve	insig	-ve	insig	insig	+ve	insig	-ve	+ve	insig	insig	-ve	insig	insig	insig	insig	insig	-ve
Age	insig	-ve	-ve	+ve	+ve	-ve	-ve	insig	insig	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	insig
partner	+ve	insig	insig	+ve	+ve	insig	+ve	n/a	n/a	n/a	n/a	n/a	n/a	n/a	insig	-ve	-ve	insig
children	insig	-ve	-ve	insig	insig	-ve	-ve	+ve	insig	insig	insig	-ve	+ve	+ve	insig	+ve	+ve	+ve
yos	+ve	+ve	+ve	-ve	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
work	-ve	-ve	-ve	-ve	-ve	insig	insig	+ve	+ve	+ve	+ve	+ve	+ve	insig	n/a	n/a	n/a	n/a
income	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+ve	insig	insig	insig
maori	insig	+ve	+ve	+ve	+ve	insig	insig	insig	+ve	-ve	+ve	+ve	insig	+ve	-ve	+ve	+ve	+ve
pacific	-ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve	insig	insig	+ve	+ve	+ve	+ve	-ve	+ve	insig	+ve
asia	-ve	-ve	-ve	+ve	+ve	+ve	+ve	-ve	-ve	-ve	-ve	-ve	-ve	insig	insig	insig	+ve	+ve

7.3. Conclusions and Policy Implications

The general conclusions that can be drawn from this thesis are that location-specific investment does indeed incentivise investment in social capital formation. This is accomplished through encouraging people to 'anchor' into an area through homeownership, by separating them from their former networks through migration or by providing the means of social interaction through social infrastructure investment.

7.3.1 Homeownership

Homeowners are more likely to invest in local social capital when compared to other types of accommodation arrangements. This effect was a robust finding, consistent across the several proxies for social capital (Chapter 4). Homeowners were also found to have a strongly negative opinion of the performance of local government compared to other groups who were neutral or positive in their opinions. Homeowners are therefore argued to be more engaged through collaboration with the council than other groups. Although their opinion may be negative, social capital is still reflected in their involvement with council rather than passivity shown by other groups, and may lead to more efficient local governance.

The policy advice arising from these conclusions then is that areas with large numbers of non-homeowners are likely to hold lower stocks of social capital and social cohesion. This is a concern in New Zealand, due to falling rates of homeownership (Cochrane and Poot, 2007), and likely to be particularly true of areas which display demographic characteristics related to social capital, such as a young population with low educational attainment. These areas are therefore more likely, considering the international literature on the outcomes of social capital (Chapter 2) to experience poorer outcomes in terms of crime, health and, in particular, poorer outcomes for children. By assisting these groups

into homeownership, incentives for social capital formation are provided which will assist in mitigating the burden of these negative outcomes.

7.3.2 Migration

Migration, examined in detail in chapter 5, is also a predictor of social capital formation. The findings of this chapter lead to the conclusion that migrants catch up to New Zealand born within the first five years since migration, suggesting that social capital formation occurs early in the process of integration. The chapter also finds region of birth is shown to be an important factor, with noticeable heterogeneity between different migrant groups. In particular, migrants from Asia both invest in less social capital and hold lower stocks of social capital than other migrants groups and native born individuals, while those migrating from the Pacific invest in more social capital than other groups. In terms of bridging and bonding, migrants are shown to invest more heavily in bonding social capital, compared to native born.

These findings suggest that policies aimed at increasing social capital formation for migrants should be designed to intervene in the first five years following migration in order to capture the time when migrants are building stocks of social capital. Depending on the policy goals, the finding that migrants invest more heavily in bonding social capital suggest that policy which encourages investment in bridging social capital formation may have the most desired outcomes, due to the negative externalities that can arise from uneven investment favouring bonding social capital. Between the migrant groups, it appears that policy designed to encourage Asian migrants to invest in social capital within New Zealand are appropriate, due to the lower stock and investment in social capital within this group. In contrast, those migrants from the Pacific appear to invest heavily in social capital. Policy designed to assist this group in utilizing their social capital to improve their individual and community outcomes would be of benefit.

7.3.4 Infrastructure

Chapter 6 dealt with the investment in social infrastructure. The findings of this chapter led to the conclusion that, while there appears to be some relationship between social infrastructure and participation, the relationship is complex. Investment in social infrastructure is negatively related to the decision to participate in community activities (negative selection effect). However, it is positively related to participation in more activities (positive facilitation effect). This suggests that the relationship is complex, and that social infrastructure investment may incentivize free-riding, where the decision to participate is marginal, but facilitate more participation where individuals are already engaged.

This suggests that pursuing social infrastructure investment as a means of encouraging social capital formation may not incentivize people to participate at the margins. However, it will encourage those already actively participating to expand their activities, increasing their networks. Overall, building social infrastructure will have a net benefit only if it increases the amount of participation for those already participating, which offsets the reduction in participation from those around the margins. It is therefore suggested that to improve participation, it is important to both provide social infrastructure and incentivise those at the margins to utilise that infrastructure. Potential policies for achieving this may include facilitating access to existing social capital in order to lower transportation costs and improve the marketing of social infrastructure.

7.3.5 Social, Economic and Demographic

Across the models, education and age were two common predictors of positive social capital formation. It is therefore reasonable to suggest that policy may want to work to incentivise younger and less well-educated individuals to participate and build social networks. Simultaneously, constructing policy which incentivises the utilization of networks by well-educated and older individuals may provide greater returns. The findings also suggest that different cultures and

ethnicities use different approaches to build and maintain their social networks. Any policy aimed at increasing social capital in New Zealand should consider these different pathways. Where policy strategies are designed to use social capital to achieve policy objectives, such as smoking cessation or cervical screening, implementers should be aware of the forms of social networks used by their target audience and structure their strategies accordingly to achieve the greatest impact.

7.4. Opportunities for future research

This thesis has been largely constrained in three areas of research: econometric analysis of the outcomes social capital provides, negative externalities of social capital in New Zealand and the lack of comparative international analysis to position social capital in New Zealand within the global context, and what this means for the nation's development. Each of these three questions in turn provides avenues for further research.

Firstly, gaining information on the outcomes of social capital formation through investment is something that could be tested through the use of panel datasets. This would provide valuable evidence at the micro-level for the role social capital plays in improving the governance, social, economic and personal wellbeing of an individual. This would ideally be followed with analysis of social capital formation at the meso-level, examining community and local government performance alongside social capital to test for relevant connections. Finally, drawing on the international comparisons, as well as time series data on social capital formation, may provide an insight into how social capital impacts the macro-level wellbeing of New Zealand.

The role of the 'dark side' of social capital (i.e., negative externalities) is also an area attracting increasing attention in international literature. This area of social capital explores the potential negative impacts of too much bonding social capital in New Zealand and would be of value to researchers. It would also

aid policy makers interested in whether they should encourage the investment of social capital in their areas, and if so, what the best methods of achieving this are.

This thesis has considered both consumptive and productive social capital combined using measures which reflect civic social capital. Developing on the findings of Westlund and Adam (2010), further study should be conducted to test the impact of primarily consumptive (such as sense of community and recreational activities) and primarily productive social capital (such as professional networks or membership with innovation hubs) proxies to see if there is a difference in the factors which cause them and the impact they have.

In addition, there is some evidence resulting from chapter 6 and in the international literature to suggest that social capital is negatively related to density. Further research to both test the robustness of these findings and develop a theory for the mechanism which may be driving these results would be of interest. It is possible that the mechanism for this may be rapid economic growth, which is correlated in some cases with rapid population growth. This could be tested by examining if rapid economic growth in cities (e.g. Shanghai) results in a negative impact on social capital formation, and if so why. In a similar vein, it would also be of interest to investigate whether living or working in areas with greater population density create incentives to increase specialisation in social capital investment, in the same way as can capital and employment are observed to be more specialised.

Finally, this thesis provided analysis of the role of ethnicity across New Zealanders in the form of social capital investments across the three separate quantitative studies. It is plausible that a productive avenue for further study would be conducting a series of mixed methods papers examining social capital formation and outcomes amongst different groups in New Zealand. This study could explore whether the differences in formation hinted at across this thesis are supported by in-depth analysis and allow researchers to better understand how social capital and policies related to the concept can be more effectively designed to help vulnerable or disadvantaged groups improve their wellbeing.

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