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Essays on
Migration, Home Ownership and Social
Integration in Ireland

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Abstract

This PhD thesis explores the interactions between migration, home ownership and immigrant integration in Ireland. The thesis is presented on a paper based model, the core of which consists of three empirical studies. The first study develops a simple framework for incorporating the demographic determinants of housing demand into a standard housing-demand model. It also augments the existing time-series and cross-national literatures with a cross-county panel on the Irish housing market. The second study explores the causal links from home ownership to community engagement. In the years prior to the recent economic crisis, Ireland experienced a large increase in its foreign-born population. We hypothesise that households headed by the foreign-born are less likely to own a home, thus potentially hindering the process of social integration. But also that home ownership can be differentially effective in fostering the integration of the foreign-born. We first explore the relationship between nativity and homeownership. We then explore the linkages from both home ownership and nativity to a measure of social capital based on volunteering in line with existing literature. We discuss the limitations of the cross-sectional analysis and the specific measure of social integration. The third study utilizes a panel data set and expanded measures of social capital. One concern with the cross-sectional analysis is that omitted individual level attributes could hinder the identification of the causal effects of home ownership and social capital, and also the identification of any differential effect for the foreign-born. The panel data allows us to control for unobserved individual-level effects. The data also allows us to expand the proxy indicators for social capital beyond the volunteering measure. The results are contrasted to the cross sectional findings. Overall, we find evidence to support the hypothesis that home ownership generates differential benefits for the social integration of the foreign-born, but the results are sensitive to the data set and social-capital measure used.

Key words: House Prices, Rents, Housing Demand, Age shares, Migration, User cost of capital, Per Capita Income, Per Capita Housing Stock, Mortgage interest rates, Urban, Rural, Homeownership, Social capital, Foreign-born, Volunteering

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Chapter 1

1. Introduction

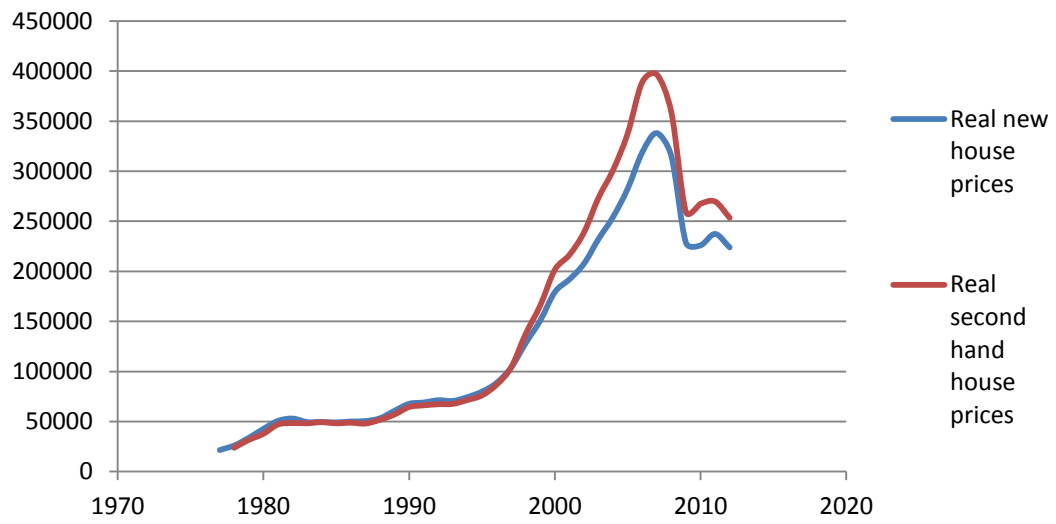
1.1 General Background

The Celtic-tiger period and the subsequent property boom brought large changes to Ireland's economy and society. Two of the most profound were the shift from being a country with a long history of net emigration - with only brief interruptions - to a country of significant net immigration, and also the rapid escalation in property prices up to the housing price crash in 2007. This thesis examines a number of important interactions between immigration, housing demand and social integration in Ireland over recent decades.

The extent of the changes brought by immigration and the housing bubble are revealed in figures 1.1, 1.2 and 1.3. Figure 1.3 shows the size of the foreign-born population in Ireland on census night from 2002 to 2011. Ireland has long had a large UK-born population, with many of these residents being the children of Irish-born emigrants to the UK that subsequently returned home. As shown in the figure, the size of the non-UK foreign-born population grew rapidly, boosting the housing demand along with having many other impacts on the Ireland's society and economy. Although immigration was only one factor increasing Irish housing demand, Figure 1.1 shows the rapid growth in Irish house prices that took place. The causality was also not one-way from immigration to rising house prices, as the price-driven construction boom drew many immigrants to Ireland's expanding economy. The following chapters

explore a number of interactions between immigration, housing demand and social integration in Ireland in order to better understand the implications of these major structural changes.

Figure 1-1 Average National House Prices

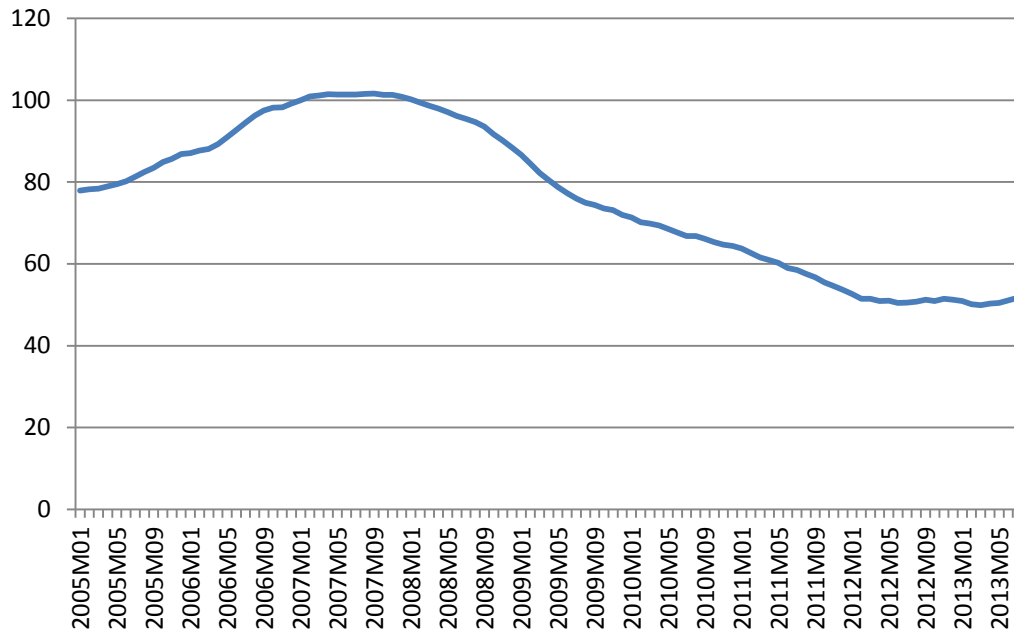


Source- CSO

Note CSO Average house prices were calculated from data obtained from the loans approved by the mortgage lending agencies. In comparing house prices figures from one period to another they advise to take into consideration that changes in the mix of dwellings will affect the average figures.

We first explore the role that demographic changes - and in particular the role of an increasing foreign-born share of the population - have played in Irish housing demand. Previous studies of Irish housing demand have paid limited attention to demographic effects, in part due to the limitations of time-series analysis of national-level data. We make use of newly available county-level data on house prices and rents, which is combined with census-based demographic data to explore the effects of demographic composition on housing demand and prices.

Figure 1-2 The New Residential Property Price Index



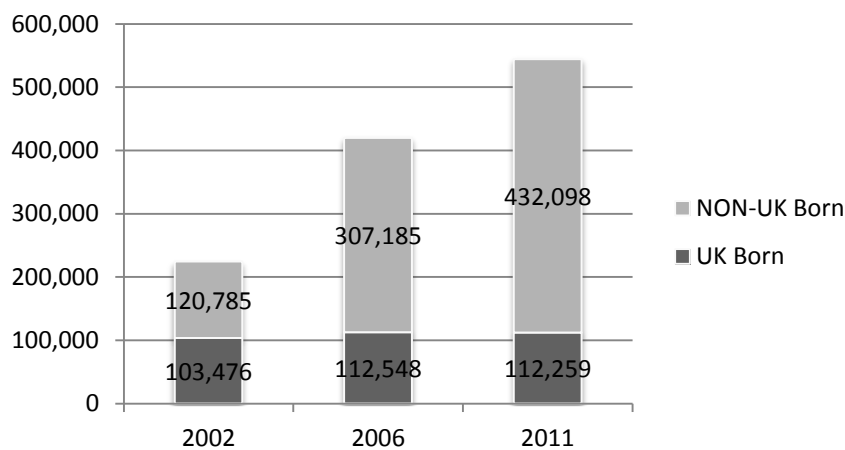
Source- CSO

Note - Price Index Base Jan 2007 = 100

We then turn our attention to the role that home ownership can play in the integration of immigrants into Irish society. International studies have highlighted the role of home ownership in the process of acquiring of social capital. To the extent they are less likely to own a house; immigrants on average could suffer a social capital disadvantage. However, becoming a homeowner also holds the prospect of overcoming existing disadvantages, and thus may be disproportionately beneficial for the foreign-born. We first examine the association between home ownership and foreign-born status controlling for a number of other socio-economic and demographic characteristics. We then examine the association between social capital, home ownership and foreign-born status. We are particularly interested in how home ownership and foreign-born status interact in the acquisition of social capital.

Owing to their less established roots in Irish society, immigrants are like to face particular challenges of social integration, leaving them with lower reserves of social capital. Language skills and cultural differences can be further barriers to integration, making it more difficult for the foreign-born to participate fully in Irish society. One common indicator of social capital is volunteering activity. Those who are firmly rooted in local communities will tend to be more likely to volunteer. However, immigrant communities can themselves be quite cohesive and supportive of volunteering activity, while being only weakly integrated into the broader society. Thus, while we are volunteering activity as our main indicator of social capital, we also examine a range of other social capital indicators. Taken together, these indicators provide a more complete picture of the integration of foreign-born into Irish Society.

Figure 1-3 Foreign-born classified as UK and Non-UK Born population as a percentage of total Migrants



Source- CSO

In identifying the causal relationship between home ownership and social capital, a concern is that unobserved individual characteristics may be correlated with both of these variables. Those with a tendency to integrate

into their communities could be more likely to own a home and to develop social relationships through such activities as volunteering. Thus, we look beyond cross-sectional data to available panel data to help control for unobserved heterogeneity and identify the casual effects of home ownership on social capital.

The rest of this introduction is structured as follows. In the next section, we set out in detail the research objectives of this thesis. In Section 1.3, we discuss the research methodologies and data used in the study. In Section 1.4 we provide the thesis structure and then finally in Section 1.5 we provide abstracts of the three core empirical studies that make up the thesis.

1.2 Research Objectives

The papers in this thesis study the interaction of inward migration and housing demand/home ownership from a number of perspectives. We consider both the effects of migration on housing demand, and also the effects of home ownership and the integration of immigrants as measured by their social capital.

Actual and anticipated demographics played a significant role in Ireland's housing boom. However, the relationship between demographic factors such as immigrant shares and the age structure of the population are poorly understood. The first paper in this thesis aims to advance this literature using newly available county-level data on housing demand, house prices/rents and demographic factors. The paper presents new estimates of key determinants of housing demand using a county-level fixed effects estimation approach.

Given the surge of immigration over recent decades, issues relating to their successful integration remain a central policy concern. International literature has identified home ownerships a potentially important factor in facilitating integration. The second and third papers in this thesis aim to provide a better understanding of the differential incidence of home ownership in Ireland for the foreign-born, the impact of home ownership on social capital, and the potentially differential impact of home ownership on the social capital of the foreign-born compared to the native born. Paper 2 explores these questions using cross-sectional micro census data. One limitation of the cross-sectional analysis is the possibility of bias due to unobserved individual level characteristics. In particular, unobserved characteristics could affect both the decision to own a home and the decision to accumulate social capital. Paper 3 attempts to address this empirical challenge using longitudinal data - the Living in Ireland (LII) survey - which allows for the control of individual-level fixed effects. This dataset also allows us to explore the impact of home ownership and nativity on social integration for an expanded range of social capital proxies.

Taken together, the thesis aims to expand the knowledge base for policy development. It strives to do so by both providing a better understanding of the drivers of housing demand in a demographically changing economy, and also through forming a better understanding of the role of home ownership in the acquisition of social capital, and in particular the role that home ownership plays for the foreign-born.

1.3 Methodology

The three core chapters of this thesis are exercises in applied econometrics. In each chapter, economic theory is used to identify the key hypotheses to be tested and to identify the econometric specifications that will facilitate the testing of these hypotheses.

In chapter 2, we begin with a standard demand function for housing. We then show how the equation can be developed to identify the effects of demographic structure on housing demand. Estimation of the equation using pure time series analysis with annual data is made difficult by the lack of observations. An innovation of this thesis is to use newly available county-level data on house prices and rents. This can be combined with census data on home ownership and demographic shares based on aggregation at the county-level. Thus this chapter contributes to the literature on housing demand in Ireland, especially in relation to its demographic determinants.

In Chapters 3 and 4, we draw on the literature on the determinants of home ownership and social capital to identify the socioeconomic and demographic determinants of these two variables. A key hypothesis is that home ownership is a determinant of social capital. We also hypothesise that home ownership may play a differentially important role for the foreign-born. The dependent variable in each of the equations is a binary variable. In the case of social capital, various binary proxies are used, with the main focus being on volunteering activity, where volunteering is used as an indicator of social integration. Econometric methodologies for the estimation of the limited binary dependent variables are used, including Probit and Fixed-Effects Logit.

In Chapter 3, we use micro census data to estimate cross-sectional versions of the two key equations. As previously noted, one concern is that omitted individual-level factors might be correlated with both the decision to own a home and to acquire social capital.

In Chapter 4 we therefore make use of longitudinal data from the Living in Ireland survey to control for the individual level heterogeneity. Pooled regressions are also used to allow comparisons with the cross-sectional results of the Chapter 3.

1.4 Thesis Structure

- **Chapter 1** - Introduction
- **Chapter 2** - Paper 1 - Demographics and Irish Housing Demand: A Cross-County Econometric Model
- **Chapter 3** - Paper 2 - Embedding in the Community: Nativity, Home ownership and Social Capital in Ireland
- **Chapter 4** - Paper 3 - Home ownership and Social Capital: Irish Household Panel Study
- **Chapter 5** - Conclusions

1.5 Core Chapter Summaries

Chapter 2

Ireland is now in the latter stages of one of the most pronounced boom-bust housing cycles in economic history. The cycle has left a great deal of damage in its wake: pronounced recession, an impaired banking system,

and huge losses in household wealth, with many younger households left deep in negative equity. The boom phase was driven in part by a belief that changing demographics would substantially increase the demand for housing in Ireland, which points to the importance of reliable models of housing-market fundamentals. This chapter develops a simple framework for incorporating the demographic determinants of housing demand into a standard housing-demand model. It also augments the existing time-series and cross-national literature with a cross-country panel on the Irish housing market. The panel combines new demographic data on age and nationality from the anonymised 5 per cent of samples from the 1996, 2002 and 2006 censuses, with a new county-level house price series based on asking prices. Our fixed-effects results suggest lower price and income elasticities compared to the existing time-series literature. We also find evidence of a noticeable effect of population aging. Controlling for other variables, we do not find that the foreign-born share significantly affects housing demand.

Chapter 3

The literature on social capital highlights the causal links between home ownership and community engagement. In the years prior to the recent economic crisis, Ireland experienced a large increase in its foreign-born population. Households headed by the foreign-born are less likely to own a home, thus potentially hindering the process of social integration. In this chapter, we use census micro data to first explore the relationship between nativity and homeownership. We then explore the linkages between both home ownership and nativity for a measure of social capital based on volunteering. We find the foreign-born are less likely to own a home controlling for a range of other factors. Furthermore we find that

home ownerships positively related to our measure of social capital and, more surprisingly, so too is foreign-born status. We also examine the interaction between home ownership and foreign-born status, hypothesising that home ownership could be especially beneficial in fostering social integration for the foreign-born. Our results show that home ownership does not appear to have a differential impact on the social capital for the foreign-born. Limitations of the cross-sectional analysis and the specific measure of social integration are discussed.

Chapter 4

One concern with the cross-sectional analysis is that omitted individual level attributes could hinder the identification of the causal effects of home ownership and social capital, and also the identification of any differential effect for the foreign-born. In this chapter, we make use of a longitudinal data set – the Living in Ireland Survey – to control for the individual-level heterogeneity. We also expand the proxy indicators for social capital beyond the volunteering measure. For our central volunteering measure, we do find tentative evidence that home ownerships differentially effective in fostering the social capital of the foreign-born. However, the results are sensitive to the social-capital proxy used.

Chapter 2

2. Demographics and Irish Housing Demand: A Cross-County Econometric Model.

2.1 Introduction

Between 1996 and 2006, the real price of housing in Ireland increased by a factor of 300 percent in one of the most dramatic national property price bubbles in the lead up to the global economic and financial crisis. Over the same period, house completions more than tripled, rising from roughly 30,000 in 1996 to a peak of over 90,000 in 2006. This price and building boom was in turn associated with a massive shift of resources into the house construction sector, with the share of house building in GDP rising from 4.6 percent in 1996 to 15 percent in 2006.

Such growth was unsustainable. From their peak in February 2007, national house prices had fallen by 50.9 percent (52.0 percent in real terms) by March 2013. The Economic and Social Research Institute estimates that house completions fell to just 24,000 in 2009. There were 10,480 completions in 2011, and the 8,488 new house completions in 2012 was the lowest number recorded since 1070's, according to data from the CSO and Department of the Environment. The bursting of the price and

building bubbles played a major role in pushing the Irish economy into recession.

Why did this dramatic boom-bust cycle happen? Distinguishing factors in the Irish case were the remarkable economic and demographic changes associated with the “Celtic-Tiger” economy. With growth averaging around 9.75 percent between 1996 and 2006¹, and a dramatic shift from net *emigration* of 19,200 in 1997 to net *immigration* of 67,300 in 2007, the fundamentals of the Irish housing market had truly changed. The early price appreciation was thus almost certainly underpinned by changing fundamentals. However at some point this fundamental-driven price rises spawned a bubble; a bubble partly obscured by the continued strong income growth and rising population.

As we now survey the economic damage wrought by the bubble, the need for accurate empirical models of housing demand is evident. It must be noted that existing econometric models of the Irish housing market did provide warnings [Kelly (2007); Roche (1999, 2001 & 2003); Kenny (1998, 1999); Murphy (1998)]. However, the available time-series models of the Irish housing market faced data limitations national-level data that made it difficult to identify robust empirical relationships.

In this paper, we augment the existing time series literature by estimating a model of housing demand using a county-level panel dataset. An advantage of the county-level data is that it allows for a richer

¹ Department of Finance, “*The Irish Economy Perspective*” June 2011- prepared by Ronan Hickey

specification of demographic factors to develop our econometric model with additional variation. We combine demographic data from the 5 percent anonymised samples from the 1996, 2002 and 2006 censuses, county-level price and rent data assembled by Ronan Lyons (daft.ie), and CSO data on county-level households, population and income to develop our model of housing demand. As our major focus is on the demographic determinants of demand, we augment the ‘textbook model’ model that has become the workhorse for empirical housing studies [Poterba (1984, 1991); Swan (1995); Murphy (1998); Mankiw and Weil (1989); Kenny (1998 and 1999); McQuinn (2004); Reed and Mills (2007); Kelly (2007); Conefrey and FitzGerald (2009)] by showing how the aggregate demand for housing can be determined as the aggregation of individual demographic segments. Crucially, this method allows us to identify the effects of changing demographic composition on housing demand.

From an ex ante perspective, there are reasons why household size could be both smaller and larger on average thus for the native –born. Household size could be smaller because newly arrived immigrants are more likely to be unattached. In some cases, economic immigrants may have left immediate family member at home as they seek to support family incomes through migration and remittances. However, to the extent that immigrants are unattached and/or attempting to limit their housing costs, they may be more likely to share than the native–born. The effect of the foreign-born share on average household size is thus an empirical question.

While younger cohorts are the drivers of the new household formation, the average household size of older households is likely to be smaller. Thus, contrary to the received wisdom that it is the size of younger cohorts that drives the demand for housing, the aging of the population is likely to be

associated with the decreasing average household size, implying a greater number of households (and homes required) for a given population size.

The remainder of the paper is structured as follows. In the next section we briefly review the econometric literature on housing demand, with an emphasis on applications to the Irish housing market. In Section 3 we develop a simple model of housing demand and show how the demographic determinants of housing demand can be identified and Section 4 explains the empirical specification. We describe our data in Section 5 and our results in Section 6. Section 7 concludes with a summary of our findings and their implications for policy.

2.2 Related Literature

There is a vast literature on the determinants of housing demand [see, Muth and Goodman (1989); McCabe and Murphy (1998) for an overview]. Our starting point is what has become known as the “textbook model” of the housing market, which captures the joint dynamics of house prices and the housing stock under rational expectations [see Poterba (1984); and Mankiw and Weil, (1989)]. The model has been empirically applied in a wide range of settings and has become the workhorse of the applied literature [see Meen (1996); Addison-Smyth, McQuinn and O’Reilly (2008); FitzGerald, Bergin, Kearney, Barrett, Duffy, Garrett, and McCarty (2008); Goodman (1998 and 2002); Larkin (2009); Muellbauer and Murphy (1997)]

The core model consists of a pair of differential equations for the housing stock and house prices. A key sub-component of the price-change equation is a static housing demand relationship. This relationship (often estimated

in inverse form) relates the demand for housing to standard demand determinants such as house price, household income and demographics. Providing new estimates of this demand relationship for Ireland is the focus of this chapter.

The textbook model has provided the framework for a number of previous studies of the Irish housing market, with Irvine (1984) providing an early application. The work of Murphy (1998) has been particularly influential, with a major update in Murphy (2005). The textbook model has also provided the foundation for the Economic and Social Research Institute's modeling of the Irish housing market, including the housing component of its HERMES macroeconomic forecasting model. More recently, Conefrey and FitzGerald (2009) apply the basic demand model to explain Ireland's recent housing boom-bust cycle.

Motivated in part by an attempt to understand the drivers of the bubble, a number of other papers go beyond the basic textbook model to incorporate other features of the Irish housing market. In a series of influential papers, Roche attempts to distinguish fundamentals and bubbles in driving Irish house prices (e.g. Roche, 2001 and 2003). Roche (2001) uses a regime switching model to test for a bubble in Dublin house prices. His approach requires separating house prices into fundamental and non-fundamental components. He uses a variety of methods to achieve this separation, including the residuals of a textbook model-style demand equation to identify the non-fundamental component. His findings are consistent with a bubble, although he notes that the results could also be explained by a "regime switch" in the fundamentals. He calls for a

loosening of supply-side restrictions to prevent further fundamentals-driven increases in prices, which could also help inflate the bubble component.

In the textbook model, the income-house price relationship comes through the impact of income on current rents, with an arbitrage relationship linking rents to prices. The arbitrage relationship also links the interest rate to house prices. McQuinn and O'Reilly (2006) postulate an alternative linkage from house prices to income and interest rates. Central to their approach is the credit capacity of the borrower, with greater capacity leading prices to be bid to higher levels. Both higher disposable incomes and lower mortgage interest rates lead to greater borrowing capacity and thus higher prices. This indirect impact through borrowing capacity leads to larger interest rate and income effects than predicted by the textbook model. They find the model generally tracks house prices well between 1980 and 2005, though divergences are seen after 2002.

Kelly (2009) also finds a strong relationship between credit availability and house price increases. In other work (Kelly, 2007), he provides a comparative perspective on Ireland's housing boom. He notes that the size of busts is just an indicator related to the extent of the preceding boom, with real house prices giving up on average 70 percent of the previous gains. With the market peaking at the time, he predicted falls in real house prices of between 40 and 60 percent – falls which have largely come to pass.

2.3 A Simple Housing Demand Model with Demographics

In this section, we set out a simple model to guide the estimation of our housing demand equation for Ireland. The model is a simple extension of the housing demand component of the “textbook model” that has previously provided the workhorse model for empirical work on Irish housing demand. The extension allows for a richer treatment of the effects of demographic structure on housing demand, which we later implement using county-level demographic shares from the 1996, 2001 and 2006 censuses.

Total housing (or household) demand, H , can be mechanically written as the aggregate demand of $M+1$ demographic groups (a base group, indexed 0, and M additional groups indexed by $j = 1, \dots, M$). Letting N_j represent the number of adult individuals in segment j and H_j the number of households in segment j , we can write the total number of households as,

$$(1) \quad H = N_0 \frac{H_0}{N_0} + \sum_{j=1}^M N_j \frac{H_j}{N_j}.$$

Dividing across by the total adult population, N , we can further write the demand equation in per capita terms as,

$$(2) \quad h = \left(1 - \sum_{j=1}^M s_j \right) h_0 + \sum_{j=1}^M s_j h_j,$$

Where h represents households per adult, h_0 households per adult in the base category, h_j households per adult in population segment j , and s_j the share of the adult population in segment j .

We next assume that per capita housing demand in segment j is a fixed mark-up, θ_j , on the base category, so that

$$(3) \quad h_j = (1 + \theta_j)h_0.$$

Substituting (3) into (2),

$$(4) \quad h = \left(1 - \sum_{j=1}^M s_j\right) h_0 + \sum_{j=1}^M s_j (1 + \theta_j) h_0$$

Combining common terms and taking logs,

$$(5) \quad \ln h = \ln h_0 + \ln \left(1 + \sum_{j=1}^M \theta_j s_j\right).$$

We assume that the base population segment is large enough so that we can use the standard approximation, $\ln(1+x) \approx x$ when x is small, to approximate (5) as,

$$(6) \quad \ln h = \ln h_0 + \sum_{j=1}^M \theta_j s_j.$$

We next assume that the per capita housing demand for the base category has a log-linear functional form,

$$(7) \quad \ln h_0 = \beta_0 + \beta_1 \ln P + \beta_2 \ln y,$$

where P is the real house price and y is per capita income.

Putting (6) and (7) together we finally obtain our demographically adjusted, log-linear housing demand equation,

$$(8) \quad \ln h = \beta_0 + \beta_1 \ln P + \beta_2 \ln y + \sum_{j=1}^M \theta_j s_j.$$

Equation (8) allows changes in the demographic structure to shift the housing demand curve. In turn it shows how we can estimate the demographic effects on housing demand using the common log-linear specification used in the housing demand literature.

2.4 Empirical Specification

Equation (8) provides our basic empirical specification of the housing demand equation. One key measurement challenge is to identify the appropriate county-level housing price. Ideally, this price is the per period user flow cost – or simply the rental price – for a (standardised) unit of housing. One obvious measure is the average rent on rented accommodations. However, we have to be concerned that Ireland’s relatively thin rental market could make it an unreliable proxy for the overall average price due to the un-representativeness of the rental housing stock. One approach taken in the literature is to calculate the flow cost of housing using the following arbitrage condition:

$$(9) \quad i = \frac{\dot{P}_h^e}{P_h} + \frac{R}{P_h},$$

where i is the return on an equivalent-risk financial asset, $\frac{\dot{P}_h^e}{P_h}$ is the

expected price appreciation over the period, and $\frac{R}{P_h}$ is the rental yield (per period rent divided by the market price). Rearranging (9) yields an expression for the house price as an appropriate capitalization of the current rent.

$$(10) \quad P_h = \frac{R}{i - \frac{\dot{P}_h^e}{P_h}}$$

Taking logs and rearranging, we obtain an alternative expression for the log of the rental price:

$$(11) \quad \ln R = \ln P_h + \ln \left[i - \frac{\dot{P}_h^e}{P_h} \right].$$

Substituting (11) into (8) allows us to write the per capita demand for housing as a function of price rather than rent,

$$(12) \quad \ln h = \beta_0 + \beta_1 \left[\ln P_h + \ln \left[i - \frac{\dot{P}_h^e}{P_h} \right] \right] + \beta_2 \ln y + \sum_{j=1}^M \theta_j s_j.$$

In the empirical application we estimate both the rent- and price-based specifications of the basic housing-demand equation. Unfortunately, while the price-based specification should give us a more representative measure of average price of the county-level housing stock, it suffers from the problem that price expectations are not observed. We experiment with using both lagged price inflation (static expectations) and actual realised price inflation (perfect foresight) as our measure of expected inflation with similar results. However, regardless of the measure of expected inflation, we find the price-based specification performs poorly as a housing demand equation in terms of consistency with theoretical priors. We thus focus on

the better-performing rent-based specification in the discussion of the results that follow.

An important question arises as to whether the econometric estimation is identifying the demand for housing as measure by the average number of occupants per household. Two features of the estimation method allow for the identification of the demand curve. First, at a point in time, cross-county variations in available supply leads to cross-county variation in prices for a given county-level demand curve. This variation should allow the tracing out of the county-level demand curve assuming other county-level demand shift factors are properly controlled for. And second, the availability of county-level incomes in the dataset allows us to directly control for the most important demand-side shift factors. Over time, a second important factor is credit availability. Again, the panel structure of the data allows us to control for time-varying credit conditions through the use of census-years specific time effects. In sum, our panel data structure and availability of demand side controls makes us confident that observed price variability is due to county/time level variations in supply conditions, allowing us to trace out county-level demand curves for housing, when the demand-side adjustment margin is the average number of occupants per household.

2.5 Data

2.5.1 Description and sources of the variables

Source of Data

The data used in this chapter come from a number of different sources. The demographic data are mainly from CSO Census samples of

Anonymised Records (SARs) and the house price and rents data are from Daft.ie.

Nominal asking house prices and Rents data were adjusted using the Harmonised Index of Consumer Prices (HICP) of the European Central Bank (ECB). In order to use a deflator we have recalculated the HICP index taking 2006 as the base year. The recalculated HICP was used to derive the real house prices and real rents for each county for census years 1996, 2002 and 2006. A detailed descriptions of the data used is provided in Data Appendix A. Descriptive statistics for the variables used in the empirical model are shown in Table 2-1.

Table 2-1 Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Log of Price	11.9978	0.4706	11.1662	12.9108
Log of Rent	6.7059	0.2034	6.268	7.2621
Log of population	11.526	0.7755	10.1289	13.9871
Log of hstock	10.5654	0.9984	9.0329	13.6446
Log of per cap hstk	-0.5109	0.2903	-0.7414	0.0883
UK born adult share	0.1062	0.0377	0.0603	0.2768
NONUK born adult share	0.0475	0.0239	0.0118	0.1395
<u>Population</u>				
Share 35-49	0.3378	0.0337	0.2571	0.4247
Share 50-64	0.324	0.0161	0.2923	0.3653
Share 65+	0.2324	0.0197	0.1866	0.2724

The house prices for the model are derived from the hedonic pricing methodology (Duffy, 2009), which takes in to consideration the

heterogeneous nature of housing units in the country as well as the variation of house prices due to location specific advantages across counties.

2.6 Results

Overall, the rental specification appears to perform well as an empirical model of housing demand (see Table 2-2). We find a negative and statistically significant relationship between housing demand and average county rent, with a point elasticity estimate of -0.08. We also find a positive and significantly significant relationship between housing demand and income, with a point elasticity estimate of 0.2. Not surprisingly, there is a strong positive relationship between county population and housing demand, with an elasticity of just above unity (1.13).

We do not find that the foreign-born share of the population is a significant determinant of housing demand. The U.K. foreign-born share has a relatively large negative coefficient (-0.2), but is statistically insignificant. Extremely interestingly, the non-U.K. foreign-born share is negatively related to housing demand, the effect -0.14 and again not statistically significant. Overall, we do not find evidence that the native/foreign-born structure of the population is a significant determinant of housing demand after controlling for other factors.

We find an interesting pattern for the age structure of the adult population, where the excluded share is the share of the adult population aged 18-34. The coefficients on the shares of the included categories are -0.10 (share 34-49); and the latter two are positive: 0.21 (share 50-64); and 0.27 (share 65+). The two latter shares are statistically significant at conventional levels. These results are consistent with population ageing

leading an to increase in housing demand (or alternatively, lower household sharing among older adults). Interpreting these results, a 1 percentage point increase in the share of the population aged 50 to 64, for example, is associated with a 0.21 percentage point increase in housing demand (where it is assumed that that increase comes at the expense of the base 18-34 category). Overall, population ageing does appear to be associated with an increase in housing demand.

The price specification does not perform well as previously noted, reflecting we believe the difficulties in accurately measuring expected price appreciation. The price variable is negative and statistically significant, with an estimated elasticity of -0.08. However, the income and demographic share variables are all statistically insignificant with the exception of the population share 65+.

How do the results differ from the time-series literature on Irish housing demand? The most striking differences are that the price and income elasticities are considerably smaller than typically estimated. Although Murphy (2005) estimates his housing demand equation in inverse form, the implied price and income elasticities are 0.442 and 0.955 respectively. Similarly, Conefrey and FitzGerald (2009) estimate a price elasticity of 0.99 and an income elasticity of 0.27. The time series literature has also found a positive relationship between the population share in their prime house-buying years of 25 to 34. In contrast, we find evidence of a noticeable age gradient. The time series literature has not been able to estimate the effect of the native/foreign-born structure of the population. The use of county-level panel data does allow us to estimate more fine-grained demographic structure effects. Our results, however, do not find that the native/immigration structure is an important determinant of Irish housing

demand after controlling for the age structure and other housing demand determinants. Thus forecasts based on population growth and age structure should give a reasonable picture of the likely evolution of housing demand.

Table 2-2 Empirical Model of Housing Demand – Fixed Effects Estimate

Regressors	Housing stock	
	Rent Specification	Price Specification
Log of rent	-0.0855*** (0.0133)	-
Log of Price	-	-0.0807** (0.0382)
Log of Per Capita Income	0.2024*** (0.0194)	0.0609 (0.0504)
Log of Population	1.1269*** (0.0400)	1.0817*** (0.0316)
UK born adult share	-0.2047 (0.1563)	-0.1634 (0.1129)
NONUK born adult share	-0.1352 (0.1431)	0.2154* (0.1176)
<u>Population</u>		
Share 35-49	-0.1027 (0.1387)	0.0545 (0.1010)
Share 50-64	0.2132* (0.1608)	0.1556 (0.1304)
Share 65+	0.2693** (0.1953)	0.3328*** (0.1137)
Year 2002	-	0.1113*** (0.0341)
Year 2006	-	0.1784*** (0.0352)
R² Within	0.9969	0.9984
-Between	0.9478	0.9479
-Overall	0.9983	0.9482
No of Observations	78	78

Note 1 - User cost of capital is calculated as the mortgage interest rates minus lagged house price inflation.

Note 2 - The omitted age share in the model is the age group 18-34 years.

Note 3 - The numbers in parentheses are standard errors. ***significant at 1 percent level **significant at 5 percent *significant at 10 percent level

2.7 Concluding Comments

Ireland has been through a massive boom-bust property cycle that ultimately undermined the creditworthiness of the Irish State itself. The boom phase was partly driven by beliefs that the demographic and income developments would underpin a sustained growth in the demand for housing. Yet understanding of the underlying determinants of housing demand was limited.

In this paper, we develop a simple framework for incorporating the demographic determinants of housing demand and implemented it using a new county-level panel dataset. We find that demand for housing is not significantly affected by the native/immigrant mix of the population. However, we do find evidence of a significant age gradient in housing demand that levels out in retirement. We also find evidence of substantially lower price and income elasticities than have been estimated in the existing time series literature. Overall, our results suggest that housing demand is likely to rise roughly in proportion with the adult population, with relatively limited income and demographic-structure effects.

Chapter 3

3. Embedding in the Community: Nativity, Home ownership and Social Capital in Ireland

3.1 Introduction

Between 1996 and 2006 the foreign-born population in Ireland grew from 178,347 to 533,165. As a percentage of the population, the foreign-born population grew from 5 percent to 13 percent. Despite the Irish economic crisis, the foreign-born population still stood at 651,815 in 2011 – 14.23 percent of the total population.

This rapid growth in the foreign-born population has led to concerns of weakening social bonds, thus undermining the social capital of Irish society. The importance of social capital for societal performance - including economic performance - has been highlighted by Putnam (2000) and the extensive literature that has followed. In more recent work, Putnam (2007) has found that immigration can weaken social capital in the short run, though increased diversity can still be an important source of economic strength over the longer term.

The literature on social capital has also highlighted how home ownership can support the acquisition of social capital (for example; DiPasquale and

Glaeser, 1999). Homeowners tend to have longer horizons in their communities and thus are more vested in local community success. Not surprisingly, home ownership has been found to be positively associated with social capital investments. This suggests one reason why immigration, to the extent immigrants are less likely to be homeowners than the native born, might weaken average social capital.

This chapter provides a preliminary explanation of the linkages between homeownership, nativity and social capital using micro data from the 2006 census. The chapter also provides a detailed review of the related literature. We begin by showing the links between the three focal variables without householder- level controls. We then explore how the addition of controls affects the observed associations in the data.

More particularly, we examine both the relationship between foreign-born status and homeownership, and also the links between both foreign-born status and home ownership and a proxy measure of social capital based on volunteering. We hypothesize that although foreign-born status is negatively related to homeownership, and home ownership is positively related to social capital, home ownership is particularly effective in facilitating the integration of the foreign-born into the community. We confirm that foreign-born status is negatively associated with home ownership and that home ownership is positively associated with the measure of social capital based on volunteering. When controlling for homeownership, there is no evidence of a further negative direct effect of nativity on social capital. Moreover, examining the interaction between home ownership and foreign-born status, we find no evidence of a differential impact of home ownership on social capital for the foreign-born.

In addition to setting out our theoretical framework and reviewing the relevant literature, the use of census data allows us to explore the associations between the key variables using a large dataset, and in particular one with a large number of foreign-born observations. Notwithstanding the advantages of a large number of observations, the cross-sectional nature of the data means that any causal interpretations of the observed associations must be treated with caution. In Chapter 4, we re-examine the core relationships between our three focal variables using a longitudinal –albeit much smaller–dataset. Combined, the two chapters allow for a more robust picture of the relationship between homeownership, nativity and social capital in Ireland.

The remainder of the chapter is organized as follows. Section 2 provides a review of the related literature, examining research on the nativity-home ownership nexus, the homeownership-social capital nexus and the nativity-social capital nexus. Section 3 sets out the key hypotheses and the econometric methodology. Section 4 describes the data and Section 5 the results. Finally section 6 concludes with a discussion of the limitations of the findings.

3.2 Theoretical Framework and Literature Review

3.2.1 Introduction

Before proceeding to the empirical analysis, first we briefly review a number of relevant literatures. In Section 2.2 we review the basic facts of the recent Irish Immigration experience. In Section 2.3 we briefly examine the vast international and national literature on social capital, with an emphasis on its measurement and hypothesized role in economic and

societal performance. Studies that explore the relationship between immigration/nativity and social capital and other indicators of integration are discussed in Section 2.4. This is followed in Section 2.5 by a discussion of the existing literature on the relationship between home ownership and social capital. Finally, in Section 2.6 the literature on the home ownership choices of the foreign-born is reviewed.

Figure 3-1 Framework

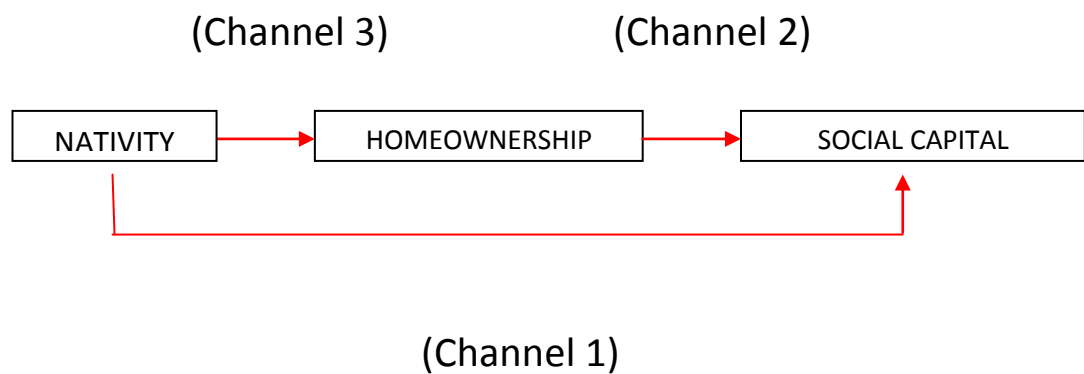
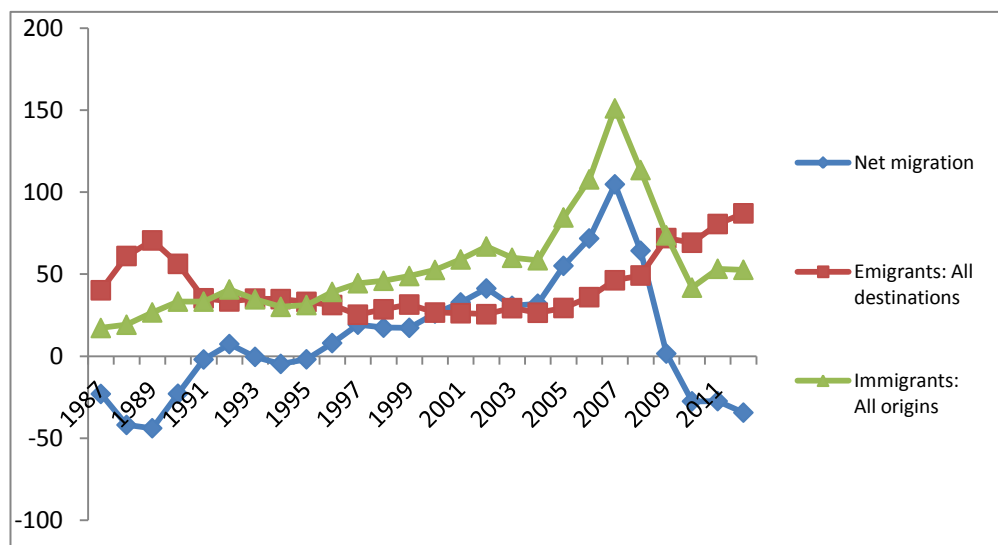


Figure 3.1 provides a useful organizing schematic. We use this to structure a brief review of relevant literature and to motivate our empirical work. Channel 1 captures the basic relationship between nativity and social capital. In general, all countries struggle to varying degrees to achieve the full integration of the foreign-born into 'host-country' society. Looking beyond nativity, there is a large literature that examines the role that home ownership can play in the development of social capital (Channel 2). This raises the possibility that becoming a homeowner (Channel 3) could be an important enabler to the acquisition of social capital for the foreign-born, and thus is critical to the broader integration process. A central question is whether this home ownership channel operates differently for

the foreign-born. One possibility is that, given existing social capital disadvantages, acquiring a home could be disproportionately important for this group.

3.2.2 Irish immigration Patterns

Figure 3-2 – Historical Irish Immigration Patterns



Source- cso

Ireland has traditionally been a country with high levels of emigration. This traditional pattern changed remarkably during the 1990s when Irish society became significantly more diverse. Figure 3.2 illustrates the levels of inward and outward migration from the late 1980s to the present. Levels of inward migration soared during the credit/property bubble between 2002 and 2007. The composition of foreign-born population changes dramatically during this period, with the share of the UK-born, which traditionally dominated the foreign-born in Ireland, falling from 46 percent in 2002 to 21 percent in 2011. Of the non-UK born, the share of immigrants

from the EU accession states – notably Poland grew dramatically from 1 percent in 2002 to 21 percent in 2011.

Table 3-1 – Foreign-born population in Ireland

Country	2002	Share	2006	Share	2011	Share
Poland	2,124	0.01	63,276	0.15	122,585	0.23
United Kingdom	103,476	0.46	112,548	0.27	112,259	0.21
Lithuania	2,104	0.01	24,628	0.06	36,683	0.07
Latvia	1,797	0.01	13,319	0.03	20,597	0.04
Nigeria	8,969	0.04	16,300	0.04	17,642	0.03
Romania	4,978	0.02	7,696	0.02	17,304	0.03
India	2,534	0.01	8,460	0.02	16,986	0.03
Philippines	3,900	0.02	9,548	0.02	12,791	0.02
Germany	7,216	0.03	10,289	0.02	11,305	0.02
United States	11,384	0.05	12,475	0.03	11,015	0.02
China	5,842	0.03	11,161	0.03	10,896	0.02
Slovakia	297	0	8,111	0.02	10,801	0.02
France	6,363	0.03	9,046	0.02	9,749	0.02
Brazil	1,087	0	4,388	0.01	8,704	0.02
Hungary	409	0	3,440	0.01	8,034	0.01
Italy	3,770	0.02	6,190	0.01	7,656	0.01
Pakistan	2,939	0.01	4,998	0.01	6,847	0.01
Spain	4,436	0.02	6,052	0.01	6,794	0.01
Czech Republic	1,103	0	5,159	0.01	5,451	0.01
South Africa	4,185	0.02	5,432	0.01	4,872	0.01
Others	45,348	0.2	77,217	0.18	85,390	0.16
Total Foreign-born	224,261	1	419,733	1	544,357	1

3.2.3 Social Capital

Putnam (1993) pioneered the development of the concept of ‘social capital’. His initial work was based on Italian data, where he found a strong relationship between civic engagement and the quality of the

governments. The social capital literature has developed rapidly since. The primary idea behind social capital theory is that social networks have 'value' and thus social capital refers to the value of the connections among individuals and the social networks that arise from them. A core concept in the social capital literature is trust. Therefore social capital is related to understanding selected characteristics and building a trustworthy and strong network. Greater trust strengthens network ties (Glaeser, Laibson and Sacerdote, 2002; Putnam, 2000).

There is a growing body of Irish (Healy, 2005; Healy, 2006) as well as international literature on social capital (Putnam 1993, 1996, 2000, 2001, 2007; Dipasquale and Glaeser, 1999; Glaeser & Sacerdote, 2000; and Borjas 1994, 1995, 2000, 2002, 2004, 2006, 2007). These studies have defined the term 'social capital' with varying emphasis on different aspects. The common element however is that inter connections among people are a key source of capital in addition to more traditional forms of physical, natural and human capital.

Social capital can be mapped along five key dimensions (Putnam, 2000): groups and networks; beliefs and harmony; combined action and collaboration, social structure and inclusion; and information and communication. It is also important to note that social capital can be positive or negative in terms of its impact on society. For example a negative aspect of social capital is that criminal groups may be rich in connections that enable them to operate successfully. Though extensive research exists on the effects of social capital, researchers are still trying to understand the underlying mechanisms that support the acquisition of social capital (Glaeser, Laibson and Sacerdote, 2002).

Glaeser (2002) stresses the importance of identifying the determinants of social capital, arguing that if we are to understand and transform social capital, we first need to identify how it is created. DiPasquale and Glaeser (1999) hypothesise that social capital is the inter-connection with others which enables individuals to benefit from their neighbours' investments. They argue that this leads to the development of a common language to communicate, as well as creating trust and bonds.² In other words, social capital enhances the ability of everyone in the neighborhood to benefit from each other's investments.

Healy (2005) uses the Survey of Social Capital to examine the composition of social capital in Ireland. The survey was undertaken by the Economic and Social Research Institute (ESRI) for the National Economic and Social Forum in 2002. While the survey did not record nativity, it did explore the association between home ownership and measures of community involvement and civic engagement. It finds that home ownership is positively related to both, the effects of which increases with the tenure at the respondent's current address.

²"Studies have also looked at different perspectives in understanding social capital such as individual and collective structural approach". (Van Der Gaag and Snijders, 2004 and Bourdieu, 1977). "If social network connections were to produce social capital there should exist resources that could be exchanged such as a return on investment on social endeavours" (Manturuk, Lindblad and Quercia, 2010). The view is that there should be a positive outcome in order to incentivize the community to invest in social capital.

3.2.4 Nativity and social capital

It is inevitable that native born persons would have an advantage over foreign-born persons in building social connections due to their familiarity with language, culture, and communication patterns. Immigrants normally arrive in a foreign country with an inherent economic and social disadvantage (Borjas, 1994). A vast body of labour market literature finds a negative wage differential for immigrants on arrival in the host country (Borjas, 2004). Although they start with a natural disadvantage of low level of earnings compared to natives - sometimes as low as 20 percent (Borjas, 2006), after a few decades their earnings converge to a level comparable with natives with similar socio-economic and education background. Immigrants from advanced economies tend to do better than poorer economies (Borjas, 2006). Initial disadvantages can also be transmitted across generations. According to Putnam (2007), socio-economic diversity among these different ethnicities has a positive effect on economic growth in the long run, despite hindering growth in the short run.

A large body of international and Irish studies reveals that foreign-born individuals have encountered social exclusion. Fahey and Fanning (2010) and Fanning and Mutwarasibo (2007), studied the impact of Irish immigrant settlement patterns and socio-economic inequalities in the Dublin area between 1996 and 2006. They found evidence of a relationship between separation from native born and a tendency to cluster in disadvantaged areas. More positively, they found evidence of advantages to the host areas in terms of the social engagement amongst disadvantaged groups.

In order to measure successful integration, Ager and Strang (2008) propose that achievement and access across the sectors of employment, housing, education and health are the four key dimensions of integration for UK immigrants. Jimenez (2011)³ finds that language proficiency, socio economic attainment, political participation, residential locale and social interaction with host families are the five main integration indicators for the USA. This shows that integration is a complex concept, understood differently by different researchers (Cohen *et al*, 1998). There is no generally accepted definition for integration, which makes it controversial and a subject of ongoing debate (Castles, 2001).

3.2.5 Homeownership and social capital.

There is a vast literature on the ‘positive’ externalities associated with home ownership (Borjas, 2002; Dipasquale & Glaeser, 1999; Glaeser et al, 2002; Sampson et al, 1997). Borjas (2002) confirms that immigrants have a lower home ownership rate compared to natives in the United States. Using U.S General Social Survey, Dipasquale & Glaeser (1999) found that individuals are incentivized to improve their community when they become homeowners, as it slows mobility and lengthens horizons. They also find a connection between home ownership and nativity based on their analysis using the German Socio-Economic Panel and controlling for individual fixed effects. Glaeser *et al.* (2002) find that there is a connection between ‘housing structure’ and ‘social connections’.

³ Migration policy Institute- Improving US and EU Immigration Systems project funded by the European Union, May 2011

Some of the early empirical work on social benefits from home ownership is limited in a number of ways (Manturuk, Lindblad and Quercia, 2010). First, in terms of differentiating 'owning a home' from other conditions such as immobility of homeowners after purchasing their home, the task is complicated by the challenge of identifying whether home ownership is a cause of social capital or whether social capital and home ownership are the results of some omitted third factor raising issues of generalisability. Second, many studies have focused on 'volume of the network' rather than 'convenience to accessing resources through networks'. A final drawback is that these studies have concentrated predominantly on middle-to-upper class society. Homeowners in general tend to have a higher standard of life and are more self-satisfied when compared to non-owners and are more likely to be involved in neighborhood development events (Rossi and Weber, 1996).

Glaeser and Sacerdote (2000), examine how housing structure – large apartment blocks, small apartment blocks, single family housing etc. – affects social capital. They find that apartment living is associated with less engagement with politics, more interaction with neighbours, and higher crime rates. Although the focus of their paper is not the impact of home ownership on social capital, their findings generally support a positive association, even after controlling for housing type.

Long term home ownership has a significantly positive effect on social capital and homeowners are more likely to be involved in the community than non-homeowners (DiPasquale and Glaeser, 1999 and Glaeser et al 2001). Also, according to Van De Bunt and Snijder (1999), an appropriate structure with ample opportunity for human interaction should be available for people to build social connections. Policy makers might

encourage home ownership not only for its tangible financial benefits but also because it creates social wealth such as civic participation, prevention of crime, public assistance and property maintenance.⁴

There is a general understanding among researchers, that homeowners are more involved in their communities than tenants, but it is not clear whether this is by choice or because renters have less opportunities available to them (Aaronson, 2000; Dietz and Haurin, 2003; Rossi, 1996; Manturuk, Lindblad and Quercia, 2010). Regardless of which, neighborhoods with high home ownership rates have shown more participation and social involvement than others. (Haurin, Dietz and Weinberg, 2002)

3.2.6 Home ownership and Nativity

There exists a large body of empirical work on Irish immigration patterns. (Barrett and Kelly, 2010; Barrett and McCarthy, 2007; Barrett, Bergin and Duffy, 2005; Barrett and Duffy, 2008; Barrett, FitzGerald and Nolan, 2002; Barrett, McGuinness and O'Brien, 2008). However, work on the home ownership patterns of immigrants is limited. Painter, Yang and Yu (2004) examine the impact of 'English proficiency' and 'ethnic concentration' as determinants of immigrant homeownership. While English proficiency is insignificant for home ownership attainment, ethnic group concentration and living in the same area with one's own ethnicity, seems to have a positive influence on homeownership.

⁴ National Association of Realtors, (2010), "*Social Benefits of home ownership and stable housing*", Research Division, Chicago and Washington, August

Turning to International literature, DiPasquale and Glaeser (1999) use the General Social Survey to understand the consequences of home ownership by the non-native born US population. They find that home ownership provides an incentive for non-native born for social engagement-lowers rates of mobility, and also encourages sense of belonging in an area.

Rupasinghe et al (2006) use country-level measures to explore the determinants of social capital. They find that ethnic diversity is negatively related to social capital, while attachment to place is positively related. Interestingly, they find that home ownership is negatively related to these social capital measures, though the effects are statistically insignificant in some specifications.

In 1995, a survey carried out on 8,782 residents from 343 neighbourhoods in Chicago, Illinois, found that, the stronger the social bonds in neighborhoods, the more reliable the neighborhood and the less violence and crime there is in the area, after controlling for individual-level characteristics, measurement error and prior violence (Sampson, Raudenbush and Earls, 1997). Also these social interconnections tend to help reconcile any issues arising from residential disputes and crime related issues. Putnam (2007) argues that though mixed communities could create disputes in society in the short-run, in the long-run, immigration and diversity are likely to have significant cultural, economic, fiscal and development benefits.

3.3 Empirical Strategy

3.3.1 Econometric Methodology

We hypothesize that home ownership is negatively related to foreign-born status. This could be because the foreign-born have had a shorter time with which to find a suitable house, or because they have shorter expected horizons in the host economy, making a home purchase a less financially attractive proposition. We further hypothesize that home ownership is positively related to social capital accumulation, as homeowners are more vested in the success of the local community. Owing to possible shortened horizons and less past opportunity to develop social connections, we further hypothesize that the foreign-born have lower measures of social capital. Finally, we hypothesize that home ownership has a larger positive impact on social capital for the foreign-born, providing an incentive to make up for any existing deficiency in social connections.

To test these hypotheses we estimate two equations, each with a dichotomous dependent variable. The first equation is for homeownership:

$$P(\text{Homeownership}) = f(\text{Nativity}, \text{Controls}).$$

Home ownership is hypothesized to negatively depend on foreign-born status and on a range of demographic and socio-economic controls.

The second equation is for social capital, where our social capital is proxied by volunteering:

$$P(\text{Volunteering}) = f[\text{Homeownership}, \text{Nativity}, \text{Nativity} * \text{Homeownership}, \text{Controls}].$$

Our volunteering variable is also a dummy variable that takes a value of 1 if the individual volunteers. Volunteering is assumed to be positively associated with home ownership and negatively related to foreign-born status. As discussed above, we also assume home ownership and foreign-born status interact positively; that is, home ownership has a larger positive effect for the foreign-born than for native born. This positive interaction could come about because home ownership is differentially helpful in overcoming social capital deficits for the foreign-born.

Probit specifications are used as our basic empirical specification for both equations. One limitation of the probit specification is the difficulty of interpreting marginal effects for interaction terms (Ai and Norton, 2003). As noted, the homeownership/foreign-born interaction is of central interest in this study. We thus also report OLS (or linear probability model) results, as the coefficient on the interaction term is straightforward to interpret. OLS has well known limitations with a dichotomous dependent variable, notably the possibility that predicated probabilities might not lie within the zero to one range. However, the probit and OLS specifications produce very similar marginal effects for both the home ownership and social capital equations.

3.4 Data and Descriptive Statistics

The data are from 5 per cent Anonymised Sample from the 2006 census (ISSDA). Details of the sample construction are provided in Appendix B. The variables extracted are shown in Table 3-2 along with a selection of summary statistics.

Table 3-2 -Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Min	Max
<u>Homeownership</u>					
Homeowner	144498	0.7853	0.4106	0	1
<u>Social Capital</u>					
Volunteering	144498	0.0602	0.2379	0	1
<u>Nativity</u>					
Foreign (UK+NONUK)	144498	0.1317	0.3381	0	1
UK	144498	0.0749	0.2632	0	1
NONUK	144498	0.0568	0.2315	0	1
<u>Interactions</u>					
Homeowner* Foreign	144498	0.0785	0.269	0	1
Foreign * Resident					
Period	144498	5.2973	14.4603	0	75
Homeowner*NONUK	144498	0.0208	0.1427	0	1
Homeowner*UK	144498	0.0577	0.2332	0	1
<u>Socioeconomics and Demographic</u>					
Age	144498	44.1313	16.1085	22	75
Age Squared	144498	2.2071	1.5425	0.484	5.625
Rural	144498	0.3910	0.4880	0	1
Female	144498	0.5047	0.5000	0	1
Employed	144498	0.6221	0.4849	0	1
Married	144498	0.5169	0.4997	0	1
Secondary Combined	144498	0.3626	0.4808	0	1
Lower secondary					
Education	144498	0.1712	0.3767	0	1
Upper Secondary					
Education	144498	0.1914	0.3934	0	1
Third level Combined	144498	0.4057	0.491	0	1
Third level Non degree	144498	0.2931	0.4552	0	1
Third level degree &					
Upper	144498	0.1126	0.3161	0	1

The homeownership variable is defined based on the nature of occupancy of the person's accommodation. Foreign indicates that the person's birthplace is outside of Ireland. Recognizing that many UK-Born individuals living in Ireland were born to Irish parents that may have returned to Ireland when their children were young, we separately identify the UK and Non-UK foreign-born. We also extract various additional demographic and socio-economic variables, including age, sex, marital status, urban-rural, employment status and education attainment. Our social capital indicator is a measure of volunteering. The definitions of all variables are provided in Appendix B.

3.5 Discussion of results

3.5.1 Homeownership

Table 3-3 presents the OLS and probit results for the home ownership regression. In addition to the nativity variables, the regression includes demographic (age, rural-urban, sex, marital status) and economic controls.

Overall, the regression performs well, with the demographic and educational controls statistically significant and signed as expected. The probability of home ownership is positively related to rural residence, being female and being married. Home ownership also increases with employment status and educational attainment.

Table 3-3 - Home ownership Regressions with OLS & PROBIT

(UK AND NONUK break down)

Homeownership	OLS	Probit Marginal Effects
UK	-0.0638*** (0.0037)	-0.0680*** (0.0041)
NONUK	-0.3766*** (0.0044)	-0.3483*** (0.0054)
Age	0.0074*** (0.0004)	0.0041*** (0.0004)
Age Squared	-0.0174*** (0.0046)	0.0125*** (0.0046)
Rural	0.1325*** (0.002)	0.1309*** (0.002)
Female	0.0228*** (0.002)	0.0205*** (0.002)
Employed	0.0827*** (0.0024)	0.0773*** (0.0024)
Married	0.1245*** (0.0023)	0.1288*** (0.0023)
Secondary Education	-0.0562*** (0.0028)	-0.0553*** (0.0028)
Third level Education	0.0092*** (0.0026)	0.0099*** (0.0025)
R Squared	0.1805	0.1748 (Pseudo)
No of Observations	144498	144498

Note - the numbers in parentheses are standard errors

***significant at 1 percent level **significant at 5 percent *significant at 10 percent

Our main focus is on how home ownership is affected by nativity after controlling for other factors. Owing to likely differences between UK and Non-UK (foreign) born, we initially consider the two groups separately. Many of the UK born are likely to be born to Irish parents, and may display quite different home ownership patterns to other foreign-born. The results show the expected negative relationship between being foreign-born and homeownership. Not surprisingly, the negative effect is larger for the non-UK born, with a marginal effect of -0.3780 compared to -0.0690 for the UK-born. Table 3-4 reproduces the basic home ownership regressions, but with

no distinction made between the UK and Non-UK foreign-born. The overall effect of being foreign-born is to reduce the probability of home ownership by approximately 19 percent. The signs and magnitudes of the control variables are similar to those reported in Table 3.5.

Tables 3-4 and 3-5 record the results of using OLS and probit specifications for our volunteering regression, where volunteering provides our proxy measure for social engagement. We again use the same set of demographic and socio economic controls in addition to our main variables of interest – home ownership and nativity.

3.5.2 Social Capital

Generally the demographic and educational controls produce the expected results. Volunteering increases with age (at a decreasing rate), with rural residence, and with being female. We find that volunteering decreases with being employed and educational attainment.

Turning to the first of our main variables of interest, home ownership is significantly positively related to volunteering after controlling for other factors. This is in accord with the social capital literature. More surprisingly, we find that foreign-born status is not statistically significant (Table 3-7). However, this hides different effects for the UK and non-UK foreign-born (Table 3-5). Being UK-born is positively and significantly related to volunteering. Being non-UK born is negatively related to volunteering, although the coefficient is not statistically significant.

Table 3-4 - Home ownership Regressions: OLS & PROBIT (FOREIGN = UK AND NONUK)

Homeownership	OLS	PROBIT
	Without Interaction	Marginal effects
Foreign	-0.1951*** (0.003)	-0.1867*** (0.0034)
Age	0.0090*** (0.0004)	0.0052*** (0.0004)
Age Squared	-0.0306*** (0.0046)	0.0036 (0.0046)
Rural	0.1439*** (0.0021)	0.1411*** (0.002)
Female	0.0245*** (0.002)	0.0219*** (0.002)
Employed	0.0884*** (0.0024)	0.0823*** (0.0024)
Married	0.1191*** (0.0023)	0.1247*** (0.0023)
Secondary Education	-0.0458*** (0.008)	-0.0463*** (0.0028)
Third level Education	0.0188*** (0.0026)	0.0177*** (0.0025)
R Squared	0.1623	0.1630(Pseudo)
No of Observations	144498	144498

Note - the numbers in parentheses are standard errors

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level

When examining the specification with interactions, we generally find no evidence of a positive interaction between foreign-born status and home ownership on volunteering activity. Indeed, this interaction is negative and statistically significant for the UK-born. (Table 3-5)

When focusing on Foreign-born, we finally examine how the homeownership and volunteering behaviour of the foreign-born changes with the length of time since the individual has migrated to Ireland. We would expect that, controlling for other factors, both homeownership and

volunteering would increase with years-since migration given the assimilation of immigrants into Irish society over time.

**Table 3-5 Social Capital (Volunteering) Re Regressions : OLS & PROBIT
(UK & NONUK Break down)**

Volunteering	OLS Interaction	Without Interaction	OLS Interaction	With Interaction	Probit Marginal Effects
Homeownership	0.0077*** (0.0017)		0.0089*** (0.0018)		0.01086*** (0.0017)
UK	0.0055** (0.0024)		0.0192*** (0.005)		0.0051** (0.0024)
NONUK	-0.0032 (0.0028)		-0.0039 (0.0037)		-0.0015 (0.0028)
Homeownership*UK	-		-0.0178*** (0.0057)		-
Homeownership*NONUK	-		0.0034 (0.0057)		-
Age	0.0056*** (0.0003)		0.0056*** (0.0003)		0.0061*** (0.0003)
Age Squared	-0.0472*** (0.0029)		-0.0470*** (0.0029)		-0.0516*** (0.003)
Rural	0.0059*** (0.0013)		0.0059*** (0.0013)		0.0055*** (0.0013)
Female	0.0161*** (0.0013)		0.0161*** (0.0013)		0.0166*** (0.0013)
Employed	-0.0042*** (0.0015)		-0.0042*** (0.0015)		-0.0041*** (0.0016)
Married	0.0033** (0.0014)		0.0035** (0.0014)		0.0034** (0.0014)
Secondary Education	-0.0530*** (0.0018)		-0.0530*** (0.0018)		-0.0481*** (0.0015)
Third level Education	-0.0172*** (0.0016)		-0.0172*** (0.0016)		-0.0160*** (0.0015)
R Squared	0.0146		0.0146		0.0332 (Pseudo)
No of Observations	144498		144498		144498

Note - the numbers in parentheses are standard errors
 ***significant at 1 percent level **significant at 5 percent *significant at 10 percent level

Table 3-9 and 3-10 respectively show the basic assimilation pattern for homeownership controlling for socio-economic/demographic factors, and social capital, controlling for homeownership and other socio-

economic/demographic factors. We find that Homeownership (Table 3-9) and volunteering (Table 3-10) activity both do increase with time in Ireland, although the rate of increase is low, at less than 0.01 percent per year in both regressions.

Table 3-6 Social Capital (Volunteering) Regressions: OLS & PROBIT

(UK AND NONUK break down)

Volunteering	OLS Without Interaction	OLS With Interaction	Probit Marginal Effects
Homeownership	0.0230*** (0.0016)	0.0244*** (0.0017)	0.0229*** (0.0014)
UK	0.0136*** (0.0024)	0.0293*** (0.0051)	0.0139*** (0.0026)
NONUK	0.0054* (0.0028)	0.0052 (0.0036)	0.0061* (0.0031)
Homeownership*UK		-0.0204*** (0.0057)	
Homeownership*NONUK		0.0026 (0.0057)	
R Squared	0.0002	0.0018	0.0005 (Pseudo)
No of Observations	144498	144498	144498

Note - the numbers in parentheses are standard errors

significant at 1 percent level *significant at 5 percent *significant at 10 percent

A key motivation for the study is that home ownership could be a significant factor affecting community integration and thus immigrant and community-level human capital. Although we find the foreign-born are not less likely to be homeowners, and homeowners are *more* likely to volunteer, we find that, controlling for other factors, the foreign-born are actually more likely to volunteer. Assuming a volunteering deficiency for the foreign-born, we initially hypothesized that home ownership could

overcome it. But since no volunteering deficiency was found, the absence of a positive interaction between home ownership and foreign-born status is perhaps not surprising.

Table 3-7 -Social Capital (Volunteering) Regressions: OLS and PROBIT

(FOREIGN = UK AND NONUK)

Volunteering	OLS	OLS With Interaction	PROBIT Marginal effects
Homeownership	0.0083*** (0.0017)	0.0088*** (0.0018)	0.0091*** (0.0016)
Foreign	0.002 (0.0019)	0.0037 (0.0031)	0.0026 (0.0019)
Homeownership*Foreign	- -	-0.0027 (0.0039)	- -
Age	0.0056*** (0.0003)	0.0056*** (0.0003)	0.0061*** (0.0003)
Age Squared	-0.0476*** (0.0029)	-0.0476*** (0.0029)	-0.0518*** (0.003)
Rural	0.0062*** (0.0013)	0.0062*** (0.0013)	0.0057*** (0.0013)
Female	0.0162*** (0.0013)	0.0162*** (0.0013)	0.0166*** (0.0013)
Employed	-0.0041*** (0.0015)	-0.0041*** (0.0015)	-0.0041*** (0.0016)
Married	0.0031** (0.0014)	0.0031** (0.0014)	0.0032** (0.0014)
Secondary Education	-0.0527*** (0.0018)	-0.0527*** (0.0018)	-0.0479*** (0.0015)
Third level Education	-0.0169*** (0.0016)	-0.0169*** (0.0016)	-0.0158*** (0.0015)
R Squared	0.0145	0.0145	0.0331(Pseudo)
No of Observations	144498	144498	144498

Note - the numbers in parentheses are standard errors

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level

To explain the basic correlations between homeownership and nativity, we first run social capital regression without socioeconomic and demographic

controls. The results are shown in Table 3-6 and 3-8. In Table 3-8 we make no distinction between the foreign-born based on country of origin. Here we find that Homeownership and foreign-born controls have a significantly positive impact on social integration in all regressions. But for the foreign-born and being a homeowner seems to have a negative and insignificant impact on social capital. Table 3-6 shows the results for a basic homeownership regression without controls but distinguishing between the UK and Non-UK foreign-born. Here we find that being a UK-born has a significant and favourable impact on social integration compared to Non-UK born. When examining the specification with interactions, we find evidence of a positive but insignificant interaction between Non-UK-born status and homeownership on volunteering activity. Indeed, this interaction is negative and statistically significant for the UK-born.

Table 3-8 - Social Capital (Volunteering) Regressions: OLS & PROBIT

(FOREIGN =UK AND NONUK)

(Compare with Table 3.6 Controlling only for foreign born status)

Volunteering	OLS		PROBIT
	OLS	With Interaction	Marginal effects
Homeownership	0.0236*** (0.0015)	0.0244*** (0.0017)	0.0234*** (0.0014)
Foreign	0.0102*** (0.0236)	0.0130*** (0.0031)	0.0108*** (0.0020)
Homeownership*Foreign		0.0043 (0.0039)	
R Squared	0.0017	0.0017	0.0039(Pseudo)
No of Observations	144498	144498	144498

Note - the numbers in parentheses are standard errors

***significant at 1 percent level **significant at 5 percent *significant at 10 percent

Table 3-9 - Home ownership Regressions (Only for foreign born) OLS and Probit (Comparison with Table 3.4) including years since residence variable

Homeownership	OLS	PROBIT
	Without Interaction	Marginal effects
Age	0.0145*** (0.0019)	0.0076*** (0.0067)
Age Squared	-0.0001 (0.0001)	-0.0001 (0.0001)
Rural	0.2313*** (0.0086)	0.2211*** (0.0305)
Female	0.0351*** (0.0081)	0.353*** (0.0274)
Employed	0.1076*** (0.0093)	0.1050*** (0.0313)
Married	0.1415*** (0.0086)	0.1399*** (0.0287)
Secondary Education	-0.0536*** (0.0113)	-0.0614*** (0.0390)
Third level Education	-0.0178* (0.0089)	-0.0198* (0.0390)
Years since migration	0.0097*** (0.0003)	0.0107*** (0.0013)
R Squared	0.2588	0.2255
No of Observations	11320	11320

Note - the numbers in parentheses are standard errors

***significant at 1 percent level **significant at 5 percent *significant at 10 percent

With a focus on the Foreign-born, we finally examine how the homeownership and volunteering behaviour of the foreign-born changes with the length of time since the individual has migrated to Ireland. We would expect that controlling for other factors, both homeownership and volunteering would increase with years-since migration given the assimilation of immigrants into Irish society over time.

Table 3-10 - Social Capital (Volunteering) Regressions: OLS and PROBIT

(FOREIGN = UK AND NONUK)
(Compare with table 3.5) Only for Foreign-born

Volunteering	OLS	PROBIT
		Marginal effects
Homeownership	0.0003 (0.0057)	0.0019 (0.0059)
Age	0.0056*** (0.0011)	0.0065*** (0.0012)
Age Squared	-0.0001*** (0.0001)	-0.0001*** (0.0001)
Rural	0.0245*** (0.0054)	0.0224*** (0.0052)
Female	0.0255*** (0.0049)	0.0255*** (0.0050)
Employed	-0.0182*** (0.0057)	-0.0182*** (0.0055)
Married	-0.0039 (0.0053)	-0.0040 (0.0053)
Secondary Education	-0.0605*** (0.0069)	-0.0623*** (0.0074)
Third level Education	-0.0254*** (0.0054)	-0.0245*** (0.0053)
Years since migration	0.0009*** (0.0002)	0.0008*** (0.0002)
R Squared	0.0219	0.0431(Pseudo)
No of Observations	11320	11320

Note - the numbers in parentheses are standard errors

***significant at 1 percent level **significant at 5 percent *significant at 10 percent

Table 3-9 and 3-10 shows the basic assimilation pattern for homeownership controlling for socio-economic/demographic factors, and social capital, controlling for homeownership and other socio-economic/demographic factors. We find that Homeownership (Table 3-9) and volunteering (Table 3-10) activity both increase with time in Ireland, although the rate of increase is low, at less than 0.01 percent per year in both scenarios.

We caution that our results are for a single measure of social capital based on volunteering. This was the only plausible social capital variable available to us in the census micro data file. It is possible that different measures of social integration/capital could produce different results, especially where they focus on cross-community networks and interactions. We examine alternative measures for social capital from an alternative dataset in the next chapter.

3.6 Conclusions

The literature on social capital highlights the causal links from home ownership to community engagement. In this chapter, we use census 2006 micro data to first investigate the relationship between nativity and homeownership. We then explore the linkages between both home ownership and nativity for a measure of social capital based on volunteering. We find that foreign-born individuals are less likely to own a home when a series of other factors are controlled for. We also find that being a homeowner is positively related to our measure of social capital and, more surprisingly, so too is UK-born status. We also examine the interaction between home ownership and foreign-born status, initially hypothesising that home ownership could help overcome any shortfall in social capital for the foreign-born. Overall we do not find evidence that home ownership differentially aids in the social integration of the foreign-born. It is important to repeat, however, that we do not find evidence of a relative deficiency of social capital for the foreign-born. Given that we hypothesized that home ownership would play a role in overcoming this relative deficiency, it is perhaps not surprising that we do not find a differential effect of home ownership for the foreign-born.

One concern with the social capital results is the possible bias as a result of excluded individual characteristics. In particular, an excluded characteristic say a personal characteristic such as the degree of extrovertism of the person's affinity to their adopted country-could affect decisions to both own a home and to integrate into the community. This could lead to bias in the estimated effect of home ownership on social capital, and possibly also bias in the estimated interaction effect between home ownership and foreign-born status. This suggests the value of panel data that would allow us to control for unobserved individual-level effects. In the next chapter we use the longitudinal Living in Ireland dataset to re-examine our core hypotheses using both pooled and fixed-effects approaches. The Living in Ireland data also offers alternative indicators of social capital. We take advantage of these additional measures to examine the robustness of the basic results to non-volunteering based indicators of social capital

Chapter 4

4. Home ownership and Social Capital: Irish Household Panel Study

4.1 Introduction

The objective of this chapter is to extend the analysis of Chapter 3 using Census longitudinal data and alternative measures of social capital. The analysis in chapter 3 is confined to a single cross section and uses a limited measure of social capital. In this chapter we use longitudinal panel data from the Living in Ireland (LII) survey. The period we analyse is the eight years from 1994 to 2001 with an approximate sample size of 15,000 individuals (numbers varying with the different number of households sampled over the years).

In Chapter 3 we find that foreign-born individuals are less likely to own a home after controlling for a series of other factors. We also find that being a homeowner is positively related to our measure of social capital and, more surprisingly, so too is being foreign-born. Furthermore, we examine the interaction between home ownership and foreign-born status, hypothesising that home ownership could help overcome any shortfall in social capital for the foreign-born. However, we find evidence that home ownership has a larger positive impact on social capital for the foreign-born compared to the native born.

Although we find strong evidence of an association between home ownership and social capital in the cross section, it is not obvious that this reflects a causal relationship from home ownership to social capital. Unobserved household characteristics could explain both the propensity to own a home and having a high level of social capital. Although we include a number of household-level controls in the cross-sectional analysis, the suspicion remains that relevant characteristics are omitted. This chapter attempts to solve this problem, and thus examine the robustness of the cross-sectional analysis by using the longitudinal Living in Ireland survey.

The longitudinal nature of the dataset allows us to control for time-invariant householder characteristics that could be correlated with both decision to own a home and to volunteer. For example, both decisions could reflect a preference for community connection and engagement. We would expect such preference to be stable over time. While it is possible that preferences shift over time, we follow the common approach in economics to treat preferences as stable. Controlling for householder fixed effects, we thus believe it is reasonable to treat the association between homeownership and volunteering as causal. Similarly, any differential effect of homeownership on volunteering for the foreign-born compared to the native-born is plausibly treated as causal given stable underlying preference over time. This data set also includes additional indicators of social capital, which allow us to examine the determinants of social capital beyond a limited measure of volunteering.

The next section of this paper provides an overview of our empirical methodology. Section 3 describes the data and variables used. Section 4 reports our empirical results for both home ownership and social-capital specifications. This section also explains alternative proxies for social

capital beyond the volunteering measure. The final section presents conclusions and recommendations for further research.

4.2 Empirical Methodology

As reviewed in Chapter 3, there is a vast empirical literature on social capital and home ownership (DiPasquale and Glaeser, 1999; Glaeser and Sacerdote, 2000; Putnam, 2007, etc.). However, the literature on the interactions between homeownership, nativity and social capital is limited. This is one of the few studies that investigates the causal connections between the social capital with nativity and home ownership using longitudinal data, and which simultaneously includes a comprehensive coverage of other socio-demographic controls.

As in the previous chapter, we are interested in two central relationships

Relationship one: Homeownership

$$\text{Prob (Homeownership)} = f (\text{Nativity, Controls})$$

Relationship two: Social Capital

$$\text{Prob (Social Capital)} = f (\text{Nativity, Homeownership, Nativity} \\ \text{*Homeownership, Controls})$$

The first relationship captures the association between nativity and homeownership. The second relationship captures the association between social capital, nativity and homeownership, allowing for interactions between the latter two in terms of their impact on social capital.

In Chapter 3, we use Ordinary Least Squares (OLS) and probit specifications to model the determinants of both the decision to own a home and the decision to volunteer (our indicator of social capital). In order to compare the results of the two chapters, we again report both OLS and probit results in this chapter.

The main advantage of the longitudinal data in this chapter is that it allows us to control for omitted individual-level characteristics that might be correlated with home ownership and social capital. In particular, the same (unobserved) household characteristics might be correlated with both the decision to own a home and to volunteer. For example this could reflect a psychological characteristic such as the degree of extrovertism and introvertism, or the long-term attachment to the community.

This leads us to look at econometric specifications for dichotomous dependent variables that allow for the inclusion of fixed effects. We therefore also report the results from OLS and Logit with household-level fixed effects.

As discussed in Maddala (1987), fixed-effects probit is difficult to implement computationally, and, more seriously, leads to inconsistent estimates. However, as shown in Anderson (1970) and Chamberlain (1980), a conditional likelihood approach is computationally feasible. Moreover, provided the conditional likelihood function satisfies regularity conditions, the estimate is consistent.

We thus report both OLS and Logit fixed effects results for our panel estimations. As discussed in the previous chapter, a further empirical challenge in applying the probit model even to the pooled data is that the

magnitude of the interaction effect in non-linear models does not equal the marginal effect of the interaction term. [See, e.g., Ai and Norton (2003)]

Thus, although we report the marginal effects from a probit specification for the purpose of comparison with the OLS results (without an interaction term), we focus on the OLS results for specifications where we include a homeownership-nativity interaction. We similarly focus on OLS with fixed effects rather than logit fixed effects when considering the specification with the homeownership-nativity interaction in the fixed effects regressions.

The longitudinal data comes from the Living in Ireland Surveys from the Irish component of the European Community Household Panel (ECHP): an EU-wide project coordinated by Euro Stat. The ECHP provides harmonized longitudinal surveys dealing with the social situation, financial circumstances and living standards of European individuals and households. The fact that the same set of households is interviewed each year means that it is possible to study changes in the characteristics and circumstances of particular households or individuals over time.

4.3 Data and Descriptive Statistics

The first wave of the ECHP was conducted in 1994, and the same individuals and households were followed each year. The survey ran for eight waves until 2001. In 2000, the seventh wave, the Irish sample of individuals and households followed from Wave 1 was supplemented by the addition of 1,500 new households to the total. This was done in order to increase

the overall sample size, which had declined due to attrition since 1994. These additional households, as well as the original sample, were surveyed in 2001. (Data Appendix C)

Table 4-1 - Descriptive Statistics

Variable	Observations	Mean	Std Deviation	Minimum	Maximum
<u>Home ownership</u>					
Homeowner	57467	0.78	0.417	0	1
Household Size	57467	3.99	1.863	1	10
<u>Social Capital</u>					
Volunteering	57467	0.54	0.498	0	1
Talk to neighbours	57467	0.98	0.124	0	1
Meet friends	57467	1	0.033	0	1
Church attendance	57467	0.92	0.274	0	1
Mind kids free	57467	0.05	0.226	0	1
<u>Nativity</u>					
Irish	57467	0.99	0.11	0	1
EU	57467	0.01	0.103	0	1
NONEU	57467	0	0.039	0	1
Foreign	57467	0.01	0.11	0	1
Homeowner*Foreign	57467	0.01	0.094	0	1
<u>Socioeconomic and Demographic</u>					
Age	57467	43.9	18.4	17	92
Age Squared	57467	2264	1766	289	8464
Urban	57467	0.54	0.499	0	1
Income	57467	822	816	17	2421
Employed	57467	0.5	0.5	0	1
Female	57467	0.49	0.5	0	1
Married	57467	0.87	0.34	0	1
Separated	57467	0	0.064	0	1
Divorced	57467	0	0.028	0	1
Widowed	57467	0.01	0.119	0	1
Never married	57467	0.11	0.318	0	1
Other marital					
Combined	57467	0.13	0.34	0	1
Primary Education	57467	0.07	0.258	0	1
Secondary Education	57467	0.83	0.376	0	1
Third level Education	57467	0.1	0.295	0	1
Other education	57467	0	0.053	0	1

The focal dependent variables in the two equations are 'homeownership' and 'social capital' (with various measure of social capital being used). Independent variables are mostly socio-economic and demographic controls common to both equations. The focal independent variables for this study are foreign-born status and homeownership. The variables are defined in the ECHP as follows:

Home ownership variable

- Homeownership: Whether your household owns this dwelling, or is a tenant or sub-tenant? If the house is owned (either through a purchase from a local authority or through a purchase from the private market, and with or without mortgage) the variable takes a value of 1; 0 otherwise.

Social Capital Variables

- Volunteering: If the person is a member of any club or organization such as sports or entertainment club, a neighbourhood group, a political party etc, the variable takes a value of 1; 0 otherwise.
- Minding Kids for free: If a person is minding kids without a fee the variable takes a value of 1; 0 otherwise.
- Meeting friends: If a person is meeting friends regularly the variable takes a value of 1; 0 otherwise.
- Church attendance: If a person attends church on a regular basis the variable takes a value of 1; 0 otherwise.
- Talk to neighbours regularly: If a person talks to neighbours regularly the variable takes a value of 1; 0 otherwise.

Nativity variable

- Nativity (Foreign-born): If a person reports their status as non-EU or Other EU the variable takes a value of 1; 0 otherwise.

Socioeconomic and Demographic

- Married: If a person records their current marital status as “married” the variable takes a value of 1. All other marital statuses – Separated, divorced, widowed or never married- are recorded as 0
- Education: The ECHP asks the respondent to record which of the following categories best describes the highest level of education completed:

No education beyond Primary	1
Primary Cert. or equivalent	2
Some 2nd level, no exams	3
Group Cert. or equivalent	4
Inter Cert. or equivalent	5
Junior Cert. or equivalent	6
Leaving Cert. /Matric. or equivalent	7
VPT or Post Leaving (PLC)	8
Diploma or equiv. from University/RTC	9
Primary Degree or equivalent	10
Higher degree	11
Special School (Code not used in Wave 1)	12
Other	13

Here we classify the educational attainment into three broad categories: Primary and other (1, 12 and 13) Secondary (2, 3 4,5,6,7 and 8), Third level (9, 10 and 11). The omitted category is primary and other. Two dummy variables are included for (i) Secondary; and (ii) Third level.

- Employment status: The employment variable takes a value of 1 if the person is employed in a job or a business for at least 15 hours per week; 0 otherwise.
- Urban: If a person lives in a district electoral division (DED) with more than 50 per cent of their population in towns with a population of 3,000 or more the variable takes a value of 1; 0 otherwise.
- Income: This is a continuous variable measuring the total net income (after tax and PRSI) per week (or month) including income from all sources (including social Welfare) Income variable is deflated using the Irish Consumer Price Index (www.cso.ie). For this purpose year 1994 was treated as the base year.
- Age: The age variable was created by deducting birth year from the year of the survey

Table 4-2 Structure of the Living In Ireland Panel

Year	Individuals	Percentage	Households	Percentage
1994	9904	16.75	4048	16.07
1995	8530	14.43	3584	14.23
1996	7487	12.66	3174	12.6
1997	6885	11.61	2945	11.69
1998	6321	10.69	2729	10.83
1999	5449	9.22	2378	9.44
2000	8051	13.62	3466	13.76
2001	6518	11.02	2865	11.37
TOTAL	59125	100	25189	100

Table 4-3 – Home ownership OLS and Probit specifications

Homeownership	OLS	PROBIT
	Without Interaction	Marginal effects
Foreign	-0.0374** (0.0154)	-0.0378** (0.0161)
Age	0.0011** (0.0018)	0.0014*** (0.0005)
Age Squared/1000	0.0188*** (0.0195)	0.0155*** (0.0054)
Rural	0.1663*** (0.01222)	0.1646*** (0.0034)
Female	-0.0053 (0.0126)	-0.003 (0.0035)
Employed	0.0971*** (0.0138)	0.0934*** (0.0038)
Married	0.0181*** (0.0187)	0.0165*** (0.0054)
Secondary Education	0.1849*** (0.0229)	0.1864*** (0.0076)
Third Level Education	0.2660*** (0.0313)	0.1857*** (0.0042)
R Squared	0.0735	0.0697(Pseudo)
No of Observations	59125	59125

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level
 Note - the numbers in parentheses are standard errors

Table 4.1 lists the main variables used in this study and their respective descriptive statistics. Table 4-2 describes the structure of the panel in terms of number of individuals and households in each year.

4.4 Results

As outlined in Section 2, we utilize a number of regression techniques to analyse dichotomous dependent variable in order to compare the cross-sectional results using Census data with the results using the Living in Ireland data, and to take advantage of the panel nature of the Living in Ireland data.

4.4.1 Home ownership

Table 4.3 and 4.4 record the results of OLS and probit regressions *without* fixed effects. The OLS specification is provided for the purposes of comparisons with the later OLS specification with fixed effects. The probit and OLS specifications are provided in order to compare the results with the cross-sectional findings from Chapter 3.

Table 4.3 provides the results for homeownership. We start with a discussion of the key demographic control variables. Across the specifications, home ownership increases with age at an increasing rate (both the linear and squared age variables are positive and statistically significant). Home ownership is also positively and significantly related to rural residence and employment status. The specifications consistently show that females are less likely to own a home, all else being equal. Compared with the excluded category of primary education, after

controlling for other factors, those with a third-level education are more likely to own a home.

Table 4-4 – Social Capital (Volunteering)

Volunteering	OLS and PROBIT specifications		
	OLS	OLS With Interaction	PROBIT Marginal effects
Homeownership	0.1450*** (0.0005)	0.1450*** (0.0005)	0.1434*** (0.0050)
Foreign	0.1302*** (0.0153)	0.1894*** (0.0353)	0.1389*** (0.0180)
Homeownership*Foreign		-0.0804** (0.0411)	
Age	0.0112*** (0.0006)	0.0112*** (0.0006)	-0.0007*** (0.1287)
Age Squared/1000	-0.1359*** (0.0064)	-0.1359*** (0.0064)	-0.1379*** (0.0065)
Rural	-0.0451*** (0.0041)	-0.0451*** (0.0041)	-0.0445*** (0.0041)
Female	0.1251*** (0.0042)	0.1251*** (0.0042)	0.1257*** (0.0041)
Employed	0.0292*** (0.0046)	0.0292*** (0.0046)	0.0268*** (0.0047)
Married	-0.2562*** (0.0065)	-0.2562*** (0.0065)	-0.2510*** (0.0056)
Secondary Education	0.0016 (0.0081)	0.0015 (0.0081)	0.0022 (0.0081)
Third Level Education	0.1166*** (0.0104)	0.1166*** (0.0104)	0.1191*** (0.01)
R Squared	0.0846	0.0846	0.0645(Pseudo)
No of Observations	59125	59125	59125

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level

Note - the numbers in parentheses are standard errors

Turning to the focal foreign-born variable, we find that being foreign-born lowers the probability of home ownership by about 4 percentage points.

We next compare the results of the probit specification with the cross-sectional probit results of home ownership in Chapter 3 (Comparison of Table 4-3 with Table 3-4 in Chapter 3). In both datasets, foreign-born status is associated with lower homeownership, with the size of coefficient being

significantly larger in the more recent cross section. There are also some interesting differences in the signs of some of the control variables. Being female is associated with lower home ownership in the Living in Ireland panel, but is associated with higher home ownership in the cross section. The education gradient is also different. In the panel, home ownership rises monotonically with education. However, in the cross section, home ownership is lower for those with a secondary education compared to excluded primary category.

4.4.2 Social Capital

Table 4-5– Social Capital (Volunteering)

VOLUNTEERING	Fixed Effects –OLS and LOGIT specifications		
	OLS Without Interaction	OLS With Interaction	LOGIT Without Interaction
Homeownership	-0.0109 (0.0074)	-0.0100 (0.0074)	-0.0007 (0.0004)
Foreign*Owner	-	0.1968*** (0.0233)	-
Age	-0.0145*** (0.0028)	-0.0127*** (0.0028)	-0.0009*** (0.0001)
Age Squared/1000	-0.3559*** (0.0268)	-0.3655*** (0.0268)	-0.0019** (0.0008)
Rural	-0.0236* (0.0116)	-0.0234* (0.0116)	-0.0002* (0.0001)
Employed	0.0220*** (0.0068)	0.0224*** (0.0068)	0.0001** (0.0001)
Married	-0.2559*** (0.0069)	-0.2506*** (0.0069)	-0.0015*** (0.0005)
Secondary Education	-0.2278*** (0.0083)	-0.2272*** (0.0083)	-0.0017*** (0.0006)
Third level Education	-0.0984*** (0.0117)	-0.1032*** (0.0117)	-0.0002** (0.0001)
<u>R Squared</u>			
Within	0.1359	0.1346	-
Between	0.0140	0.0140	-
Overall	0.0192	0.0196	-
No of Observations	57467	57467	37146

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level
Note - the numbers in parentheses are standard errors

Table 4.4 provides the results for our social-capital indicator based on volunteering. We again first discuss the key demographic controls. The

probability of volunteering increases at a decreasing rate with age (with a positive coefficient on age and a negative coefficient on age squared). All else being equal, rural residents are less likely to volunteer. Volunteering also tends to increase with being employed.

Females are more likely to volunteer, while married individuals and rural residents are less likely to volunteer. Volunteering tends to increase with educational level, with a positive gradient running from primary-through third-level educational attainment.

We next turn to a comparison of the results from in Chapter 3 (Table 3-8). Compared to the negative coefficients attained in the previous cross-section study, we find (Table 4-4) a strong positive and significant coefficients relationship for volunteering when employed and for all levels of educational attainment from primary through to third-level.

Turning to our focal explanatory variables - homeownership, foreign-born status and their interaction the signs of the effects are parallel to those found in the cross section. All else equal, we again find that the foreign-born are more likely to volunteer. The positive coefficient on the foreign-born variable is now statistically significant. However, the size of the estimated impacts of both home ownership and foreign-born status on volunteering are much larger in the panel.

A central hypothesis in this thesis is that home ownership has a differentially positive effect on social capital for the foreign-born. The idea is that home ownership helps to overcome other barriers to integration. However, we again find a negative coefficient on the interaction term - this

time statistically significant. But, again, the negative coefficient may not be a surprise since we do not find evidence of a deficiency to begin with.

4.4.3 Fixed Effects

As discussed in Section 4.2, a concern is that the estimated associations in the social capital regressions could reflect omitted individual characteristics that are positively correlated with both home ownership and volunteering. The advantage of the living in Ireland survey data is that we can include individual-level fixed effects. The effect of home ownership on social capital (as indicated by volunteering) is then identified from changes in home ownership status. Given the fixed-effects specification, only variables that change value across time are included.

The fixed-effects results are reported in Table 4.5. Home ownership is again found to be negatively related to social capital, although the effect is statistically insignificant. Given that foreign-born status does not change over time, it is not included in the specification. However, we do include the interaction between foreign-born status and homeownership, which will vary with changes in homeownership.

The positive and statistically significant coefficient on the interaction term indicates that home ownership does have a differentially positive impact on the social integration of the foreign-born (see Specification 2). This is at odds with the findings from both the Census cross section and the simple pooled Living in Ireland panel. As noted, the cross section and pooled results could be biased due to omitted household level attributes. The fixed effects results, which should be robust to this bias, are consistent with the differential impact hypothesis. The differences in results in table 4-4 and 3-

8 also could be due to different years under consideration in the two data sets used. i.e Census 2006 data in Chapter 3 cross sectional results and Living In Ireland(LII) longitudinal data used in Chapter 4 in LII waves running for the eight years from 1994 – 2001. The foreign born nature of the variable could be different in these two data sets as a result of returning UK born immigrants born to Irish born parent in LII data and the influx of immigrants due to Economic boom and opening up of the Irish labour market to other EU member countries. The evidence suggests that policies that encourage home ownership by the foreign-born would tend to support the integration process, at least in terms of the volunteering proxy for their social integration.

4.5 Other measures of Social Capital

The Living in Ireland Survey includes five main types of questions that provide an indication of social integration. Our final analysis is based on all available social capital measures: involvement in volunteering activities; how often people meet friends and talk with neighbours; whether people attend church; and whether they mind children without a payment. We use these as alternative proxies for our social capital dependent variable.

Table 4.6 records the results of the OLS specification with the foreign-home ownership interaction included. We chose the OLS specification because of our direct interest in the interaction variable, as discussed in Section 3. The First column reproduces the results for the volunteering proxy to allow for easy comparison across the alternative proxies.

Table 4-6 – Alternative Measures of Social Capital

(Volunteering/Talking to neighbours/ Meeting friends/ Church / Minding kids free)

OLS Specification with Interactions

SOCIAL CAPITAL	Volunteering	Talk to Neighbours	Meet friends	Church	Mind kids free
Homeownership	0.1450*** (0.0005)	0.0152*** (0.0013)	0.0012*** (0.0003)	0.0461*** (0.0028)	0.0001 (0.0023)
Foreign	0.1302 (0.0183)	0.0140*** (0.0121)	-0.0193*** (0.0024)	-0.1100*** (0.0199)	-0.0142 (0.0165)
Foreign*Owner	-0.0804** (0.0411)	-0.0003*** (0.0002)	0.0181*** (0.0028)	0.0147 (0.0232)	0.0106 (0.0192)
Age	0.0112*** (0.0006)	0.0017*** (0.0002)	0.0008 (0.0001)	0.0036*** (0.0003)	0.0081*** (0.0003)
Age Squared/1000	-0.1359*** (0.0064)	-0.0155*** (0.0017)	-0.0005 (0.0004)	-0.0263*** (0.0036)	-0.0782*** (0.03)
Rural	-0.0451*** (0.0041)	0.0127*** (0.0011)	0.0005* (0.0003)	0.0657*** (0.0023)	0.0023 (0.0019)
Employed	0.0292*** (0.0046)	-0.0075*** (0.0012)	0.0001 (0.0003)	-0.0044* (0.0026)	-0.0234*** (0.0022)
Female	0.1251*** (0.0042)	0.0010 (0.0011)	-0.0002 (0.0003)	-0.0363*** (0.0024)	-0.0350*** (0.002)
Married	-0.2562*** (0.0065)	0.0079*** (0.0017)	0.0015*** (0.0004)	-0.0028 (0.0036)	-0.0048 (0.003)
Secondary Education	0.0016 (0.0081)	0.0085*** (0.0021)	0.0016*** (0.0006)	0.0322*** (0.0046)	-0.0006 (0.0038)
Third Education	0.1166*** (0.0104)	-0.0039 (0.0027)	0.0022*** (0.0007)	0.0125** (0.0058)	-0.0124** (0.0048)
R Squared	0.0853	0.013	0.0025	0.038	0.0273
No of observations	57411	57411	57467	57467	57467

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level

Note - the numbers in parentheses are standard errors

The results indicate that the most robust links between both home ownership and foreign-born status and social capital are present for the volunteering measure. Home ownership has a positive and statistically

significant relationship for all social capital proxies with the exception of minding kids for free. However, foreign-born status is negatively related to three of the social-capital proxies: talk to neighbours, meet friends and mind kids for free (with the latter statistically insignificant). Foreign-born status is positively and statistically significant in relation to volunteering and church attendance.

Turning to the interaction term, a negative and statistically significant effect is found for talking to neighbours as well as the previously identified volunteering variable. The size of the negative coefficient on the interaction term in the talking with neighbours specification is economically small. In contrast, a positive and statistically significant interaction is found in the meeting with friends' specification.

Taken together, the results suggest the sensitivity of the links between foreign-born status and social capital to the precise measure of social capital chosen. The nature of the integration of the foreign-born into domestic society depends on the precise form of the integration being measured. One issue is that a number of these measures could be poor indicators of integration into broader society, possibly reflecting more the integration into immigrant or extended family networks (e.g. minding kids for free). Overall, we consider the volunteering proxy as the most useful indicator of broader social integration.

Table 4-7 – Alternative Measures of Social Capital

OLS Fixed effects Specification with Interactions

SOCIAL CAPITAL	Volunteering	Talk to Neighbours	Meet friends	Church	Mind kids free
Homeownership	-0.0100 (0.0074)	0.0125*** (0.0020)	0.0001 (0.0006)	-0.0026 (0.0038)	0.0045 (0.0035)
Foreign*Owner	0.1968*** (0.0233)	-0.0001* (0.0001)	0.0189*** (0.0036)	-0.0338 (0.0234)	-0.0004 (0.0220)
Age	-0.0127*** (0.0028)	-0.0002 (0.0008)	-0.0003 (0.0002)	0.0054*** 0.0014	0.0044*** (0.0013)
Age Squared	-0.3655*** (0.0268)	0.0057 (0.0073)	0.0020 (0.0021)	0.0317** (0.0137)	-0.0777*** (0.0129)
Rural	-0.0234* (0.0116)	0.0194*** (0.0032)	0.0023** (0.0009)	0.0005 (0.0059)	0.0072 (0.0056)
Employed	0.0224*** (0.0068)	-0.0071*** (0.0018)	-0.0009* (0.0005)	0.0139*** (0.0035)	-0.0053 (0.0032)
Married	-0.2506*** (0.0069)	-0.0032* (0.0019)	0.0011** (0.0005)	-0.0085** (0.0035)	-0.0030 (0.0033)
Secondary Education	-0.02272*** (0.0083)	0.0061*** (0.0023)	0.0018*** (0.0007)	0.0113*** (0.0043)	-0.0037 (0.0040)
Third Level Education	-0.1032*** (0.0117)	0.0030 (0.0032)	-0.0014 (0.0009)	0.0050 (0.0060)	-0.0082 (0.0056)
<u>R Squared</u>					
Within	0.1346	0.0028	0.0016	0.0025	0.0023
Between	0.0140	0.0117	0.0014	0.0097	0.0018
Overall	0.0196	0.0072	0.0007	0.0082	0.0006
No of Observations	57411	57411	57467	57467	57467

***significant at 1 percent level **significant at 5 percent *significant at 10 percent level
 Note - the numbers in parentheses are standard errors

Table 4.7 reports the results of the fixed effects specification for all five social-capital proxies. We again re-report the volunteering specification for ease of comparability. Once again we find the results are very sensitive to the chosen social-capital proxy. Meeting with friends is the only other social-capital proxy besides volunteering that has a positive and significant interaction. The coefficients on the interaction in the other specifications are statistically insignificant and/or economically small. We again conclude that these additional proxies are likely to be poor indicators of social

capital relative to the volunteering proxy. However, the variation in results across specifications does suggest caution is required in interpreting the volunteering regression results as definitive on the joint and separate linkages between home ownership and foreign-born status and social capital.

4.6 Conclusion

This chapter provides a further exploration of the links between homeownership, nativity and social capital. The longitudinal data allowed us to explore a key concern with the cross-sectional reported in Chapter 3: the possibility that omitted individual-level effects lead to biased estimates of the causal links from home ownership to social capital, from nativity to social capital, and the interaction of homeownership/ nativity to social capital. The longitudinal dataset also allowed us to explore the determinants of social integration using alternative social-capital proxies.

Overall, the results including individual fixed effects do cast a doubt on the cross-section results. As in the cross section, the simple pooled sample results again show negative interaction between home ownership and foreign-born status in terms of their impact on social capital. However, the inclusion of household fixed effects points to a positive and statistically/economically significant interaction effect in the preferred volunteering specification. We thus find evidence to support the hypothesis that home ownership does have a differentially positive impact on the social capital of foreign-born.

Nonetheless, the sensitivity of the results to the data set and precise specification used suggests caution is required in drawing firm conclusions.

In addition, the results are quite different depending on the indicator of social capital chosen. This probably partly reflects the limits of a number of the proxies as measures of social-capital. The volunteering proxy would seem to be the most natural indicator of social integration.

In sum, the findings of this chapter are suggestive of bias in the cross-section results. The evidence is thus supportive of the role that home ownership could play in the integration of the foreign-born. However, given the sensitivity of the results, further study is needed before pursuing policies that would specifically encourage home ownership on the part of the foreign-born as a strategy for improved social integration.

Chapter 5

5. Conclusions and Contributions

5.1 Summary of Context

International migration and housing markets have been at the forefront of developments in Ireland's economy and society in recent decades. These include the property bubble and crash and also the challenges of integration in an increasingly heterogeneous society. This thesis contributes to the currently available literatures by exploring empirical questions at the intersection of these developments, utilizing new data sources and methodologies.

5.2 Summary of Contributions

Chapter 2- Demographics and Irish Housing Demand: A Cross-County Econometric Model

Contribution

This paper develops a simple framework for incorporating the demographic determinants of housing demand into a standard housing demand model. It also augments the existing time-series and cross national literatures with a cross-county panel on the Irish housing market. The panel combines new demographic data on age and nationality from the anonymised 5 per cent of samples from the 1996, 2002 and 2006 census, with a new county-level house price series based on asking prices.

Both price and income elasticities are found to be lower in the cross-county data than in existing time-series studies. The combination of the functional form for incorporating demographic effects and the cross-county data also allows for a richer treatment of the demographic determinants of housing demand than in existing studies.

Chapter 3 - Embedding in the Community: Nativity, Home ownership and Social Capital in Ireland

Contribution

In this paper we use census data to explore the relationship between nativity and homeownership. We then explore the linkages between homeownership, nativity and a measure of social capital based on volunteering.

The rapid rise in the size of Ireland's foreign-born population has led to concerns about successful immigrant integration. While the international literature has highlighted the role of home ownership in the integration process, the question has received limited attention in the Irish context. Chapter 3 contributes to the literature by examining both the determinants of home ownership and social capital using Irish census micro data. Of particular interest is the possibility that home ownership could be differentially beneficial in supporting the social capital accumulation of the foreign-born. However, we do not find evidence of a differential effect in the cross section analysis. One possible explanation is that we do not observe significant evidence of a social capital deficiency for the foreign-born based on our measure of volunteering. Another issue is that omitted individual characteristics could be correlated with both the home

ownership and social capital accumulation decisions, potentially biasing estimates of the causal effects of interest.

Chapter 4 - Home ownership and Social Capital: Irish Household Panel Study

Contribution

As reviewed in Chapter 3, home ownership is seen as a route to social integration. One concern with the analysis in Chapter 3 is that omitted individual level attributes could hinder the identification of the causal effects of home ownership and social capital, and also the identification of any differential effect for the foreign-born. Therefore in this chapter, we make use of a longitudinal data set – the Living in Ireland Survey – to control for individual level heterogeneity. We also expand the proxy indicators for social capital beyond the volunteering measure. In contrast to cross sectional findings, we find evidence from fixed-effect regressions that home ownership does have a differentially positive effect on the social capital of the foreign-born. However, the results are sensitive to the dataset, specifications and social-capital proxy used.

The final empirical chapter attempts to overcome the limitations of the cross-sectional analysis of Chapter 3 due to a single measure of social capital based on volunteering. The contribution of Chapter 4 is to use a panel data set - the Living in Ireland Survey - to allow for the inclusion of individual-level Fixed effects and also the use of an expanded set of social capital indicators. Controlling for time-invariant individual-level characteristics, we do find evidence that home ownership is differentially beneficial for the volunteering activity of the foreign-born compared do the native-born. However, the regressions based on alternative indicators of

social capital generally perform poorly, suggesting that volunteering provides the best available proxy.

Irish Society has been transformed by the arrival of “new Irish” in recent decades. This has led to new challenges of successful integration of the new arrivals into Irish society. It is well known that homeownership is a facilitator of social integration. The thesis confirms the hypothesis that the foreign –born have lower ownership rates, with the rate of such homeownership only rising slowly with time since arrival. Thus the homeownership disadvantage could be a barrier to integration. The thesis also explores the hypothesis that homeownership could be particularly effective in supporting social capital accumulation for the foreign-born. The panel data results provide evidence to support this hypothesis.

From a policy perspective, housing market policy is currently receiving significant attention, including the publication of the government’s new construction strategy (Stationary office Dublin, May 2014, “Construction 2020 – a strategy for a renewed construction sector”). However, the particular housing challenges of the foreign-born are not considered. The findings of the thesis suggest the value of identifying the barriers faced by the foreign-born in terms of becoming a homeowner. The potential barrier could include access to credit, uncertainty about visa/citizenship status, issues relating to family unification and discrimination.

The findings of the thesis – while tentative given currently available data – suggest the value of policies that reduce the barriers to homeownership in terms of furthering social integration. Given the relative newness of large-scale immigration, Ireland has the opportunity to successfully integrate new arrivals. While a successful integration policy will be multi

dimensional, the findings of the thesis suggest that policies to reduce the barriers to homeownership for immigrants are an essential component of a successful integration strategy.

While the findings are suggestive of the positive role that home ownership can play in the integration process, the sensitivity of the results to estimation method and social capital indicators, suggest that further research is warranted before firm policy conclusions can be drawn.

Data Appendix A – Chapter 2

A1.1 Description and sources of the variables

A1.1.1 Source of Data

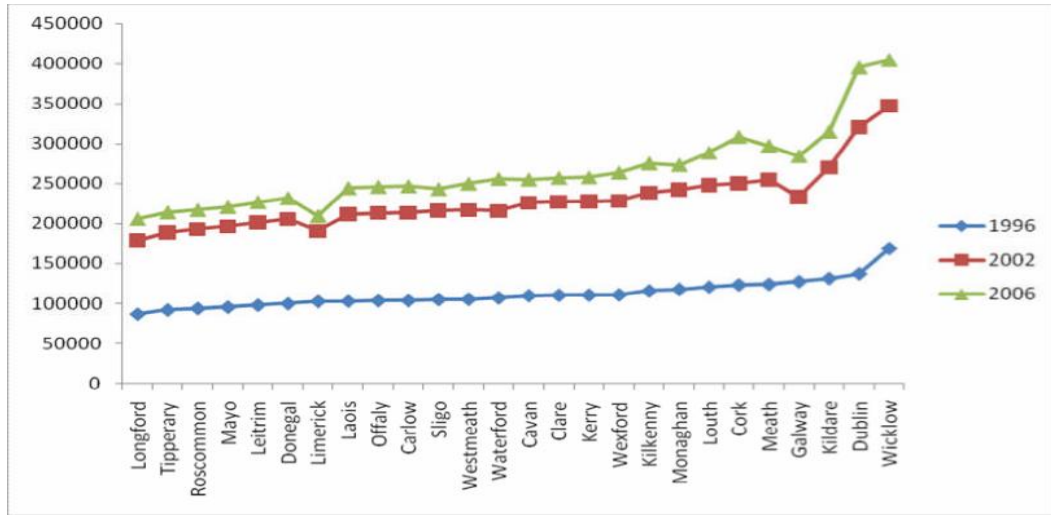
The data used in Chapter 2 are assembled from a number of different sources. The demographic data are from CSO Census samples (5 percent) of Anonymised Records (SARs) and the house price and rents data are from county-level data on asking prices assembled from Daft.ie.

A 1.1.2 House Prices and Rents

Nominal house prices and rents data were adjusted using the Harmonised Index of Consumer Prices (HICP) of the European Central Bank (ECB). In order to use as a deflator we have rebased the HICP index taking 2006 as the base year. The rebased HICP was used to derive the real house prices and real rents for each county for census years 1996, 2002 and 2006.

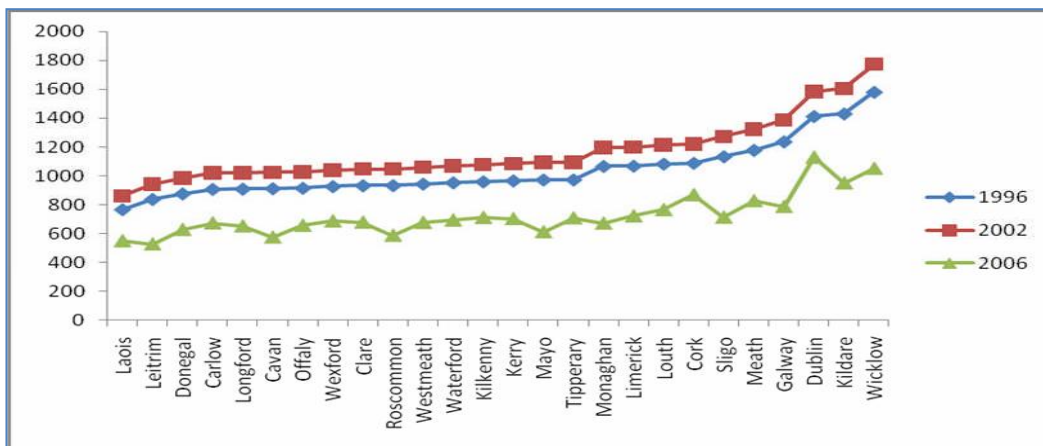
The house prices have been derived from the hedonic regression methodology due to the heterogeneity of housing units in the country and also the variation of house prices due to location-specific advantages across the country and counties.

Figure A-1– County level Real House Prices



Source : Daft.ie.

Figure A-2–County level Real Rents

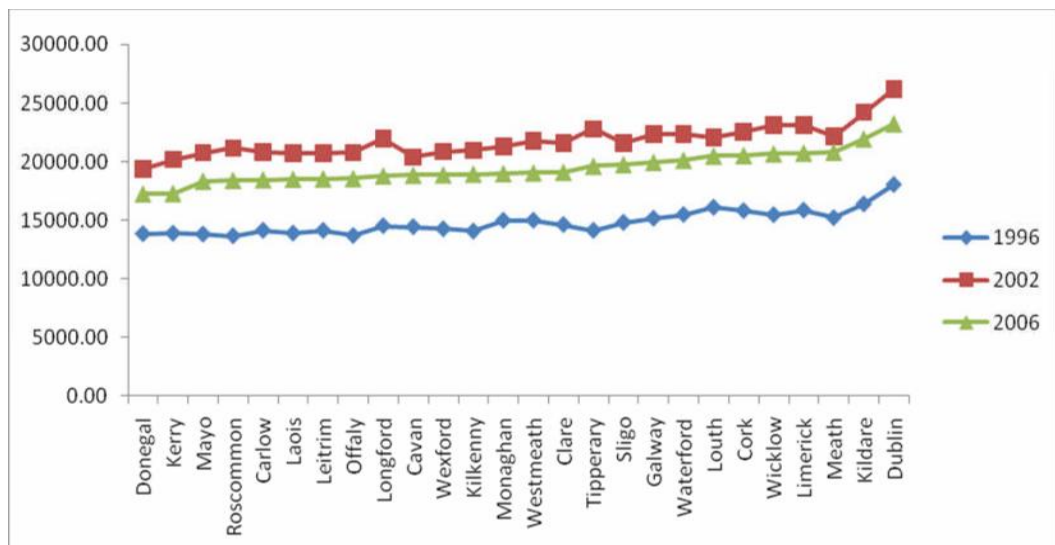


Source : Daft.ie. 2009

A 1.1.3 Per capita Income

The county level per capita income is from CSO (CSO–County Income and Regional GDP reports). Nominal per capita income was deflated to 2006 constant- price level using the HICP.

Figure A-3– County level per capita income



Source : CSO

A 1.1.4 Per capita Housing stock

The number of households in each county for each census years is used to calculate the housing stock per capita for each county. Census interactive tables of demographics were used for this purpose.

A 1.1.5 User cost of capital (ucc)

The user cost of capital is calculated using a lagged house price appreciation and mortgage interest rates using the formula in the text

(formula 9). Since data on county level interest rates are unavailable, the annual average of CSO monthly interest rates is used for each county.

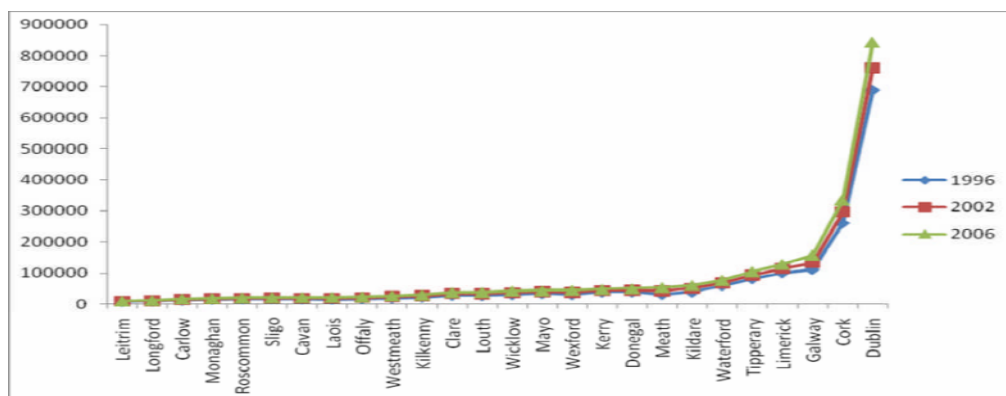
A 1.2 Demographic data

A 5 per cent of anonymised sample of the population (SARs) covering demographic and socio-economic variables associated housing characteristics is available for each census year. These data were accessed through the Irish Social Science Data Archive (ISSDA).

A 1.2.1 Age shares

The SARs micro data was classified into sixteen (16) age groups. Traditionally, the most important house buying age group is the age 24-35 years old. For the purpose of modeling the impact from the adult age shares, we have aggregated the sixteen age categories in to four broad groups; adult share 1 – age group 20-34 (Figure A.5), adult share 2 – 35-49 (Figure A.6), adult share 3 – age group 50-64 (Figure A.7), and adult share 4 – ages 65+ (Figure A.8).

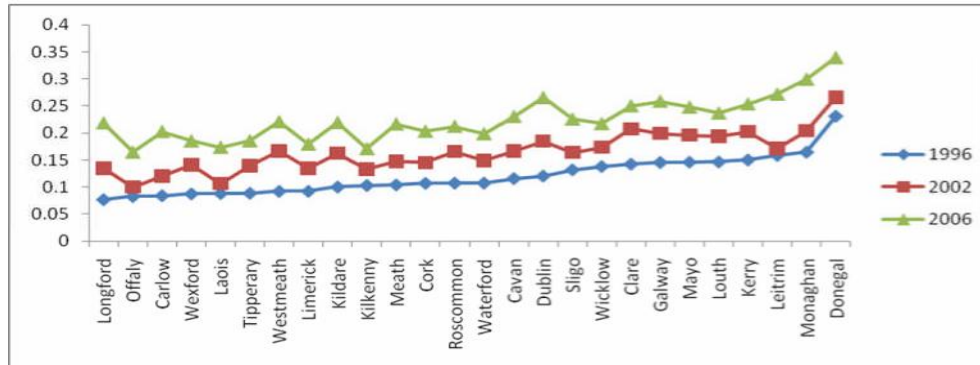
Figure A-4– County level housing stocks



Source : CSO

Figure A-5 – ADULT SHARE 1

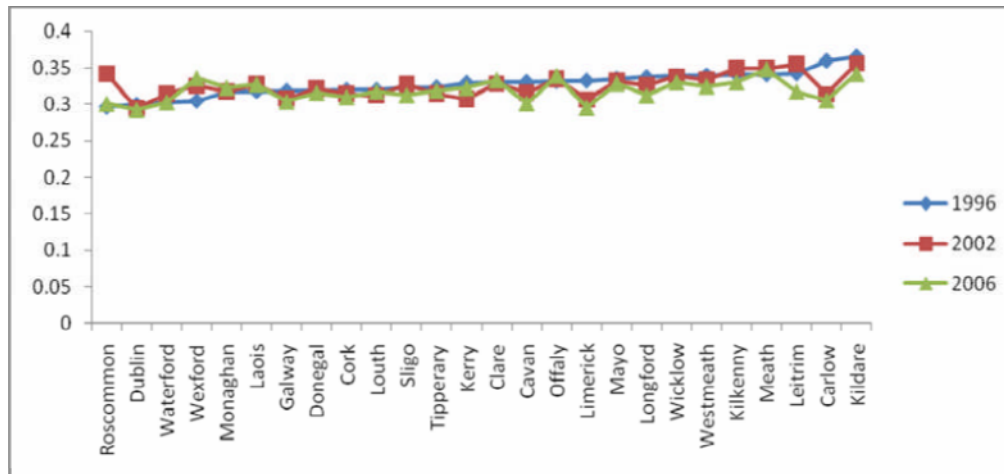
Shares of adult age group 20-34 years in each county



Source : Census (5 percent sample)

Figure A-6 – ADULT SHARE 2

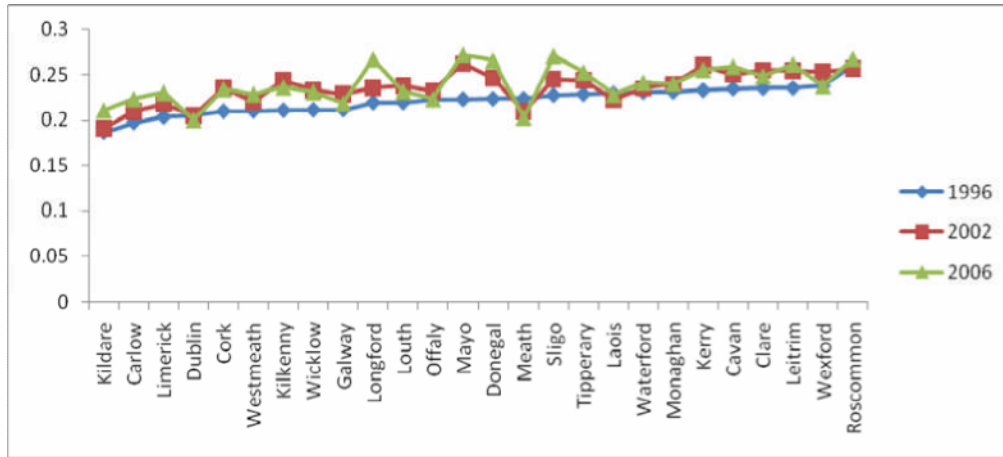
Shares of adult age group 35-49 years in each county



Source : Census (5 percent sample)

Figure A-7– ADULT SHARE 3

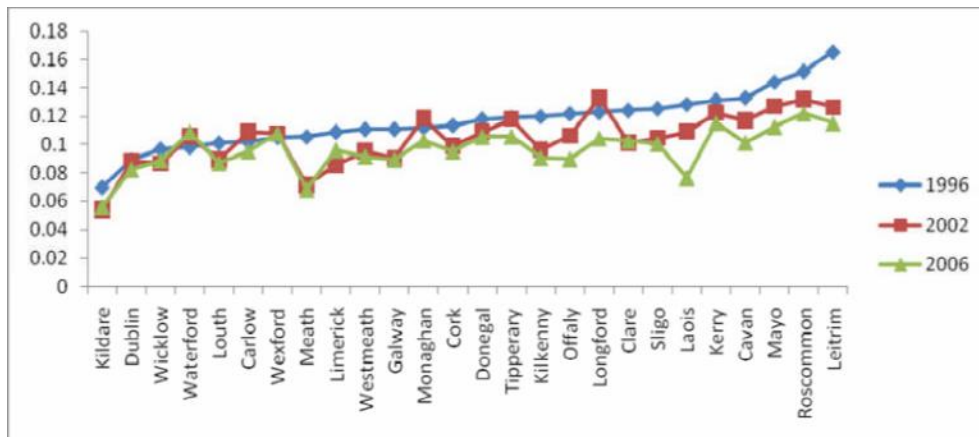
Share of adult age group 50-64 years in each county



Source : Census (5 percent sample)

Figure A-8– ADULT SHARE 4

Shares of adult age group 65+ years in each county

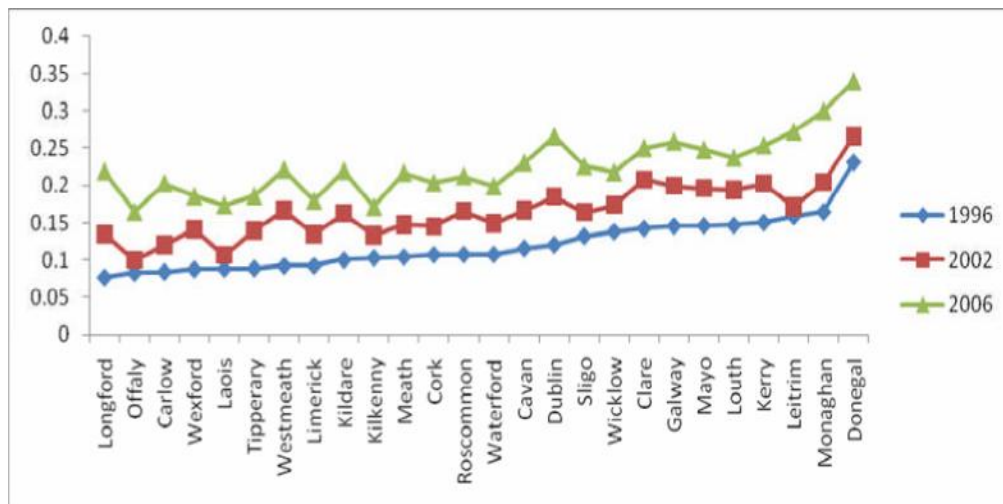


Source : Census (5 percent sample)

A 1.2.2 Native and Foreign-born population shares

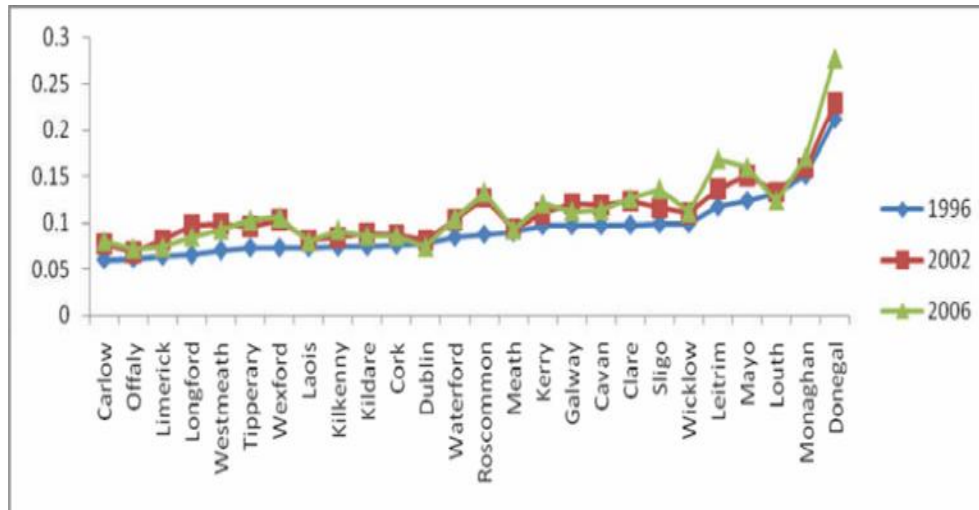
The foreign-born population is defined based on the place of birth of the individual. i.e. foreign and native born, but does not record whether these people are Irish or Non-Irish. Therefore, for the purpose of analyzing the data, we have separated the foreign-born share into two broad categories; UK-born (Figure A-10) and NONUK-born (Figure A-11) Figure A-9 depicts the pattern of the total foreign-born shares in each year for every county.

Figure A-9– Foreign-born share of population for each county



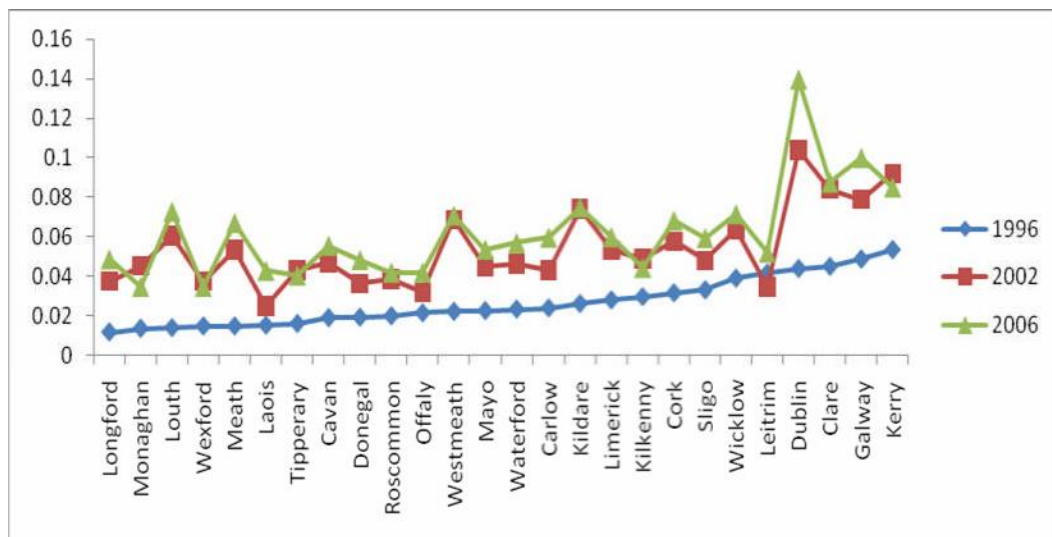
Source : Census (5 percent sample)

Figure A-10– UK born share of population for each county



Source : Census (5 percent sample)

Figure A-11- Non UK foreign-born adult population share in each county



Source : Census (5 percent sample)

Data Appendix B – Chapter 3

B1 Introduction

The data set for this study is from census anonymous 5 percent sample in year 2006. A Census of Population of Ireland was taken on the night of Sunday, 23 April 2006.

B1.1 Census coverage

The census figures relate to the 'de facto population', i.e. the population recorded for each area represents the total number of persons present within its boundaries on the night day, together with all individuals who arrived in that neighborhood on the morning of that day, not having been recorded elsewhere. Individuals aboard on ships in port are included with the population of nearby areas. Therefore these figures, include guests present on census night as well as those in residence, but usual residents temporarily absent from the area were excluded from the count.

A limited number of questions, mainly restricted to demographic characteristics, were asked from usual residents who were temporarily absent from their households on census night, which formulates a more accurate picture to be built up on households by excluding guests present on census night and including inhabitants who were temporarily absent.

B1.2 Conducting Census

The temporary field force (6 Census Liaison Officers, 40 Regional Supervisors, 400 Field Supervisors and some 4,400 part-time Enumerators)

during the four weeks before Census entered details of 1.77 million private residences and shared establishments in their records. They simultaneously distribute to these dwellings that were expected to be occupied on census night, blank census questionnaires.(1.5 million). There were approximately 266,000 residences which were vacant at the time of the census while another 30,000 household was either itemized elsewhere or temporarily absent from the country.

B1.3 Results

A summary of the population in his/her enumeration area was presented and returned to the Central Statistics Office (CSO) by each enumerator. They in turn formed the foundation for the preliminary 2006 population results. Subsequently the completed questionnaires of the individual households were sent out to the CSO for processing.

All information submitted are checked for consistency and used to determine the boundaries of census towns and suburbs with legal boundaries. Finally parallel processing of these responses to questions on the census questionnaire is carried out.

B2 Anonymisation

The records relating to individuals in each household was anonymised by stripping off all private information such as household number, person number within household and by recoding variables where the number of categories could guide to the recognition of a person when combined with other information on the documentation.

B2.1 Selecting the Sample

A 5 per cent random sample of the recoded individuals from each county was selected. The individual records within each county were sorted randomly before creation of the sample file.

B3. Definitions of Variables

1 Homeownership

Nature of Occupancy - Indicates the nature of occupancy of the households' accommodation.

Purchaser / owner occupied comprises (redefined for this study as '1')

- Owner occupied where loan or mortgage repayments are being made
- Owner occupied where no loan or mortgage repayments are being made
- Being purchased from a Local Authority under a Tenant Purchase Scheme

Rented including free rent comprises (redefined for this study as '0')

- Rented from a Local Authority
- Rented from a Voluntary Body
- Rented unfurnished other than from a Local Authority or Voluntary body
- Rented furnished or part furnished other than from a Local Authority or Voluntary Body
- Occupied free of rent

2 Social capital

Voluntary activities

The social capital component of the study was proxies this variable which was based on the question in the survey given as,

“In the last 4 weeks have you done any of the following activities without pay?”

1. Helping or voluntary work with a social or charitable organization
2. Helping or voluntary work with a religious group or church
3. Helping or voluntary work with a sporting organization
4. Helping or voluntary work with a political or cultural organization
5. Any other voluntary work
6. No voluntary activity

If they left the question ‘blank’ or stated a ‘*’ I have considered this person to have done no voluntary work and if they said ‘1’ then I considered them as a person involved in any one or more of the activities listed from 1 to 5 above.

- **Not applicable**

1 Did voluntary work

*** Did no voluntary work or not**

Not applicable applies to persons under 15 years of age on the day of the census.

3 Foreign-born/Native born

Place of Birth Individuals are asked to give the place of usual residence of their mother at the time of their birth, not the location of the hospital where the person was born. If the person was born in anywhere in Ireland (including Northern Ireland) they state county of birth. If the person was born outside Ireland, whether now inhabitant in or visiting Ireland, they

state their country of birth. (Choices were England, Scotland, Wales, Other EU, USA, Other countries)

4 Age

- All the variable for this study is for adult population (over 18)
- 5 Year Age Groups(16) were available in the sample data set

5 Sex

This variable for 1 for male and 2 for female which I have converted in to a dummy variable as 1 for male and 0 for female

6 Rural/Urban

Rural = 'R' (Converted to '1' in the study)

Urban = 'U' (Converted to '0' in the study)

Rural includes towns with a population of less than 1,500 persons.

Urban includes towns and cities with a population of 1,500 persons or more.

7 Employment

1. Employee
2. Self-employed, with paid employees
3. Self-employed, without paid employees
4. Assisting relative

Not applicable applies to:

2. persons under 15 years of age on the night of the census;
3. Persons who indicated an economic status other than 'at work', 'unemployed' or 'retired'.

8 Education

Highest Level of Education Completed to date

- 1 Primary (including no formal education)
- 2 Lower secondary
- 3 Upper secondary
- 4 Third level – non-degree
- 5 Third level – degree or higher
- . Not applicable

Not applicable applies to persons under 15 years of age on 23 April 2006.

9 Marital status

1. Never Married
2. Married
3. Separated (including divorced)
4. Widowed

Married comprises of the following categories:

- Married (first marriage)
- Re-married (following widowhood)
- Re-married (following divorce/annulment).

Separated comprises of the following categories:

- Separated (including deserted)
- Divorced.

Not applicable applies to persons under 15 years of age on 23 April 2006.

10 Years of Residence

Year of taking up residence in Ireland

Persons who lived outside the Republic for a period of one year or more were asked to indicate the year of taking up residence in the Republic of Ireland and the Country of last previous residence. The year stated was grouped into 7 separate categories for the purposes of this sample.

We use this variable to understand the relationship between home ownership and social interaction based on years resident in the state.

Data Appendix C– Chapter 4

C1. Introduction

The data for this chapter is from the Living in Ireland (LII) longitudinal data. The LII Surveys forms the Irish component of the European Community Household Panel (ECHP) which is an EU-wide project which has been coordinated by Euro stat in order to conduct harmonized longitudinal surveys dealing the ‘social situation’, ‘financial circumstances’ and ‘living standards’ of *European individuals and households*. The survey interviews the same set of households every year which enables changes in the characteristics and circumstances of particular households or individuals over time. They also provide a harmonized cross-sectional data for each survey year, as well as longitudinal data, enabling dynamic analysis of changes over time. The first wave of the survey was conducted in 1994, and the same individuals and households were tracked each year for eight waves, until 2001⁵. In year 2000 in its seventh wave, the sample followed from Wave 1 was supplemented by the addition of 1,500 new households to the total in order to increase the overall sample size, which was declining due to attrition. This was a step to ensure the precision of estimates of key figures. These new individuals and households, as well as the original sample, were brought for the survey in 2001.

⁵ Twelve countries participated in 1994, with Austria and Finland joining in 1995 and 1996, respectively.

C2. Composition of the Living in Ireland (LII) Survey

The LII is a household questionnaire which is completed by the person responsible for the accommodation, with an additional individual questionnaire which is completed by every adult over the age of 16 within that household. In year 1994 survey was administered to each member who was born in 1977 or before and was subsequently updated as appropriate in each wave of the survey.

C3. The Sample

A representative sample of private households was selected for 1994 wave 1 of the survey. 4048 households were successfully interview in year 1994 which represented 57 percent of the valid sample generating a response rate expected in any rigorous and challenging survey of this nature.

On the other hand 14,585 individuals completed the household survey and 10,418 were eligible for the personal interview who was born in 1997 or earlier and again 9,904 eligible respondents completed the full individual questionnaire (964 on a proxy basis).

The total number of households included by eligibility in Wave 2 (year 1995) was 4,376, with a response rate of 82 per cent. In the next four waves from 1996 to 1999, the household response rate remained in the range in the range of 84 to 88 per cent.

C4. Supplementation in 2000

LII survey experienced a substantial loss of respondents over time. Out of the initial sample in 1999 only 13,964 individuals were left and 49 per cent (6908) completed 1999 households, with another 813 persons joining households sample at during the intervening years. By the year 2000, 5530 of the 13861 individuals still in scope (40 per cent) were in remaining in the household's sample.

Survey was concerned of high rate of attrition for two reasons; the first the loss of representation in the resulting sample, the second been the loss of precision in the estimates derived from the sample. The main difficult encountered was the difficulties of tracing households that had changed address, such as young single adults. The reduction in the sample size was addressed by supplementing with a new sample selected using the same procedure as for the first wave of the survey in 1994, using ESRI's RANSAM programme, by the electoral register. The response rate achieved by the new sample reached 57 per cent for the 2,661 new households. Which in reality was the same as the rate achieved in Wave 1 (1994) and was in line with the typical response rate required of a survey of this nature like the Household Budget Survey.

With the more workforce participation and economic development since 2000 survey found it difficult to contact the households. Again the final wave in 2001 dataset includes 9,131 individuals, 4,820 of followed from 1994 and 4311 who joined the sample since then and most of them being added when the sample was supplemented in 2000 carrying a response rate at the household level was 78 per cent, a lower completion rate than had been achieved throughout the 1990s. In 2001 it was more difficult to

trace households with their busier schedules but still the response rate remained at 93 per cent of adult household members been successfully interviewed, and with 6521 personal interviews.

C5. Definitions of each variable

1) Home ownership

Question - **Does your household own this dwelling or are you a tenant or sub-tenant? If you own, or are purchasing, please say whether the purchase was through a local authority or with a private mortgage (or no mortgage).**

Nature of homeownership

Owner (or purchasing)	1
Owner (or purchasing)	2
Accommodation provided rent-free	3
Tenant/subtenant	4

For the purpose of this study I have formulated the binary variable to state 1 for home ownership and 0 for a non-homeowner and in this case 1 and fell in the home ownership category and 3 and 4 fell under non-home ownership category

2) Sex

Question –**Sex of respondent**

Gender

Male	1
Female	2

3) Marital status

Question - **Could you tell me your present marital status and since when have you held this status?**

Marital Status

Married	1
Separated	2
Divorced	3
Widowed	4
Never married	5

Marital status was taken as 1 if married and 0 if any other status.

4) Highest level Education

Question - **Which of the following categories best describes the highest level of education you have completed?**

No education beyond Primary	1
Primary Cert. or equivalent	2
Some 2nd level, no exams	3
Group Cert. or equivalent	4
Inter Cert. or equivalent	5
Junior Cert. or equivalent	6
Leaving Cert/Metric Or equiv	7
VPT or Post Leaving (PLC)	8
Diploma or equiv. from University/RTC	9
Primary Degree or equivalent	10
Higher degree	11

Special School (Code not used in Wave 1)	12
Other	13

For the purpose of our analysis the classification for educational attainment variable was classified as follows.

Primary = 1

Secondary = 2+3+4+5+6+7+8

Third Level = 9+10+11+12+13

5) Location

Question - **Size of location All** (based on number of residents in the area)

Country	1
Village (200-1,499)	2
Town (1,500-2,999)	3
Town (3,000-4,999)	4
Town (5,000-9,999)	5
Town (10,000 or more)	6
Waterford City	7
Galway City	8
Limerick City	9
Cork City	10
Dublin City (incl. Dun Laoghaire)	11
Dublin County (outside city)	12

6) **Irish-born**

Question -**Were you born in Ireland?**

Yes	1
No	2

7) **Voluntary**

Question -**Are you a member of any club or organization such as a sports or entertainment club; a neighborhood group; a political party etc?**

Yes	1
No	2

8) **Period residing**

Question -**Since when have you lived at this address? (Year)**

1909-2001

9) **Citizenship (first)**

Irish	1
Other EU Country.	2
Other Non-EU Country	3

10) **Age & Age Squared**

Question - **Year of birth All 1909 (=1909 or earlier) to 2001**

11) Employed /not employed

Question - **I'd like to start by collecting some details on what you do, what your main activities are and so on. I'd like to start with your present work and daily activities. Are you at Present working in a job or business for at least 15 hours a week?**

Yes	1
No	2

12) Talk to neighbors'

Question - **How often do you talk to any of your neighbors?**

On most days	1
Once or twice a week	2
Once or twice a month	3
Less than once a month	4
Never	5

If a respondent said 1, 2, 3 or 4 it was taken as 'Yes' and 5 as a 'No'

13) Meet people

Question - **I would like to ask you how often you meet people, whether here in your home or elsewhere. How often would you meet friends or relatives?**

On most days	1
Once or twice a week	2
Once or twice a month	3

Less than once a month	4
Never	5

If a respondent said 1, 2, 3 or 4 it was taken as 'Yes' and 5 as a 'No'.

14) Church

Question - **Apart from weddings, funerals and christenings about how often do you attend religious services?**

More than once a week	1
At least once a week	2
At least once a month	3
At least twice a year	4
At least once a year	5
Less than once a year	6
Never or practically never	7

If a respondent said 1, 2, 3, 4, 5 or 6 it was taken as 'Yes' and 7 as a 'No'

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