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Wendy Disch, Lea Hauser and Kieran McQuinn

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A comparison of homeownership rates across European Union countries: How fares Ireland?

Wendy Disch, Lea Hauser and Kieran McQuinn*

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Abstract

Increasing homeownership has been a long-standing policy objective of many western economies. However, homeownership rates have stalled across many of these countries in recent years due to the significant volatility many housing markets have experienced with house prices in particular varying substantially over the period. In this paper, using data from the EU-SILC we examine trends in homeownership across twelve EU countries. In particular, we focus on the demographic, income and employment characteristics of home-owning households across households in different European countries. Initially, we focus on these trends for the Irish market, however, we then compare the results across the EU sample in order to benchmark the performance of the Irish residential market. This market was especially impacted by the global financial crisis (GFC) between 2008 and 2010. This should help provide policymakers with a clearer perspective on the measures that need to be undertaken if homeownership rates are to be maintained or increased.

Keywords: Homeownership; Housing Affordability; European Households.

JEL codes: D10, G50, O18, R21.

* The views in this paper do not represent those of the Central Bank of Ireland or of the Euro-system of Central Banks. The authors can be contacted at: wendy.disch@centralbank.ie, lea.hauser@esri.ie and kieran.mcquinn@esri.ie. We are particularly grateful to Eoin Corrigan, Department of Housing, Local Government and Heritage for comments on an earlier draft. Any remaining errors are the responsibility of the authors.

Introduction

Many western economies have had the long-standing policy objective of either maintaining or increasing home-ownership rates amongst the overall population (see European Commission (2019), Pawson, Martin, Lawson, Whelan and Aminpour (2022) and Dreier and Schwartz (2014)). Homeownership generally is regarded as desirable by policymakers as it can provide a degree of financial stability for households, act as a hedge against inflation and it can improve identification amongst households with a sense of society particularly in the context of rising equity levels (Doling and Horsewood (2010), Forrest and Yip (2012) and Goodman and Mayer (2018)).

However, the past 25 years have seen unprecedented changes in international housing markets; across many countries house prices appreciated significantly in the period leading up to the great financial crisis (GFC) before falling sizeably in many of those countries afterwards. Such large fluctuations in house prices across certain markets has had implications for housing affordability and homeownership rates.¹ Indeed, the post GFC sustained recovery in house prices is one of the reasons cited for the relative decline in homeownership rates particularly amongst younger cohorts of the population (Hilber and Schöni (2021)). As the ratio of house prices to income increases persistently through time and across countries², the capacity, particularly of younger households, to owner-occupy is diminished significantly.

Related to the large variations in certain countries' house price movements is the issue of credit, which has been widely acknowledged as playing a key role in house price developments since 2000 (see Duca, J, J Muellbauer and A Murphy (2021) amongst others for more details). For a number of Euro Area countries, the capacity of financial institutions in one country to borrow funds from institutions in another facilitated a substantial increase in the provision of mortgage credit prior to the GFC as credit conditions were persistently eased (Duca, Muellbauer and Murphy (2021)). Therefore, the expansion and subsequent contraction in mortgage lending went hand-in-hand with house price developments. Such large fluctuations in both house prices and access to mortgage credit across certain markets has had implications for housing affordability and homeownership rates across Europe. Indeed, limited mortgage market access following the GFC has been linked to a decline in homeownership (Whitehead and Williams,

¹ For example, see Corrigan et al. (2019) for changes in affordability trends in the Irish market over this period.

² See updated data from Mack and Martínez-García (2011) for details.

2017; Duffy et al., 2016) while the sustained recovery in house prices over the same period is another frequently cited contributor to the relative decline in homeownership rates.

While housing markets across many European countries were adversely impacted by the global financial crisis (GFC), the Irish case was especially severe. The “Celtic tiger” period of rapid growth in the Irish economy from the mid-1990s had resulted in a surge in housing demand as income levels increased sharply. Eventually, this gave way to a credit bubble with Irish financial institutions adopting a particularly liberal credit regime. Consequently, the Irish mortgage market was acutely vulnerable to the emerging GFC (see McCarthy and McQuinn (2017) and Kelly and McQuinn (2014) for details). The Irish economy was plunged into a significant recession from 2008 onwards with income levels contracting and unemployment rising sharply. However, since 2013, the domestic economy has recovered persistently. Despite or possibly because of this, the Irish housing market has experienced profound volatility over the recovery period with housing supply levels struggling to keep pace with the substantial rebound in housing demand (Egan and McQuinn (2023)).

Therefore, in this paper, we examine changes in homeownership rates in the Irish market within the context of a representative sample of European households across a number of years. This acts as a useful benchmark for developments in the Irish market as it allows us to assess how much changes in the domestic market are influenced by factors specific to Ireland and how much are due to trends in international markets. We examine homeownership rates amongst households in 12 countries in the European Union over the period 2005 to 2022. The key demographic and economic factors of households who owner-occupy are examined and the extent to which these factors have changed across time and/or across countries is assessed, which provides us with a rich overview of the household characteristics of homeownership across the European Union for the time period considered.

Overall, our results suggest that homeownership rates have declined across a number of countries including Ireland since 2005, however there has been significant variation in the change in rates over this period. Among the twelve countries examined, Ireland ranks approximately in the middle in terms of the proportion of mortgage holders. Furthermore, among all types of tenures, homeowners in Ireland have significantly higher income levels than those in other tenure categories. Across the Irish sample it is evident that the majority of mortgage holders have income levels in excess of the median income and in most countries mortgage holders are more commonly found in the highest two income quintiles. Finally, for

households with a head of household aged 40 or below, renting is the most common tenure for the lowest income cohort across the sample while owing with a mortgage is the most common tenure for those in the highest income cohort across most of the countries examined.

Changes in homeownership rates are not just of importance to individual housing markets, it can have significant broader macroeconomic implications; it has implications for macroeconomic volatility (MacLennan, Meen, Gibb and Stephens (1997)) while varying homeownership rates are inextricably linked with key policy issues concerning pension provision and the resulting associated fiscal costs. Slaymaker et al. (2022) examined the financial adjustment challenges for Irish households to retirement in the presence of declining homeownership and a rise in the proportion of households in private rental accommodation. Traditionally, as noted, by Slaymaker et al. (2022), the transition historically in Ireland has been smoothed by high homeownership rates and mortgage amortisation which lowered the cost of housing payments and increased financial assets, however, where more households are not homeowners means the burden for future pension provision may increasingly fall back on the State. Ultimately, obtaining detailed household information on homeownership rates over time will enable European policymakers to more accurately frame, and tailor policy options aimed at maintaining or increasing homeownership rates.

The remainder of the paper is structured as follows. Chapter 2 provides background on the relevant developments in the housing markets of interest. Chapter 3 explores the key findings in Ireland. Chapter 4 provides a comparison of the Irish findings to results from comparable countries along with initial regression analysis. The final Chapter concludes with an overview of the findings along with policy recommendations.

Literature review

As noted by Mundt, Wagner, Angel and Amann (2022), an extensive amount of the literature dealing with homeownership focuses on the merits and demerits of the concept. A non-exhaustive list of studies in that regard include DiPasquale and Glaeser (1999), Coulson (2002), Elsinga and Hoekstra (2005), Hulse and Burke (2009), Doling and Horsewood (2010), Doling and Ronald, (2010), Haffner and Heylen (2011), McCabe (2013), Coulson and Li (2013), Elsinga and Hoekstra (2015), Whitehead (2016), Walks (2016), Arundel and Ronald (2021), Gentili and Hoekstra (2021).

One strand of this literature considers the merits of housing as a source of income in retirement. Homeownership can help move the housing cost burden towards those at the highest stage of labour market participation and income potential. In an Irish context, Fahey (2003) highlights the role housing can play in providing income later in life should the need arise. Banks et al. (2005), Crawford and O’Dea (2012) and Beirne et al. (2020) all considered the role of owner-occupied housing wealth in assessments of retirement income adequacy in England and Ireland whereas Delfani et al. (2015) demonstrate for four European countries³, using Survey on Income and Living Condition (SILC) data, that homeownership among the income-poor older population significantly reduced poverty in old age.

However, the literature that is most relevant to our context is that which examines potential determinants of homeownership. Gyourko, Joseph and Peter Linneman (1996), in a relatively early contribution, use a single-equation logistic model to examine the role sociological and economic forces play in influencing ownership patterns amongst US households. They find that labour market conditions, especially increasing returns to skill, are particularly influential with being highly educated rivalling the combined influence of key demographic forces such as marital status and family structure. They also find that the increasing real cost of housing plays a greater role in tenure choice estimation.

A number of studies have examined differences in homeownership rates amongst certain ethnic groups (Gabriel and Rosenthal (2005), Jacob and Munasib (2009), Painter, Yang and Yu (2003)). Coulson and Dalton (2010), for example, using US data, conduct probit-based Oaxaca-Fairlie decompositions of the change in ownership rates for four ethnic groups and three age groups over five censuses, and then construct second-order decompositions of the white/nonwhite differentials. They observe significant differences in the homeownership conversion rates of various age cohorts between Hispanic, Asian, and Black households and their white counterparts.

Filandri and Bertolini (2016) also use EU-SILC data to look at homeownership amongst young people in 28 European countries. Their analysis highlights the importance of the socio-economic family background as they show that coming from a middle-class background increases the possibility of home ownership. Those who do not live independently in owner-occupied accommodation appear to belong to either the lowest or the highest social classes. Filandri and Bertolini (2016) also investigate the relationship between the welfare state in

³ Belgium, Germany, Ireland and the Netherlands.

different countries and the homeownership rate, concluding that the observed negative correlation between the welfare generosity of the state and levels of home ownership, emphasises the concept of the house as a safe haven particularly in countries where the family unit is regarded as a social safety net. Finally, Corrigan (2021) analyses the decline in homeownership in Ireland using EU-SILC data by comparing household- and individual-level data from 2007 and 2018. He highlights the roles of urban living, extended education, and living with children as factors contributing to this decline, while differences in real income between the two cohorts have minimal influence.

Background

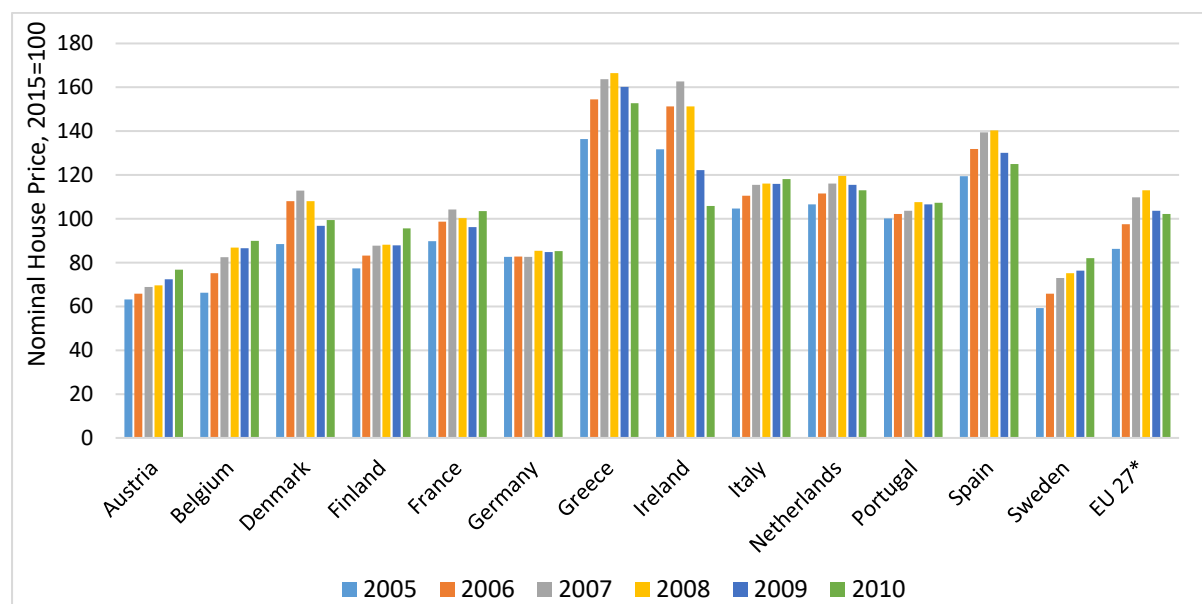
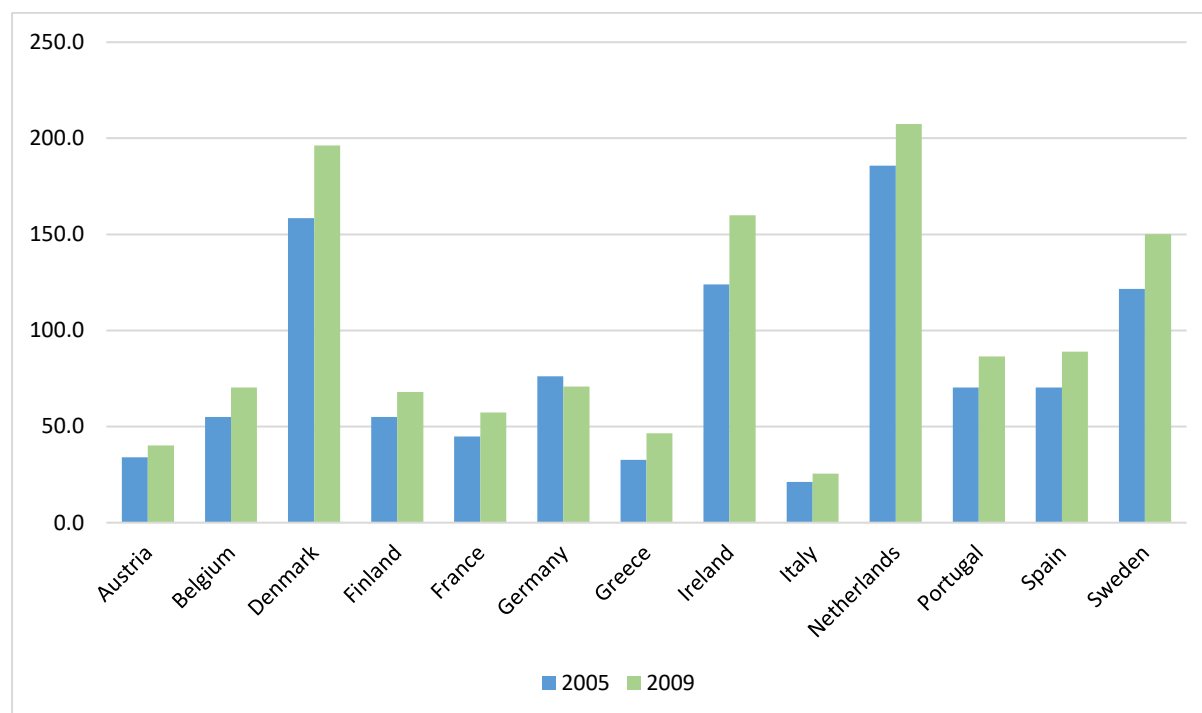
The analysis presented in this paper covers the period from 2005 to 2022. Given the significant changes in housing markets over this time, this chapter provides a brief overview of the trends and policies occurring over this period.

Developments in housing markets since 2005

Following the development of new mortgage products coupled with loose credit conditions, mortgage credit expanded in many countries prior to the GFC (Scanlon et al. 2008). As shown in Figure 1, the share of outstanding residential loans to Gross Disposable Income of Households increased rapidly amongst a select number of countries in a just a few years. Ireland, Denmark and the Netherlands witnessed a particularly large expansions in lending with residential loans being more than 1.6, 1.9 and 2 times greater than household disposable income in 2009 respectively.

For many countries, this expansion in credit went hand in hand with house price developments. After a number of years of substantial price increases, housing prices in the EU reached their peak in 2009 before falling 8.3 per cent in 2009 and experiencing several years of modest declines during the GFC (Figure 2). Yet the experience amongst house prices was not constant across European countries. Some countries (Austria, Belgium Sweden, Finland, Italy and Portugal) avoided any significant drop in housing prices, instead experiencing stable or increasing prices. . Meanwhile, Ireland, Spain and Greece contributed most significantly to the drastic decline in home prices. In 2009, house prices in Ireland declined 19.1 per cent and another three years of substantial declines followed.

Figure 1 and 2: Total outstanding residential loans as a share of Gross Disposable Income (%) and Nominal House Prices – lead up to GFC



Source: European Mortgage Federation, 2024

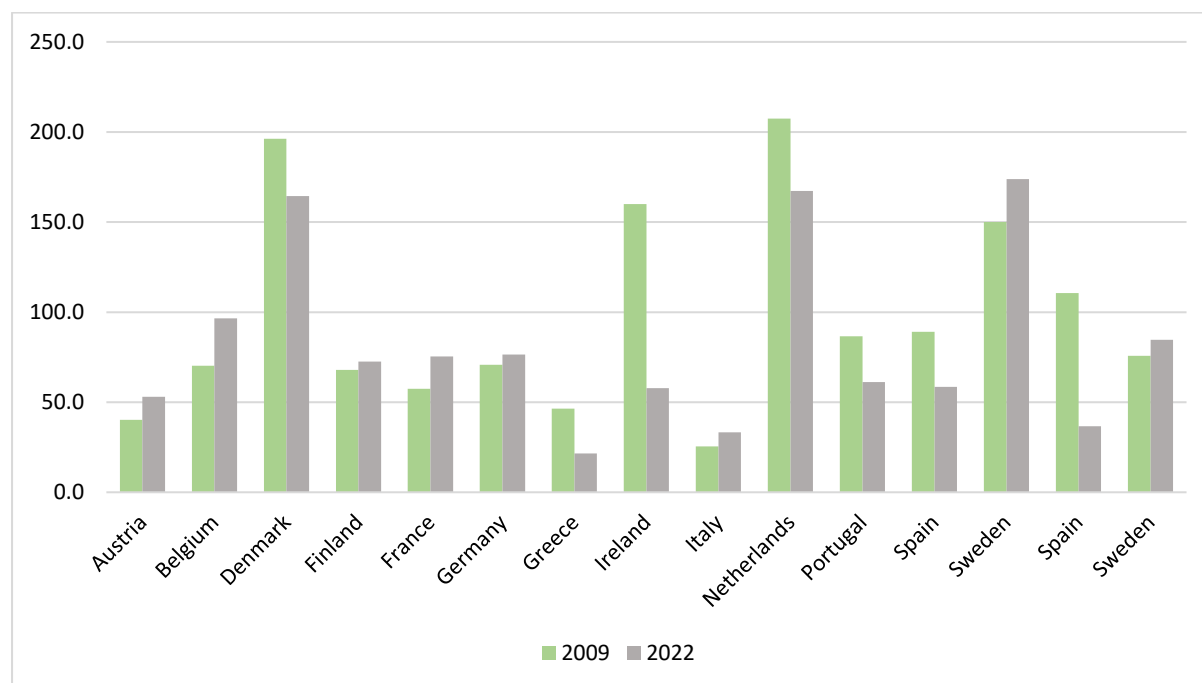
Note: Data unavailable for EU27 in 2005

Unsustainable levels of borrowing coupled with substantial rates of mortgage defaults during the GFC contributed to a new era of regulatory restrictions. Following the GFC, macroprudential regulations targeting loan-to-income, loan-to-value or debt-service-to-income ratios were introduced to support the resilience of banks and borrowers (Duca et al 2019).

These regulations ushered in a new era of limited access to mortgage credit. While proving to be an important step in combatting systemic risk in the financial sector, macroprudential measures introduced across Europe have contributed to a general decline in overall mortgage credit. Across the sample of European countries, outstanding residential loans as a share of Gross Disposable Income has declined across almost half of the countries (Figure 3). However, not all countries introduced the same degree of credit restrictions as others. In Ireland, where key macroprudential parameters are generally tighter relative to elsewhere in Europe (O’Toole and Slaymaker, 2022), the level of loans declined from over 1.6 times household income in 2009 to just under 60 per cent of income in 2022.

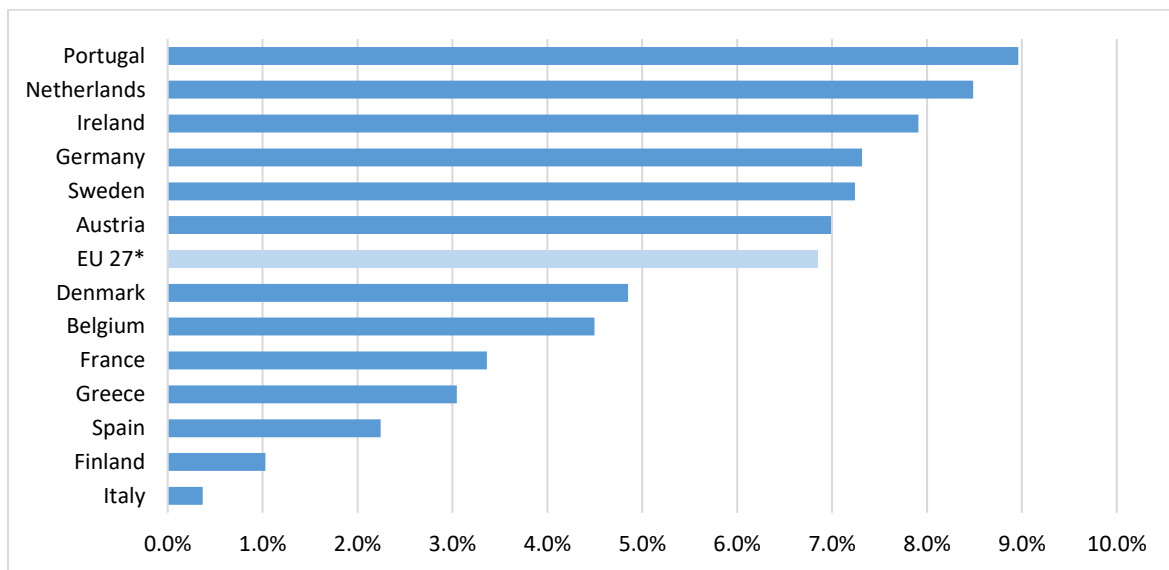
In the wake of the rollout of new macroprudential measures, house prices across much of Europe have reacted more uniformly relative to the period of the GFC. Annual growth rates for average nominal house prices in the EU have increased each year from 2014 to 2022, at an increasing pace. Since 2015, the average annual growth in nominal housing prices for all countries, displayed in Figure 4, has been positive. Only Italy and Finland have experienced an average annual growth rate less than 2 per cent.

Figure 3: Total outstanding residential loans as a share of Gross Disposable Income (%)



Source: European Mortgage Federation, 2024

Figure 4: Average Annual Growth in House Prices (2015 – 2022)



Source: European Mortgage Federation, 2024

Given the literature linking stricter lending conditions to a drop in homeownership (Whitehead and Williams, 2017; Duffy et al. 2016), and the documented challenges of accessing home ownership amongst young (Hilber and Schoni (2021); Kelly and Mazza, 2019; McQuinn et al., 2021; Slaymaker et al., 2022) and low-income households (Lydon and McCann 2017), future sections examine European household level data to assess the changes, if any, amongst mortgage holders in a selection of European countries. The following section outlines the data used for the analysis and discusses the selection of the countries examined.

Data

SILC Description

The data used is the cross-country EU Survey on Income and Living Conditions (EU-SILC) microdata files available from Eurostat. These surveys are conducted on an annual basis with approximately 250,000 households interviewed per annum across Europe. The surveys are carried out by national statistical agencies within each country. These datasets provide representative statistics at a household and individual level. This paper details socio-economic characteristics at the household level such as housing payments, income and location (as measured by degree of urbanization) associated with mortgage holders. On an individual level, age and employment status are also examined.

EU-SILC data are available from 2004 to present. Due to limited reporting in 2004, our cross-country analysis begins in 2005. An important benefit of using this survey microdata is the ability to permit cross-country comparison as the methodology and definitions for the survey and questions asked have been standardised across reporting countries.

Variable Description

In this paper, income refers to a household's net disposable income⁴. In the EU-SILC dataset, net disposable income is defined as the sum of gross personal income components for all household members (inclusive of unemployment, sickness, disability, and old age benefits) plus gross income components at household level (such as rental income, housing allowances, family-related allowances and dividends or profit from investments). Income inter-household transfers and tax on income, social insurance and wealth. To address any outliers reported in the income data, we winsorize the top and bottom 1 per cent of values and focus our analysis on income quintiles. Corrigan (2021) highlights potential limitations in using household income data, noting scenarios where the assumption of income pooling may not hold in the context of SILC data. These weaknesses suggest that household income may not fully capture individual financial dynamics within households⁵.

One challenge of examining a long time period is the risk of changes in reporting in the SILC dataset. There is, for example, no consecutive question that captures mortgage holding homeowners. There is a question on tenureship, which, from 2010 on specifically asks homeowners if they own outright or if they have a mortgage. However, prior to 2010, homeowners with a mortgage and outright owners were classified in the same tenure group. To address this issue, we developed a variable intended to identify all homeowners with a mortgage from 2005 to 2022. This variable uses information on mortgage interest repayments and mortgage principal repayments as they have been reported by most countries since the beginning of the survey⁶. Therefore, by identifying individuals with mortgage interest repayments, we can extend the sample to include mortgage holders from before 2010 and capture additional mortgage holders after 2010.

⁴ Income data in EU-SILC 2022 refer either to calendar year t-1 (i.e. 2021) or to income in the 12 months prior to the interview date, depending on the country.

⁵ It is assumed that adults without children who are renting and who live in multi-adult households do not share income, nor do working adult children share income with the parents they cohabit with.

⁶ Mortgage interest repayments are captured by variable HY100G or HY100N in the SILC dataset while mortgage principal payments are captured by variable HH071.

We define mortgage holders in our data as every head of household who is an owner according to their self-reported tenureship status and has stated to either 1) be mortgage holding homeowner, 2) to be a homeowner and has indicated in the survey to have either an interest repayment on a mortgage⁷ or 3) a mortgage principal repayment⁸. Outright owners are considered owners without a mortgage or any mortgage-related costs.

Furthermore, it is relevant to point out that mortgage holders refer to people who are actively paying off a mortgage in the year of the survey and not people who have applied for and have been granted a mortgage in the specific year they were interviewed. Therefore, the data is trusted to be representative of the mortgage-holders in the analysed countries.

The cross-country SILC dataset also does not differentiate between market and social renters. While these data can be collected for some individual countries, the purpose of this paper is to distinguish trends in mortgage-holding households specifically.

Sample of Countries

As detailed above, the Irish housing market has had a particularly unique experience over the past 25 years compared to a number of European countries. While mortgage credit may have declined more significantly and house prices have fluctuated more sharply than in neighbouring countries, a cross-country comparison can still provide valuable insights in assessing how the cohort of Irish homeowners has changed compared to their European peers.

We follow the categorisations made by Disch and Slaymaker (2023) as a valuable starting point for understanding the similarities and differences between the countries' housing systems. Countries with a history of less market-based housing systems and therefore lacking a developed mortgage market and having a high proportion of 'free housing' have been excluded from the analysis. The remaining countries therefore include Ireland, Spain, Norway, Greece, Portugal, Italy, Belgium, Finland, France, Sweden, the Netherlands, Denmark, Austria, Germany and Switzerland. Three of the countries in our sample (Austria, Spain, and Greece) are missing mortgage data for 2005 and 2006. Nevertheless, we included them as the structures of their housing markets are a relevant addition to the analysis and the rest of the needed data for the analysis is available. Furthermore, those countries are also representative of the different

⁷ Captured by variable HY100G or HY100N which is available from 2004 on.

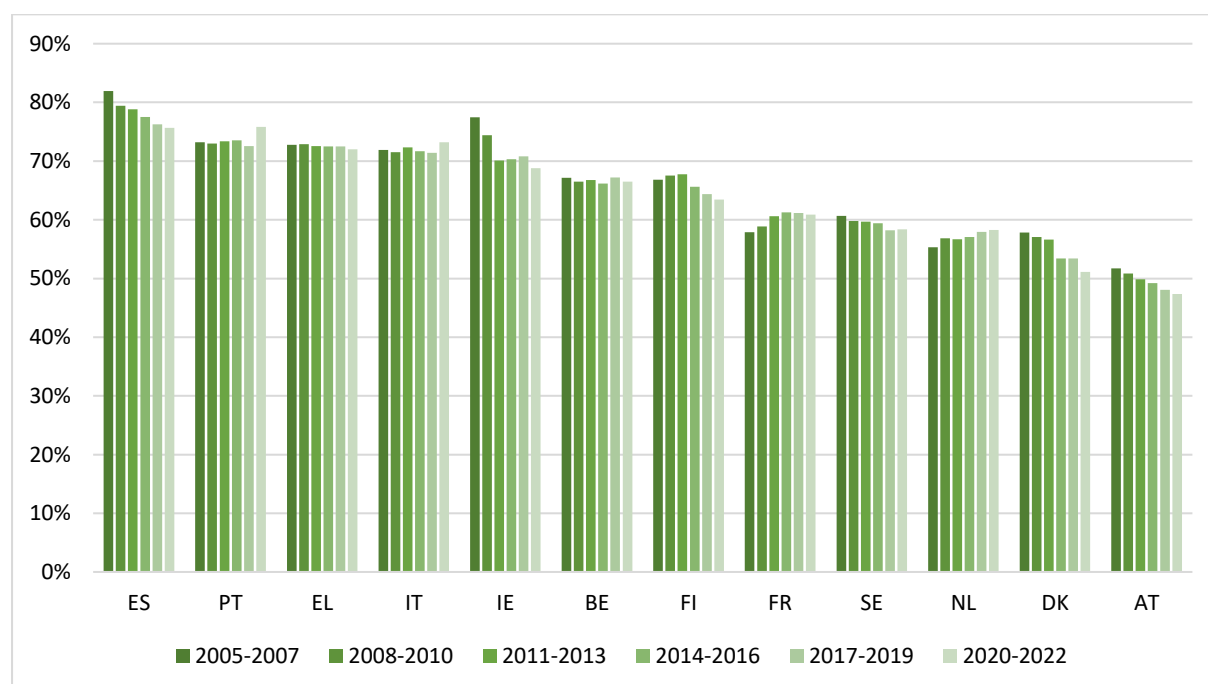
⁸ Captured by variable HH071 which is only available from 2010 on.

housing systems prevalent in Europe. Due to data unavailability over the full period of the sample, we exclude Germany, Norway and Switzerland from the analysis.

In order to provide insightful comparisons between Ireland and these remaining eleven countries, it is first useful to see the similarities and differences in their tenure structures and housing systems, as much variability still persists through the sample. In looking at the tenure status across these countries over time, it's useful to see how Ireland compares.

Figure 5 shows the homeownership rate in our sample countries over time. Over the full period, Ireland has the fifth highest share of ownership (72 per cent), after Spain, Portugal, Greece and Italy. The housing markets of Southern European countries share distinct characteristics, such as high rates of owner occupation, a smaller rental market and a greater reliance on familial support relative to other European countries (Allen, 2006). While Ireland shares some features of these markets and experienced rates of homeownership similar to Southern European countries in the early 2000s, in more recent years, the tenure patterns seen in Ireland are much closer to those seen in countries such as France, Finland and Belgium. Meanwhile, Sweden, the Netherlands, Denmark and Austria are characterised by having a larger rental sector, which is seen as a more secure form of tenureship in these countries, in part due to the extensive regulations in place to support renters (Disch and Slaymaker, 2023).

Figure 5: Homeownership rate in selected European Countries (2005-2022, 3-year average)

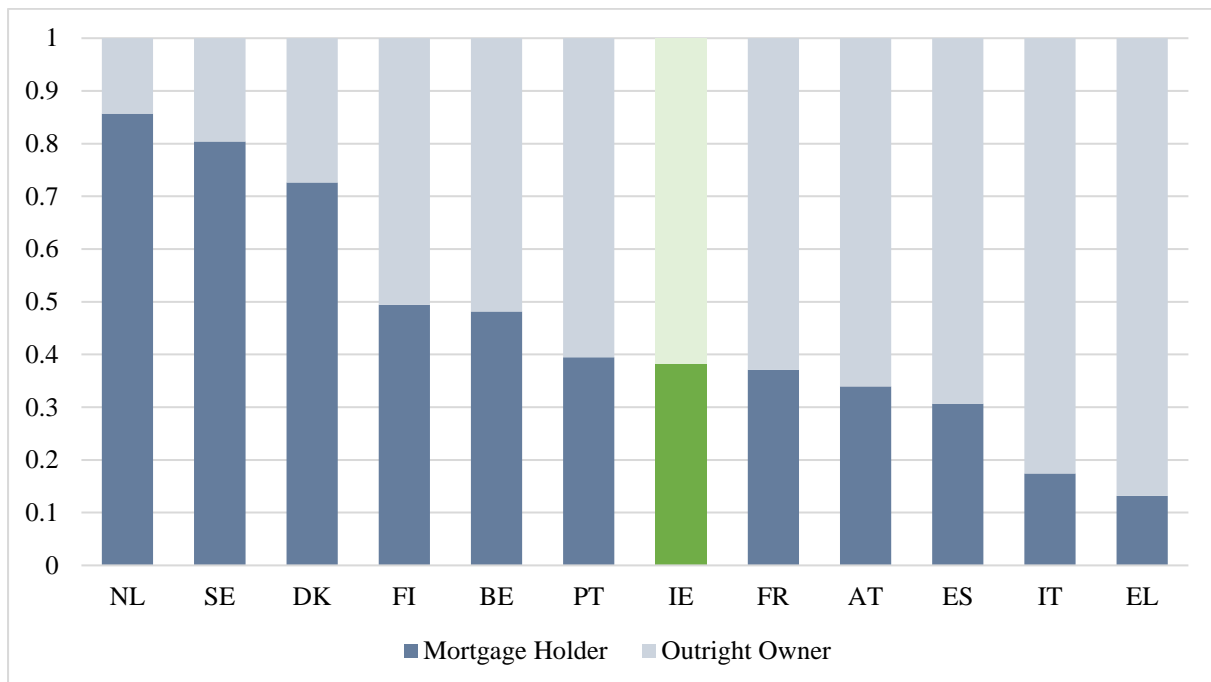


Source: Authors' calculations of EU-SILC microdata

Looking at Figure 5, the sharp drop in Ireland from the first two periods to the final four is particularly striking. Ireland was potentially the most impacted by the Global Financial Crisis (GFC), experiencing a 4.3 percentage point decline in average homeownership between the 2008-2010 and 2011-2013 periods and even a 7.4 percentage point drop between the 2005-2007 and 2011-2013 periods. It has slightly recovered in the two following periods but has experienced a decline again in the most recent 2020-2022 period. It's notable that many countries have also experienced declines in homeownership, albeit less pronounced than in Ireland (Spain, Austria Denmark, Sweden and Finland have all experienced some degree of declining home ownership). France and the Netherlands are the two countries that show a notable increase in ownership rates over the full sample period, while the remaining countries have relatively stable ownership rates.

While Figure 5 shows the developments in overall homeownership, there is much to be learned by examining how homeownership is broken out between mortgage holders and outright owners. Figure 6 below displays the average split between outright and mortgage holding owners per country, between 2005 and 2022. Some countries with high shares of homeownership, such as Greece and Spain, have relatively low shares of mortgage holders. Based on the observations in the SILC dataset, in Ireland the majority of homeowners own their home outright (61.7 per cent). Meanwhile, in countries such as the Netherlands and Sweden, less than 20 per cent of homeowners do not have a mortgage or interest payment on their home.

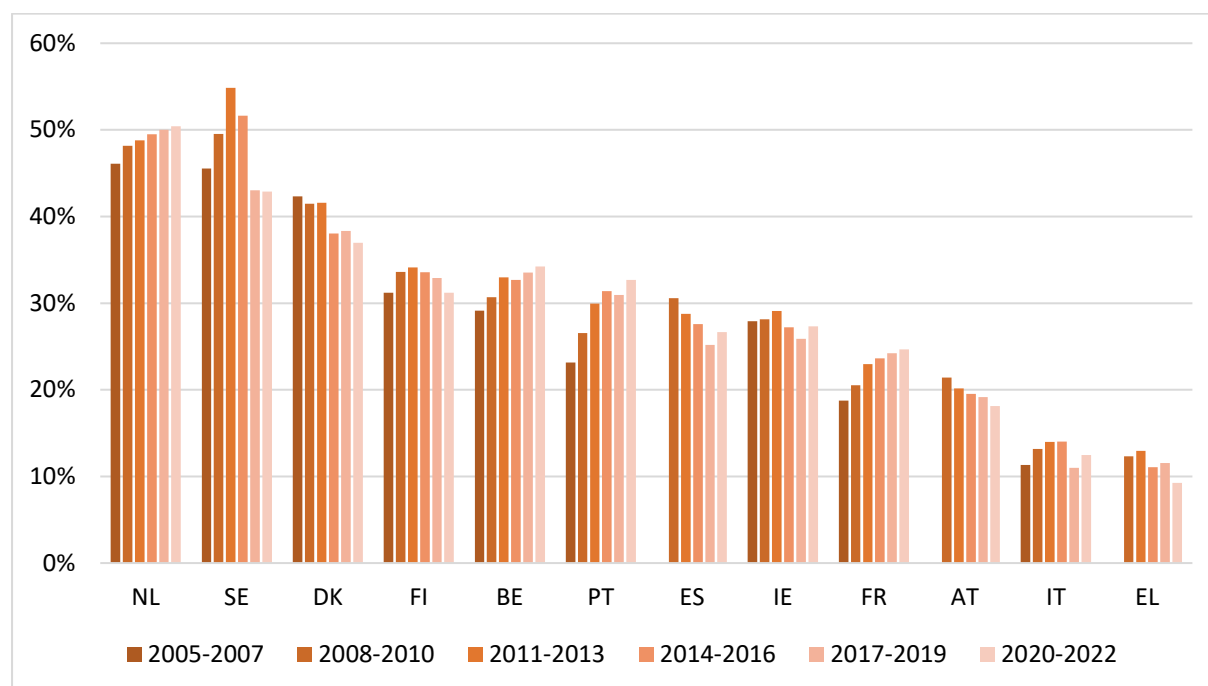
Figure 6: Average composition of homeowners (mortgage holders vs. outright owners) by country (2005-2022)



Source: Authors' calculations of EU-SILC microdata

While Figure 6 shows the general split between homeownership types, it's useful to see how the mortgaged tenure has changed over time. This is shown in Figure 7. The Nordic countries lead with the highest shares of mortgage holders in the population, as the Netherlands have the highest share of mortgage owners, followed by Sweden Denmark and even Finland. In our sample, the countries that experienced an increase in the share of mortgage holders over time include the Netherlands, Belgium, Portugal, and France. Conversely, Austria, Greece, and Denmark showed a decline in mortgage holders. Spain also saw a decrease in mortgage holders until the most recent period (2020-2022), when the number rebounded compared to the previous period (2017-2019). The share of mortgage holders in Ireland appears more volatile than its European peers; the share increased before and during the Global Financial Crisis (GFC), “peaking” in the period of 2011-2013 at 29 per cent. Following this peak, the share decreased for two periods before rising again to 27% in the most recent period (2020-2022). Italy follows a similar pattern to Ireland; however, mortgage holders account for a much smaller share of the population in Italy. Sweden and Finland also demonstrate a similar trend, however, with no rebound in the most recent period.

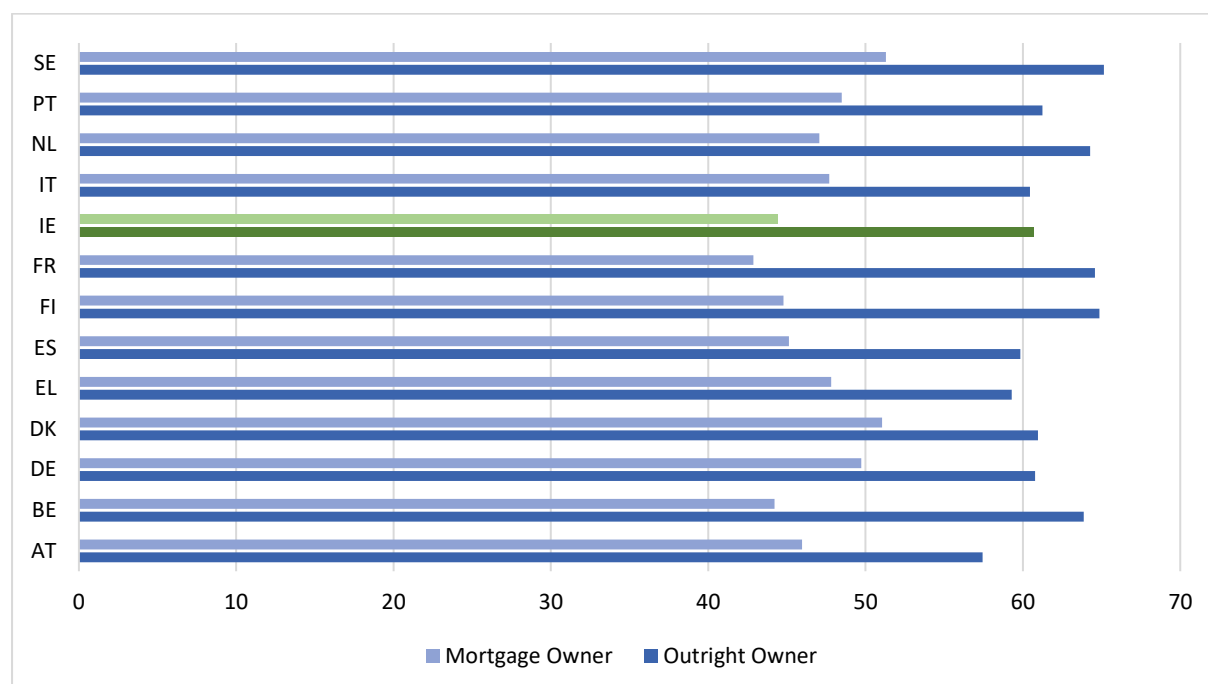
Figure 7: Percentage of mortgage holders among the full population by country over time



Note: For Austria, Spain, and Greece the data for the pre-crisis period is missing.

As demonstrated in Figures 5 and 6, outright ownership accounts for a significant proportion of total home ownership but the split between outright owners and mortgage holding owners differs by country. Looking closer at the characteristics of each group, it becomes clear that the outright owners are a relatively homogenous group as outright ownership strongly correlates with age. Looking at the average age of homeowners versus mortgage owners between 2005 and 2022, Figure 8 shows that outright owners are older than mortgage owners across all countries, as they have usually already paid off their mortgages. The differences vary between 10 (Denmark) and 22 (France) years on average – in Ireland the average difference stands at 16 years. However, looking at the development of the differences over time (see Table 1 in the Appendix) it becomes clear that the age gap has increased in all countries. That is driven by both, the average age of outright owners increasing and the average age of mortgage holding owners decreasing in most countries. In Ireland, the average age of mortgage holders has not changed much while the average age of outright owners has increased consistently over time. The average age of outright owners has increased in all countries of our sample whereas the average age of mortgage holders shows more ambiguous patterns between different countries.

Figure 8: Average age of outright owners and mortgage holders



Note: Sweden is missing age observations for the last 3 periods of time (2016-2018, 2017-2019, 2020-2022) for the mortgage owner category. Furthermore, Austria, Spain, and Greece are missing data for 2005 and 2006.

Furthermore, on average over all countries and time periods, 58 per cent of the outright owners in our sample are 60 years or older. This number differs by country, standing on average at 54 per cent in Ireland. The country with the highest average percentage of outright homeowners over 60 years old are Sweden and the Netherlands at almost 70 per cent⁹. The country with the average lowest share of 60+ years old outright owner is Austria with 44 per cent.

Given that access to homeownership and affordability are primary policy concerns, and outright owners are not affected by either issue, the remainder of this paper will focus on the trends and characteristics associated with homeowners who hold a mortgage. The next section will explore the dynamics underlying the changes in the share of Irish mortgage holders over time. Specifically, we will examine how the proportion of mortgage holders has evolved among various subgroups, categorized by characteristics such as age, income, degree of urbanization, and the combination of some of them. We will then compare the trends in Ireland with those in the other countries in our sample.

⁹ This can be seen in the Appendix in Table 2.

Trends in Ireland

The following section provides a detailed overview of trends in Irish tenure patterns and developments amongst mortgage holders in particular.

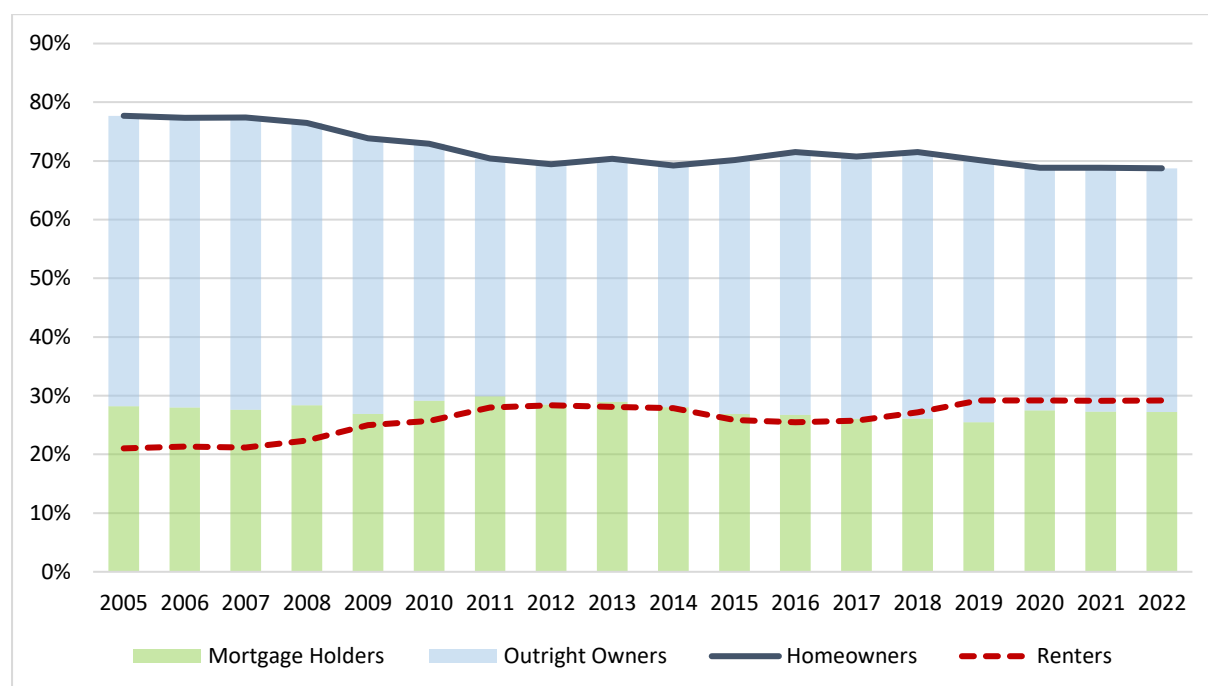
Tenure Overview

Figure 9 gives an overview of the tenure landscape in Ireland between 2005 and 2022. What is apparent is the overall decrease in homeowners (dark blue continuous line) and increase in renters (red dotted line) over time. Furthermore, it can be observed that in Ireland, outright homeowners are more prevalent than mortgage holding homeowners at all times. Before and during the beginning of the financial crisis almost 50 per cent of all households were outright homeowners. That decreased during the recovery period and experienced a slight increase between 2016 and 2019, before decreasing again in 2020 and standing at just above 41 per cent in 2022. The percentage of mortgage holders has been relatively stable, just below 30 per cent the whole time, with relatively few fluctuations (which can be seen more clearly in Figure 7).

The proportion of renters has generally increased over time, though not in a linear manner. Between 2014 and 2017, the percentage of the population renting declined, while the percentage of homeowners rose. However, since 2017, the trends have reversed, with the percentages of renters and homeowners beginning to converge again—renters are increasing in share, while homeowners are decreasing. It's important to note that renters refer to those in both market and social rental accommodation. Details on the changing composition of the Irish rental market can be found in Disch and Slaymaker (2023). It should be noted that in an Irish context, renters are a conflation of two quite different groups; market renters are typically younger, higher income and have a stronger likelihood of shifting to homeownership, while the social housing renters are unlikely to attain homeownership via market mechanisms.

We now examine how the socio-demographic characteristics of the population of mortgage holders have evolved during the period covered by our sample.

Figure 9: Tenure overview among the full population of households



Age

Changes in tenure patterns by age groups¹⁰ can be seen in Figures 10 and 11. In looking at mortgage holders by age groups (Figure 10), a notable divergence can be seen following the Global Financial Crisis (up until 2011). Prior to 2013, the proportion of mortgage holders aged 25-39 years was very similar to those in the 40-54 years age cohort. However, from 2012 onwards, the percentage of the younger age group declines significantly, from above 40 per cent prior to 2013 to a low of 27 per cent in 2018 and 2019. The proportion of mortgage holders in this age group shows signs of stabilizing in more recent years (on average, accounting for 30 per cent of mortgage holders between 2020 and 2022) but remains far below pre-GFC levels. Meanwhile, the decline in younger mortgage holders has been mirrored by an increase in the 40-54 year cohort. This cohort accounted for approximately 45 per cent of all mortgage holders prior to 2013 but have since increased notably, accounting for 56 per cent of the mortgage holder population between 2020 and 2022. The share of the 55-69 year cohort has also seen relative increases since the GFC (from 8 per cent prior to 2010 to 13 per cent in the years since).

¹⁰ The age groups are: 1) Below 25, 2) 25-39, 3) 40-54, 4) 55-69, and 5) over 70.

Trends in outright ownership show a similar pattern. As the concentration of mortgage holders are increasingly older over time, individuals will need to pay off their mortgage later into life. This is reflected in the share of outright owners in the >70 age cohort increasing over time. This age cohort accounted for approximately one-third of outright owners prior to 2009 but now represent over 40 per cent of this tenure.

These trends are likely attributable to a combination of factors, including more stringent mortgage accessibility requirements and rising house prices. Stricter regulations, such as those requiring a larger deposit—often only achievable later in life—or the need for larger mortgages due to higher housing prices, may have made homeownership more attainable for older individuals compared with younger cohorts. This delay also leads to the observation that individuals are paying off their mortgages until later in life.

Figure 10: Distribution of Mortgage Holders by age groups

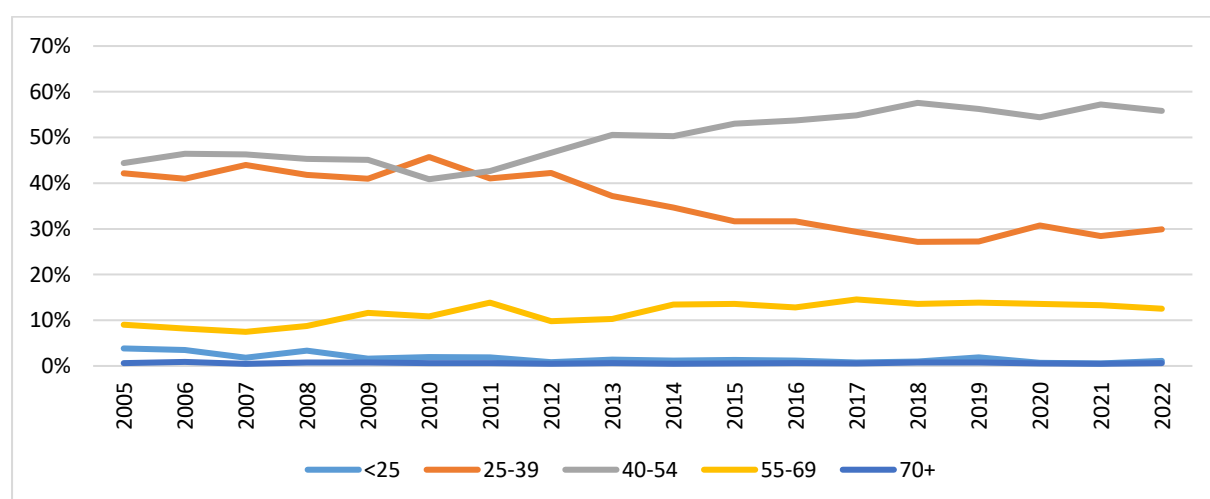
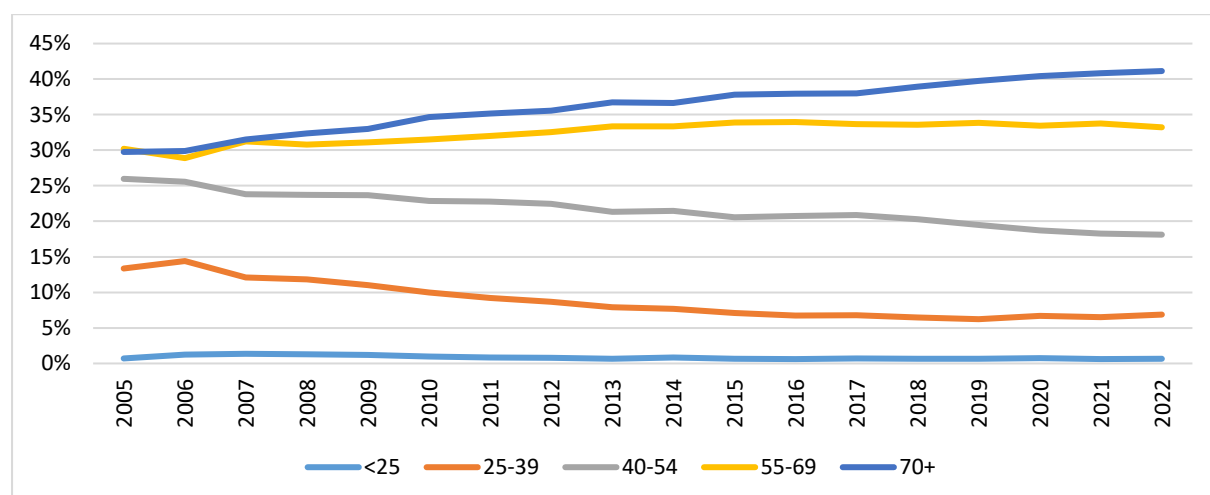


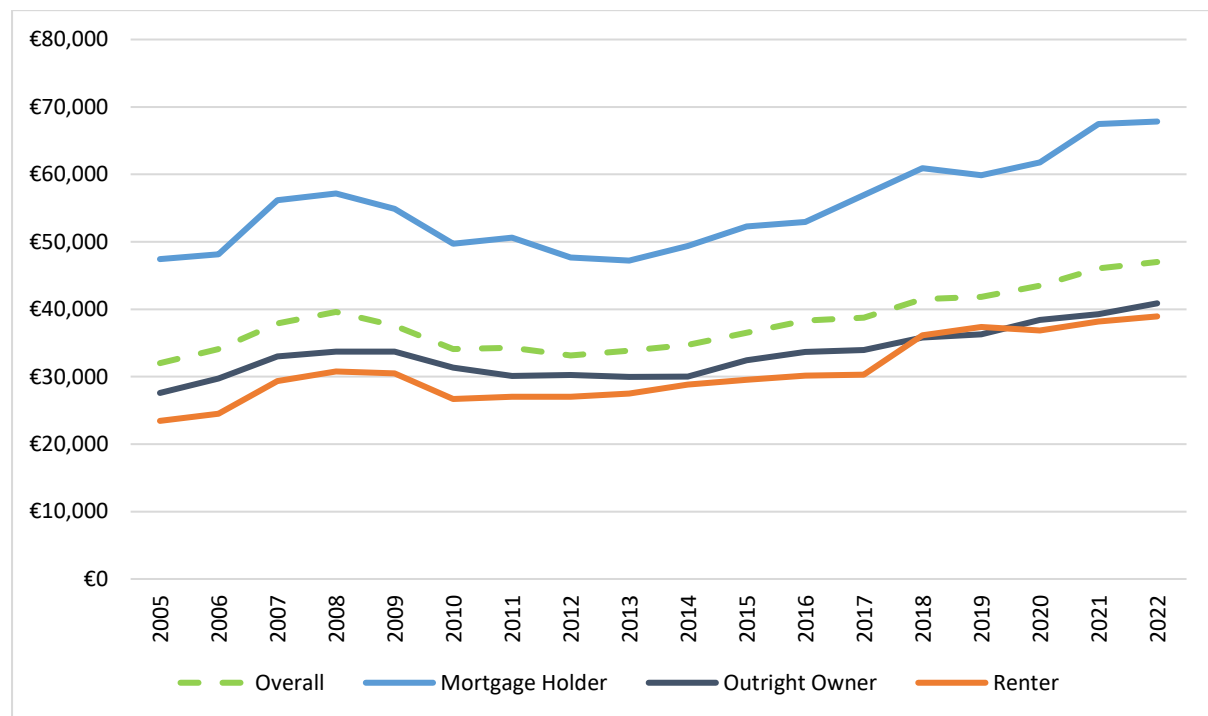
Figure 11: Distribution of Outright Owners by age groups



Income

Figure 12 illustrates the trends in median disposable household income across different tenureship groups in Ireland from 2005 to 2022.

Figure 12: Median disposable household income for different tenureship groups over time in Ireland



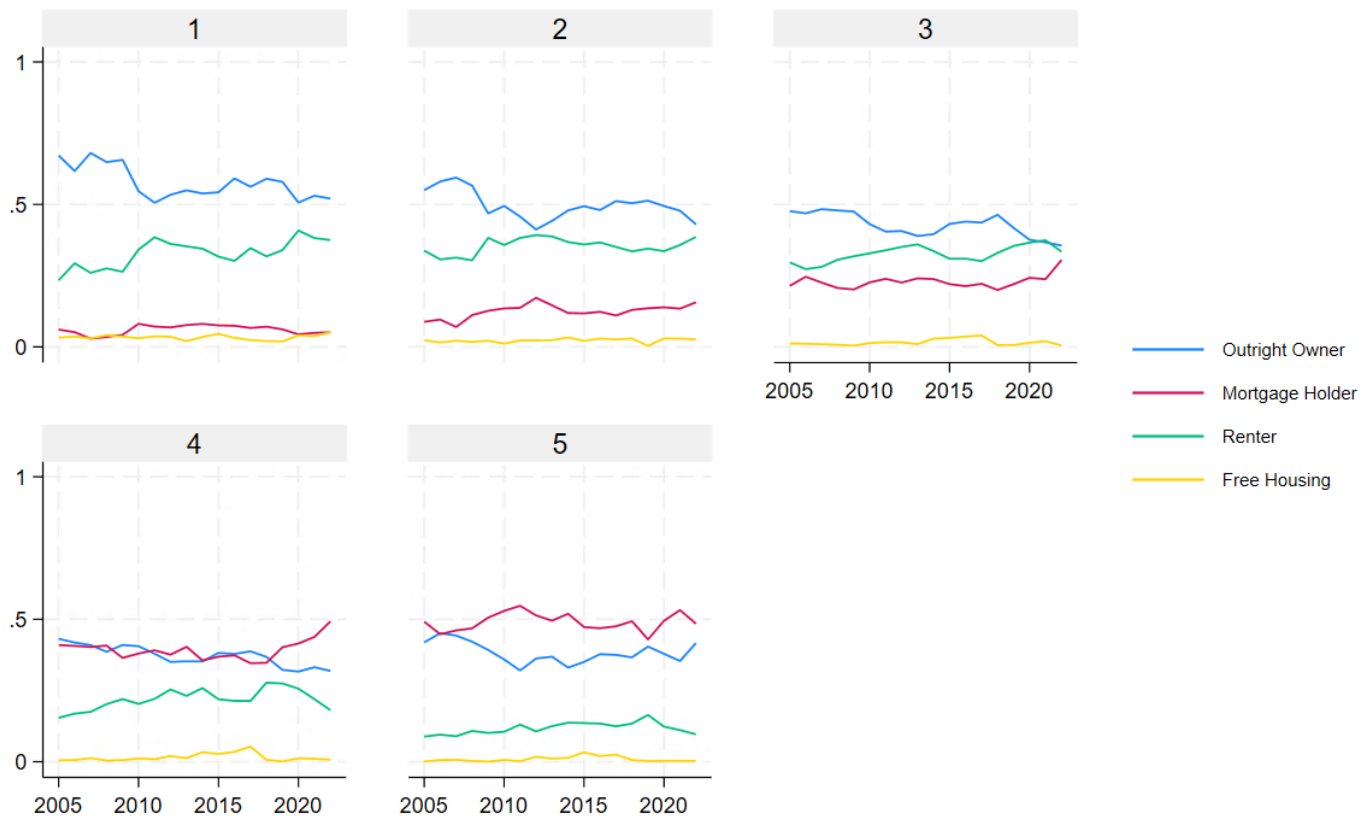
The median income for the entire sample population (represented by the green dotted line) remained stagnant following the Global Financial Crisis (GFC) but exhibited a sharp increase starting in 2014. Among the different tenures, mortgage holders have the highest median income, significantly above the median of the sample population. Meanwhile, those who own their home outright earn less than the median income. This can be largely attributed to the age profile of this tenure group (as shown in Figure 11). Many of these individuals may already be retired and relying on pension income, which could account for their lower median income. The tenure group with the lowest income are renters (both private and public renters). Since the GFC, mortgage holders have experienced the most significant increases in median income.

Figure 13 presents the distribution of tenure status across income quintiles in Ireland over time (with Q1 denoting the lowest income and Q5 the highest). Within the three lowest income quintiles, outright ownership is the most common tenure. As discussed previously, outright

owners are largely older households, with a lower-than-median income. This observation is further explained by Figure 14, which shows that the lowest income quintile corresponds to the highest average age (the relationship between income and age is explored in more detail in the next section). Renting is the second most common tenure in the three lowest income quintiles. While outright ownership appeared to be the dominant tenure amongst these income groups prior to 2013, there has been a notable increase in the share of renters since the GFC. As shown in Figure 9, the share of renters overall has increased since 2009. Figure 13 shows that this increase is largely concentrated amongst the three lowest income quintiles. This is particularly notable in the third income quintile; by 2020 and 2021, the proportion of outright owners was nearly equal to that of renters, both around 38 per cent. Only a small share of households in the bottom two income quintiles own with a mortgage.

In the second-highest income quintile (Quintile 4), the proportions of outright owners and mortgage holders were nearly identical until 2019. At that point, the percentage of mortgage holders began to rise, accounting for nearly half of this cohort in 2022. In the highest income quintile, owning with a mortgage is the most common tenure type, accounting for approximately half of individuals in this quintile across the full time period. Outright owners make up the second largest group, although this has declined slightly since the GFC. Renters comprise less than 15 per cent of the highest income quintile in all years.

Figure 13: Distribution of income quintiles by tenure groups



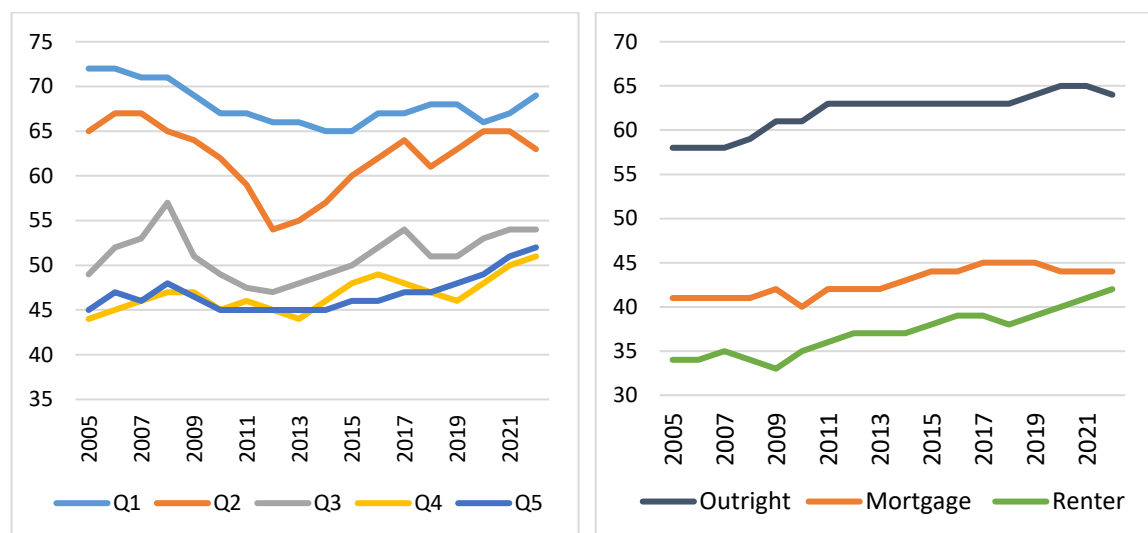
Income and Age combined

Since income alone does not clearly explain the distribution of tenure groups, it is important to examine the characteristics of each quintile and tenure group more closely. Looking at median age within each income quintile (LHS) and tenure group (RHS) over time (Figure 14), we see that outright owners, on average, are over 60 and the lowest-income quintile as well is over 65. This helps to explain the high share of outright owners across the lower income quintiles.

In contrast, the median age is significantly lower in the two highest income quintiles: 52 and 51 in 2022, respectively. However, the age profile of these groups has increased over time (the median age has increased 7 years between 2005 and 2022). Looking at tenure type, the median ages of mortgage holders and renters has also increased over time, for these two groups range between 45 and 34 years. Of the tenure groups, renters have experienced the largest increase in age. It is important to note that data for households described here only include those who

have formed independent households; therefore, there may be a significant share of young people who remain in their family home and are not captured here¹¹.

Figure 14: Median age by income quintiles (LHS) and tenure status (RHS) over time



Tenure by income for people aged 40 years and younger

As these average characteristics are largely dominated by older age groups, this section will limit the sample to households aged 40 years and below in order to see the effect of changes in the housing market on younger households.

Figure 15 illustrates the distribution of tenure types across income quintiles over time for individuals aged 40 and younger¹². In the two lowest income groups, the share of those who rent and those who hold a mortgage has widened slightly over time, as renting is increasingly the predominant tenure for these groups. While renting has also been the most common tenure for the third income quintile (approximately 50 per cent of individuals were renters following the crisis up until 2021), homeownership has increased within this group more recently. In 2022, for the first time since 2007, there were more mortgage holders than renters in this cohort.

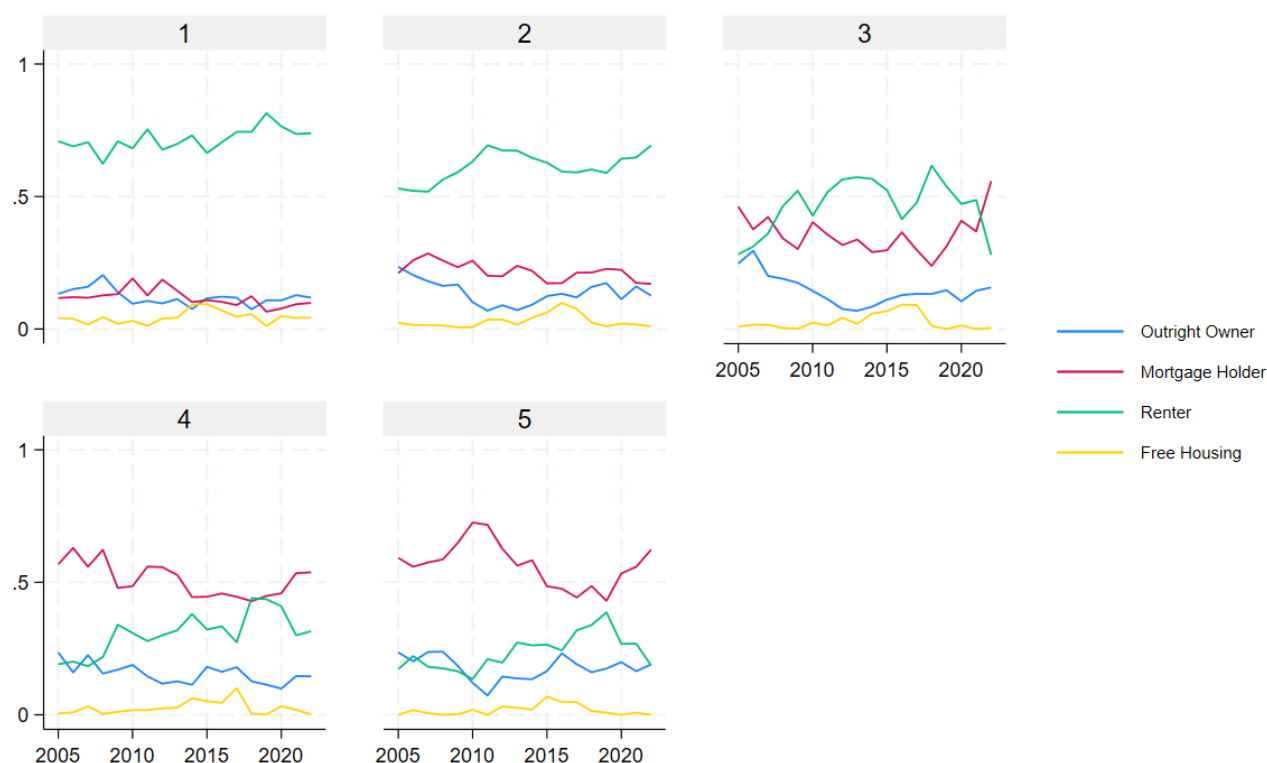
In the two highest income groups, households are more likely to own with a mortgage. However, the effects of the GFC can be seen as these cohorts both experienced significant increases in renting following the crisis, with renting surpassing homeownership in 2019 for

¹¹ The share of young adults living at home ranges significantly across countries. In 2019, those aged 25-34 living in a family home varies from a low of 4 per cent in Denmark to a high of 58 per cent in Greece. In Ireland, this proportion was 27 per cent in 2019.

¹² The quintiles have been recalculated for the population aged 40 and below.

those in the fourth income quintile. However, owning with a mortgage has increased within these cohorts in the most recent years, reversing a downward trend in homeownership for this cohort.

Figure 15: Distribution of income quintiles by tenure groups for individuals aged 40 or younger

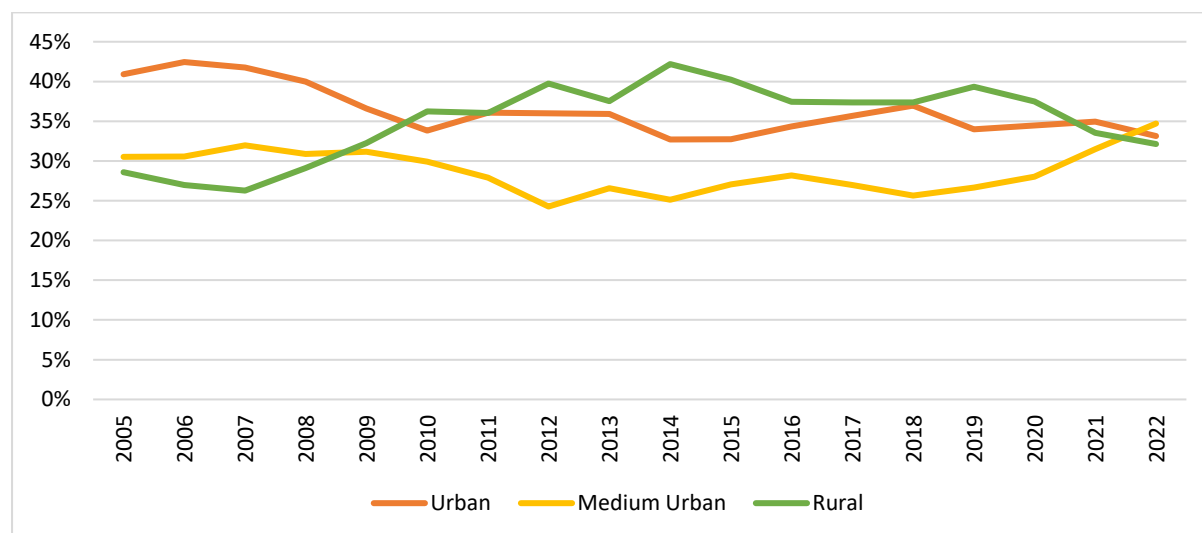


Urbanisation

When examining changes within the mortgage-holding population, it is also important to consider their geographic distribution. Figure 16 presents the distribution of mortgage holders in Ireland by degree of urbanization. Prior to and at the onset of the GFC, over 40 per cent of mortgage holders resided in urban areas, followed by just over 30 per cent in medium urban areas and just under 30 per cent in rural areas. During the recovery period following the crisis, the percentage of mortgage holders in rural areas began to rise, becoming the largest group from 2010 onwards, while the percentage of those in urban areas declined, placing them second. Throughout this period, the share of mortgage holders in medium urban areas remained the smallest. However, by 2022, the distribution across the three groups had converged, with

each group representing roughly one-third of the mortgage-holding population. All these developments are likely representing the drastic increase in house prices in Irish urban areas.

Figure 16: Distribution of Mortgage Holders by degree of Urbanisation



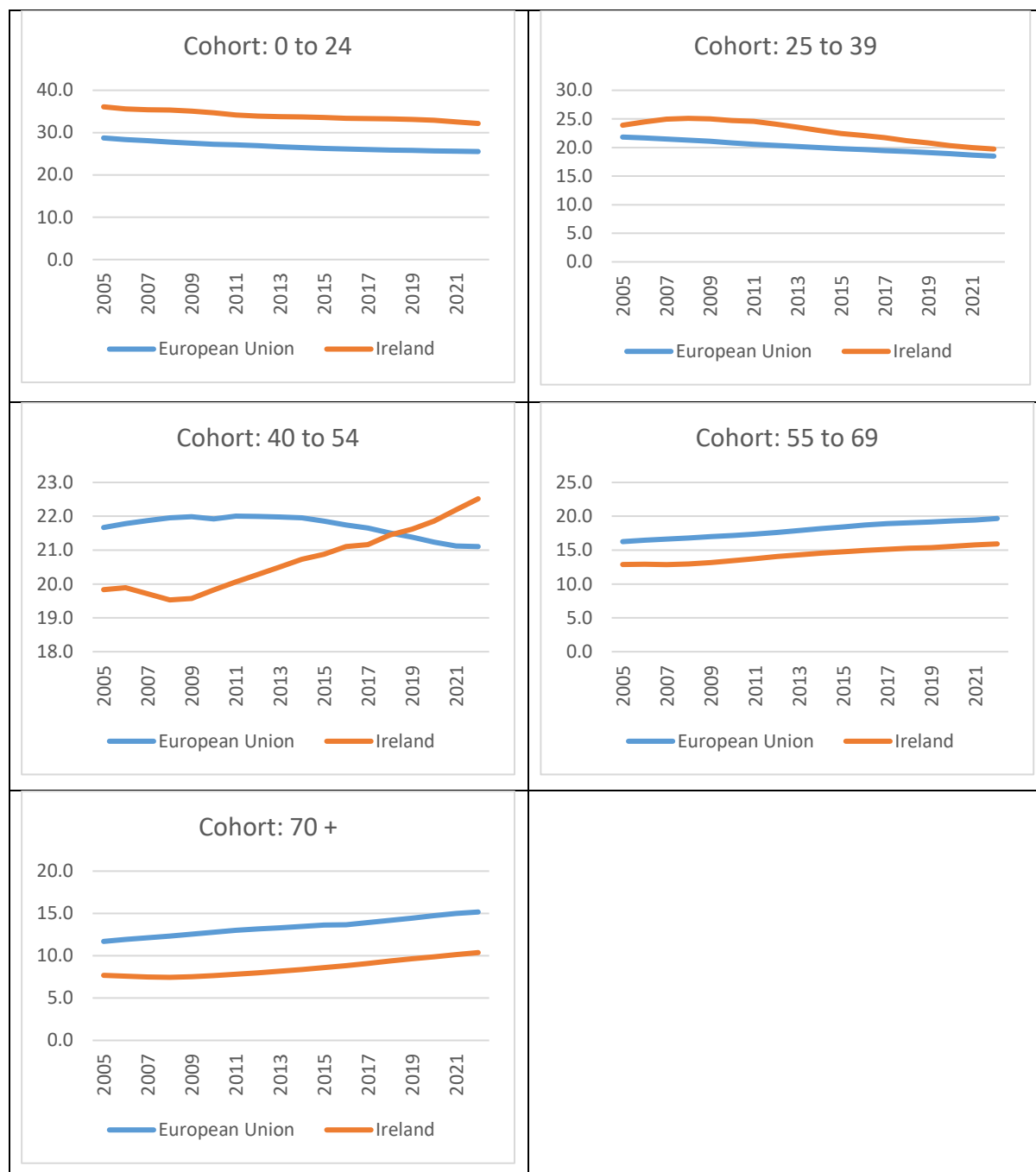
Comparing Ireland to EU peers

Having broken down trends in Irish tenureship by certain criteria, we now compare these trends with those for our cross-country sample. This enables us to gauge how the Irish mortgage market compares, particularly given the international nature of the global financial crisis (GFC) and its impact on cross-country housing markets.

Tenure Overview

As a first step in comparing tenureship across countries, we initially examine the relative shares of different cohorts of the actual population for Ireland and for the European Union as a whole. This helps to place in context the different shares accounted for by different age cohorts within domestic population levels. Figure 17 compares the share of the population in the 0-24, 35-39, 40-54, 55-69 and 70+ cohorts.

Figure 17: Proportion of population (%) in different age cohorts for Ireland and the European Union

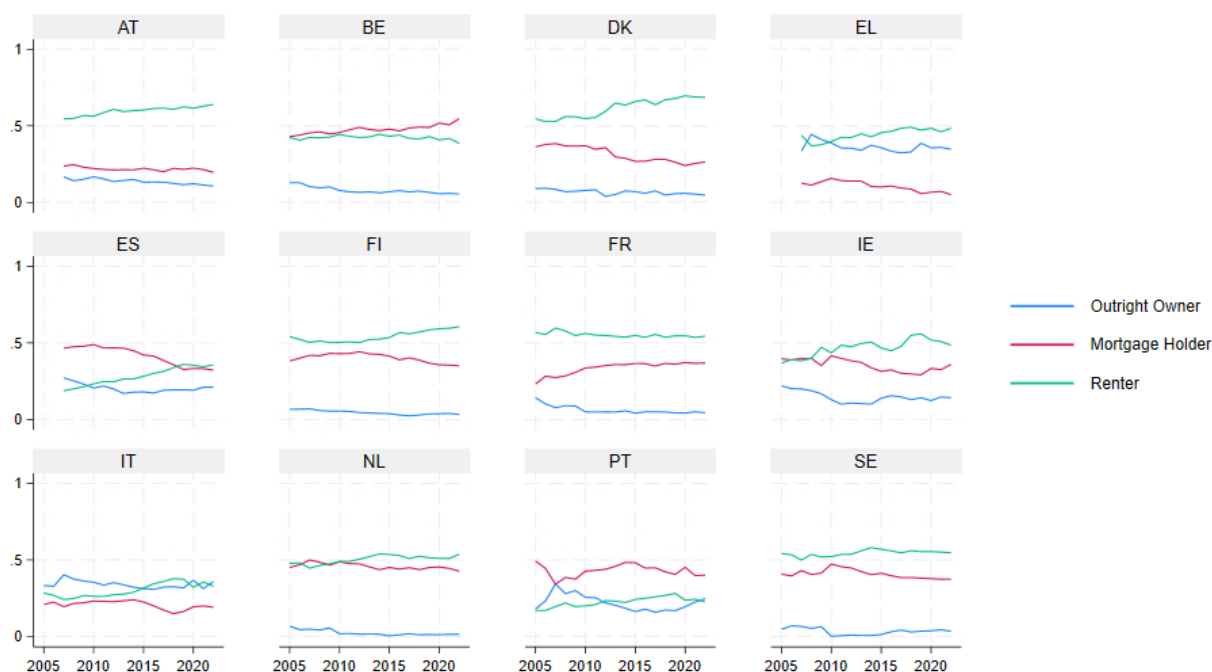


The different graphs clearly show the relatively “young nature” of the Irish population with larger shares of the domestic population in the 40 or younger age cohorts. Equally, over the period in question 2005 – 2022, there is a greater cohort of the EU population in the 55 and older cohorts.

To provide an overview of the part of the housing market that we are most interested in, Figure 18 shows the distribution of the three main tenure categories among the population of people aged 40 and below by country. As discussed above, in Ireland the largest group among the younger population are renters, even though at the beginning of the observed period the share of mortgage holders and renters was about the same. While the share of mortgage holders has decreased, the share of renters has increased and remains the largest group among the population aged 40 and below.

A similar pattern – where renters constitute the largest share of the sub-population, followed by mortgage holders, with outright owners making up the smallest share – can also be observed in Austria, Denmark, Greece Finland, France, the Netherlands, and Sweden. Therefore, this trend is evident in more than half of the countries in our sample. In the Netherlands, similar to the trend observed in Ireland, the proportion of mortgage holders was roughly equal to that of renters until shortly after the GFC. Following the GFC, the share of renters increased while the proportion of mortgage holders declined. In Greece, a similar pattern can be observed; however, outright owners, rather than mortgage holders, constitute the second largest group. The proportion of mortgage holders among the younger population is the lowest in our sample.

Figure 18: Distribution of tenure for people aged 40 and younger by country



Note: ‘Households under 40’ are considered any household in which adults under 40 are living independently, therefore with no adults aged 40 or older residing in the household

In Belgium, Spain, and Portugal the largest tenure category present among people aged 40 and below are mortgage holders. In Belgium and Spain, the second largest tenure category are renters for most of the time. In Spain the share of mortgage holders drastically decreased over time and by 2022, renters, who were the smallest group in 2005, are the largest group among the young population. Since just after the crisis, the share of outright owners in Spain makes up the smallest group. In Portugal, mortgage holders remain the largest group, followed by outright owners until the recovery period of the GFC, when renters took up the second highest share.

Italy presents a unique case, as until 2015, the most common tenure category among those aged 40 and under was outright ownership. However, this group has since been overtaken by renters, and by the end of the sample period, both groups comprise roughly the same share. Mortgage holders have consistently remained the smallest group in Italy.

Age

A notable change over time amongst mortgage holders is their increasing age. The overall trends in age cohorts across Europe show an aging population, as individuals below the age of 40 account for a smaller proportion of the total population over the past 20 years. However, these trends are even more pronounced across individual mortgage holders. On average, this population has become older, with the extent of this change varying by country, as discussed below. Delayed homeownership among younger generations and longer mortgage terms has significant policy implications for affordability and accessing homeownership. These trends may also affect the broader mortgage market, as well as retirement patterns and fluctuations in the job market. Figure 19 illustrates the distribution of mortgage holding homeowners by age group over time age in more detail¹³ for the twelve countries in our dataset.

¹³ The exact numbers can be found in Table 3 in the Appendix.

Figure 19: Distribution of mortgage holders by age group



Note: This displays the split of the population of individuals with a mortgage by age group. Each period, the shares add up to 100%. For Austria, Spain, and Greece the data for 2005 and 2006 is missing.

What all countries have in common is the very low percentage of people aged younger than 25 years with a mortgage. Across all countries and years in the sample, this share never rises above 3 per cent. Furthermore, the percentage of people aged 70 and over do not make up a large share of the mortgage holders in most countries either, with a few exceptions. For Ireland, Portugal, Italy, France, Spain, Belgium, and Austria this percentage is never higher than 5 per cent. In Greece and Finland, older households with a mortgage began increasing after the financial crisis, reaching a peak of 9 per cent in Greece and 7 per cent in Finland in the most recent period, 2020-2022. In the Netherlands and Denmark, the share of mortgage holders over the age of 70 doubled between the 2005-2008 and 2020-2022 period (from 6 to 13 per cent in the Netherlands and from 8 to 17 per cent in Denmark). Finally, Sweden is the country with the highest share of mortgage holders over 70 years, accounting for over 10 per cent of this tenure group across the full time period.

The more interesting and policy-relevant developments are observed among the middle-aged groups: 25-39 years, 40-54 years, and 55-69 years. As discussed above, prior to and just after the financial crisis, the mortgage distribution in Ireland was relatively balanced between 25-39-year-olds and 40-54-year-olds. However, from 2011 onward, the proportion of younger mortgage holders has markedly decreased, while the share among older age groups has risen, indicating a trend towards an aging demographic in mortgage ownership.

A similar trend is observed in Spain, Italy, Portugal, and France. While the share of mortgage holders in the 25-39 year cohort was higher pre-GFC in each of these countries, Spain is the only country where this cohort actually accounted for the largest share among mortgage holders prior to the financial crisis, representing between 43 to 47 per cent of the tenure group until 2014. After this period, the share of younger mortgage holders declined significantly, with those aged 40-54 accounting for approximately half of this tenure and those aged 55-69 also increasing, especially over the most recent three periods. Portugal, while exhibiting a similar trend to Ireland and Spain over time, has diverged slightly from this group in recent years. In the 2020-2022 period, the share of mortgage holders in the 25-39 year cohort has stagnated or increased in the other countries, whereas this cohort has continued to diminish in Portugal. Meanwhile, the 55-69 year group has increased steadily over time, matching the proportion of younger households in the most recent period (both groups accounted for roughly 22 per cent of mortgage holders). France exhibits a similar divergence between the 25-39 and 40-54 age groups in mortgage holding, although it is less pronounced compared to countries just mentioned. Prior to the crisis, these two age groups had nearly equal shares of mortgage holders (42 and 43 per cent, respectively), but by 2020-2022, the gap widened to 13 per cent, with the 40-54 age group holding a larger share of mortgages.

In Finland and Belgium, the age distribution of mortgage holders has remained relatively stable, with a slight decline in the 25-39 and 40-54 age groups, although the 40-54 group remains the largest. Meanwhile, the share of mortgage holders aged 55-69 has gradually increased. In Austria, the distribution has also been stable, but it is one of the few countries where the percentage of mortgage holders aged 40-54 has declined since the 2011-2013 period, although this group still constitutes the largest share at 42 per cent in 2020-2022. Both the 25-39 and 55-69 age groups have seen slight increases in their share of mortgage holders.

In the Netherlands, Denmark, and Greece, the 40-54 age group has consistently represented the largest share of mortgage holders, although its share has been declining over time. Notably, in

these countries, the proportion of mortgage holders aged 55-69 has increased, while the 25-39 group has declined. In Greece, the 55-69 age group has surpassed the 25-39 group since 2011-2013, reaching 36 per cent of mortgage holders by 2020-2022. Similarly, in the Netherlands, the 55-69 group's share began rising after the 2008-2010 period, surpassing the 25-39 group by 2020-2022. Denmark shows a similar trend, with the 55-69 group's share increasing and the 25-39 group's share declining, but it also has a sharply rising percentage of mortgage holders aged 70 and older, which reached 17 per cent by 2020-2022, nearly as large as the 25-39 group.

Sweden displays a distinctive trend compared to other countries. Initially, mortgage holders aged 40-54 and 55-69 each comprised about 30 per cent of the total. However, post-2011, the share of those aged 55-69 decreased while the proportion of 40-54-year-olds increased. Simultaneously, the percentage of mortgage holders aged 25-39 followed a slight U-shaped curve and surpassing the 55-69 age group in the most recent period.

Income

Income is the most critical determinant for mortgages, as it influences both the amount a person or household can borrow and the duration of the mortgage. Therefore, an overview of income¹⁴ development in the countries of study is provided in Table 4 in the Appendix. Ireland is among the countries in which the median household income has increased significantly over time and therefore has the highest median total disposable household income in the latest period (2020-2022) in our sample.

Figure 20 illustrates the distribution of tenureship across income quintiles for each country, highlighting substantial cross-country variations in the proportions of different tenureship groups. However, a common pattern emerges across all countries: as household income increases across quintiles, the proportion of mortgage holders rises while the proportion of renters declines. Additionally, the share of outright homeowners remains relatively consistent across income quintiles in most countries.

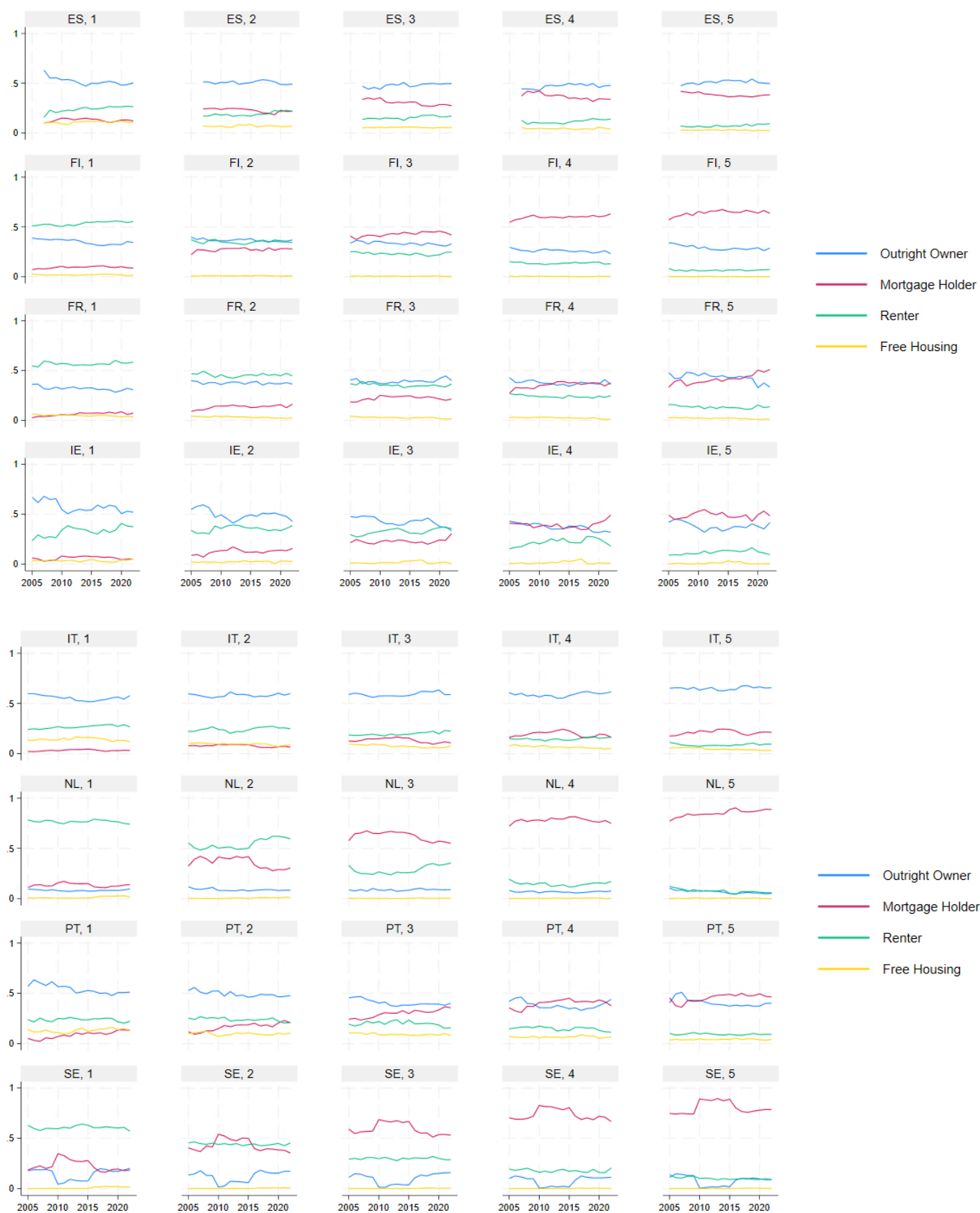
As discussed, the distribution of tenure status across income quintiles in Ireland shows that outright ownership is most prevalent in the lower income quintiles, while mortgage ownership dominates in the highest quintile. Over time, a notable trend includes the decline in outright ownership in the third quintile paired with a slight increase in renters and mortgage holders

¹⁴ Income in this paper is defined as total disposable household income.

since 2018 and the increasing share of mortgage holders in the fourth income quintile, particularly from 2019 onward.

Figure 20: Distribution by tenureship within each income quintile by country





Note: For Austria, Spain, and Greece the data for 2005 and 2006 is missing.

Southern European countries like Greece, Spain, Italy, and Portugal also exhibit high rates of outright ownership among lower income quintiles. Unlike Ireland, where mortgage holders are the largest tenure group in the highest income quintile, this trend is only closely mirrored in Portugal, where mortgage holders are predominant in the highest and most of the time the second-highest income quintiles. In Greece, Spain, and Italy, outright owners dominate across all income quintiles. In Spain, while the proportion of mortgage holders increases with income, it never exceeds that of outright owners. Additionally, as income rises, the share of renters declines; in Spain's lowest income quintile, renters are the second largest group, even ahead of mortgage holders. This pattern is also observed in Italy, where mortgage holders surpass renters in the two highest income quintiles.

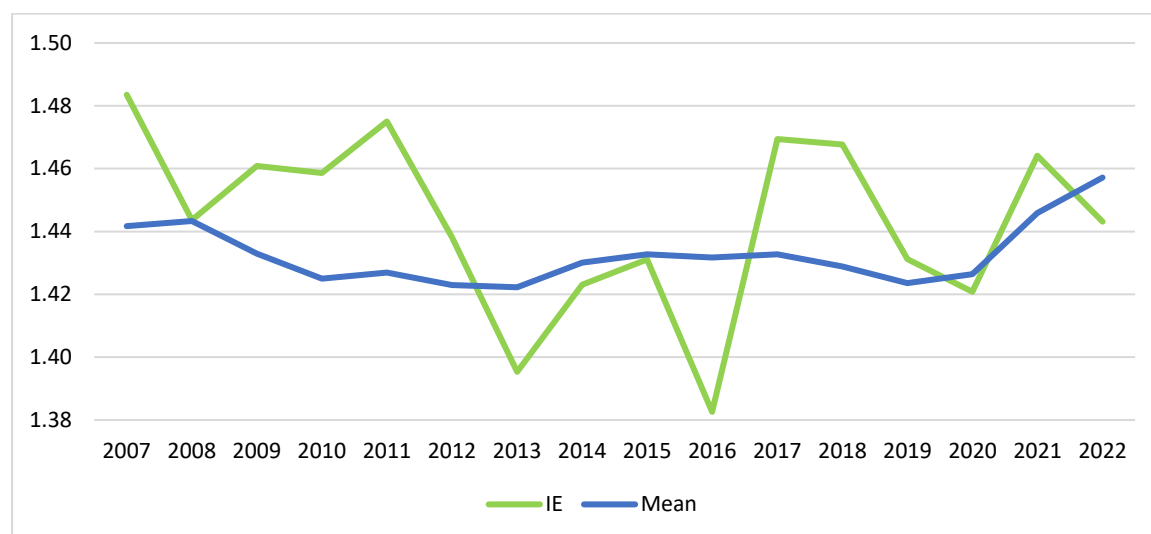
Total household median income and median mortgage income

A clear result to emerge so far is the positive relationship between income levels and those in homeownership with a mortgage; higher income levels are associated with higher levels of ownership or to put it another way, increased levels of income are required to become a homeowner with a mortgage.

To examine this relationship in more detail, we now examine the relationship across countries between the median income of mortgage holders and the median income of all households to see if this relationship has changed over time. In Figure 21 the ratio of median income for mortgaged households to the median income for all households is displayed for both, the Irish market and across all other countries in our sample over the period 2007 to 2022.

What clearly emerges from the graph is that over the past 15 years median income levels for mortgaged households have always been greater than that for all households. After the GFC, mortgaged income levels declined somewhat relative to total income levels, however, since about 2017, mortgaged income levels have started to increase again both for the Irish market and for the overall sample as a whole. This suggests, a priori, that obtaining a mortgage across European markets requires higher and higher levels of income. However, what does this mean for the overall share of mortgage holders in a market?

Figure 21: Ratio between median income for all households and for mortgaged households



To conduct a preliminary empirical analysis of this issue, using country-level data, over the period 2005 to 2022, the percentage of households with a mortgage is regressed on household income levels. In particular, three different regressions are conducted¹⁵:

- (1) Regressing the percentage of households with a mortgage on median income for all households,
- (2) Regressing the same dependent variable on median income of those households with a mortgage; and finally
- (3) Regressing the percentage of households in homeownership on the relative relationship between the two income levels.

We estimate all three regressions on a panel data basis, where country specific dummies are included, and the models are estimated over the period 2005 to 2022. The results are presented in Tables 1 through 3 below.

Table 1: Panel data regression model of percentage of households with a mortgage regressed on median income for all households

¹⁵ All models are estimated on a log-log basis so that the coefficients on the independent variables can be interpreted as elasticities. So, for example, the coefficient on the income variable in Table 1 indicates the impact of a 1 per cent increase in median income on the percentage of households with a mortgage.

	Dependent Variable: Log of the percentage of households with a mortgage		
Variable	Coefficient	T-Stat	P-Value
Log (Median Income)	0.11	2.08	0.04
Country-Dummies			
Austria	-2.80	-4.95	0.00
Belgium	-2.29	-4.12	0.00
Denmark	-2.10	-3.71	0.00
Greece	-3.26	-6.30	0.00
Spain	-2.41	-4.43	0.00
Finland	-2.27	-4.08	0.00
France	-2.66	-4.77	0.00
Ireland	-2.47	-4.34	0.00
Italy	-3.21	-5.87	0.00
Netherlands	-1.88	-3.36	0.00
Portugal	-2.32	-4.47	0.00
Sweden	-1.90	-3.41	0.00

Note: Sample = 210, 12 countries over 18 years. Fixed effects model used.

Table 2: Panel data regression model of percentage of households with a mortgage regressed on median income for all households with a mortgage

	Dependent Variable: Log of the percentage of households with a mortgage		
Variable	Coefficient	T-Stat	P-Value
Log (Median Income)	0.07	1.29	0.05
Country-Dummies			
Austria	-1.83	-3.37	0.54
Belgium	-1.63	-2.96	0.55
Denmark	-2.83	-5.63	0.50
Greece	-1.95	-3.74	0.52

Spain	-1.81	-3.34	0.54
Finland	-2.19	-4.06	0.54
France	-2.00	-3.62	0.55
Ireland	-2.75	-5.19	0.53
Italy	-1.41	-2.61	0.54
Netherlands	-1.89	-3.76	0.50
Portugal	-1.43	-2.66	0.54
Sweden	0.07	1.29	0.05

Note: Sample = 210, 12 countries over 18 years. Fixed effects model used.

Table 3: Panel data regression model of percentage of households with a mortgage regressed on median income for all households with a mortgage divided by median income for all households

	Dependent Variable: Log of the percentage of households with a mortgage		
Variable	Coefficient	T-Stat	P-Value
Log (Median Income)	-0.45	-2.39	0.19
Country-Dummies	-1.47	-21.70	0.07
Austria	-0.94	-10.90	0.09
Belgium	-0.72	-8.47	0.09
Denmark	-2.03	-29.40	0.07
Greece	-1.18	-25.25	0.05
Spain	-0.92	-11.15	0.08
Finland	-1.34	-19.85	0.07
France	-1.12	-15.72	0.07
Ireland	-1.91	-27.39	0.07
Italy	-0.56	-7.95	0.07
Netherlands	-1.12	-19.69	0.06
Portugal	-0.59	-8.90	0.07
Sweden	-0.45	-2.39	0.19

Note: Sample = 210, 12 countries over 18 years. Fixed effects model used.

In Table 1, the coefficient¹⁶ on median income for all households is positive and significant. This means that there is a clear positive association¹⁷ between household income and the proportion of households having a mortgage. In the second regression, the coefficient of the income variable is positive however, it is not statistically significant, suggesting an ambiguous relationship between the median income of households with a mortgage and the proportion of households with a mortgage.

Finally, in Table 3 we display the relationship between the ratio of the two income levels (mortgage income over total income) and the proportion of households with a mortgage. In this case, the coefficient is statistically significant indicating a negative correlation, as the relative median income of households with a mortgage increases, the proportion of households with a mortgage decreases suggesting, that, as the income required for a mortgage increases relative to median income generally, the proportion of people able to afford it declines.

Income and Age combined

While trends are becoming increasingly evident for both, age and income subcategories, their combination reveals additional insights. Figure 22, which mirrors Figure 20 by showing the distribution of tenure options across the five income quintiles, focuses specifically on mortgage holders aged 40 and below¹⁸. This more granular analysis highlights distinct patterns within each country that differ from those observed in the broader population of mortgage holders.

As mentioned, these data only reflect individuals who have formed independent households and therefore, young adults living at home are not captured. This is particularly important in a cross-country analysis, as the share of young adults living at home varies widely between countries in this sample, with countries in Southern Europe exhibiting very high shares of young adults living at home, nearing 40 – 50 per cent in some years, while living at home as a young adult in Northern countries such as Sweden and Denmark is much more rare (5 per cent or less). It is unclear which tenure we might expect young adults living at home to otherwise belong to. In areas with limited rental supply and high rent levels, young adults who wish to rent may be prevented from doing so. However, high house prices and challenges faced by

¹⁶ The regression is conducted on a log-log basis so the coefficients can be interpreted as elasticities.

¹⁷ We use the term association in this case as we do not control for endogeneity to suggest causation.

¹⁸ The quintiles have been recalculated for the population aged 40 and below.

first-time buyers may mean that those wishing to own are delayed in moving into this tenure type (Disch and Slaymaker, 2023).

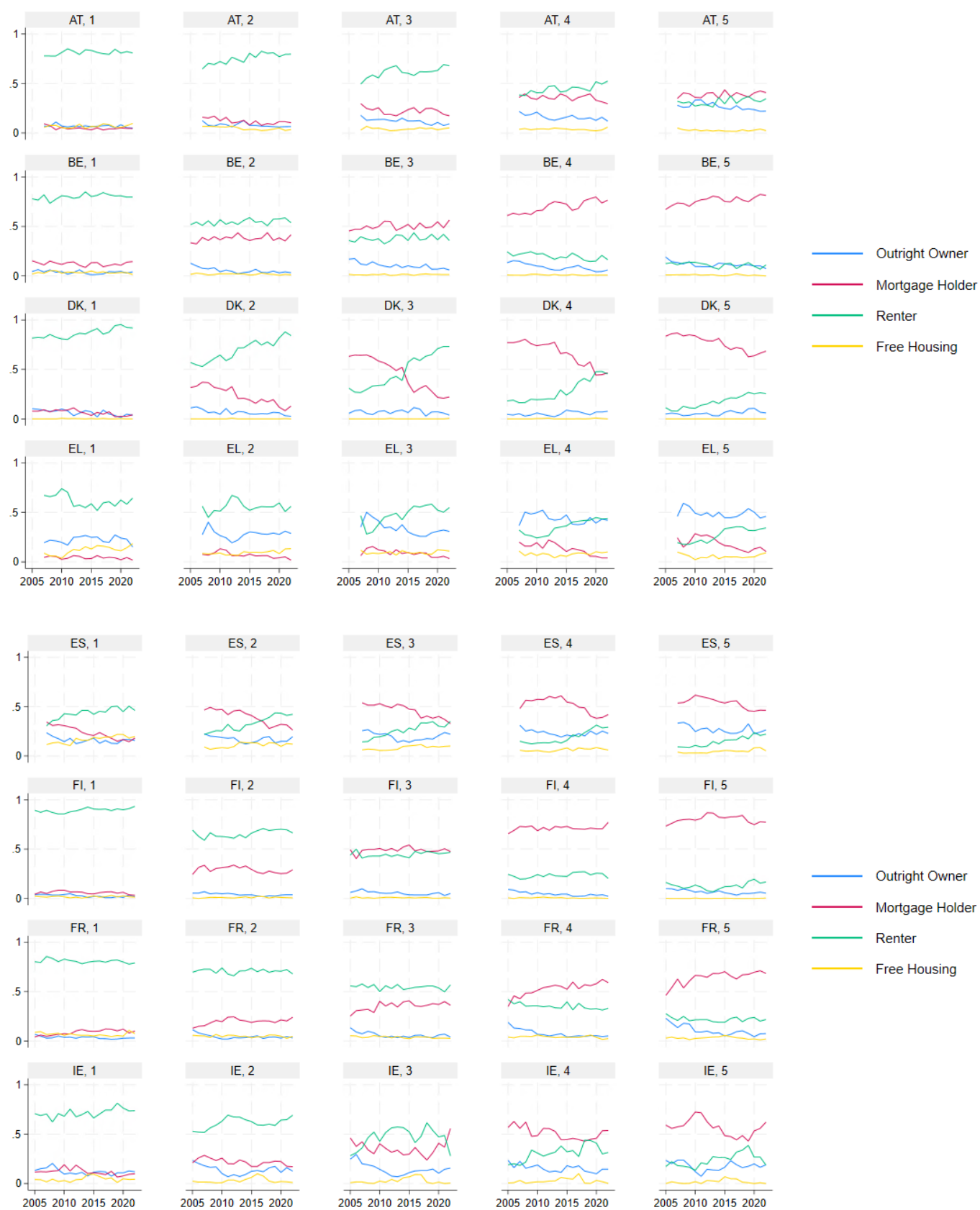
As previously noted, in Ireland, the proportion of mortgage holders increases, and the proportion of renters decreases, as one ascends the income ladder among the full population but the same trend seems to be apparent in the population aged 40 and below – as visible in Figure 21. In contrast to trends seen when looking at all age groups, the share of outright owners remains relatively low and constant across all income groups.

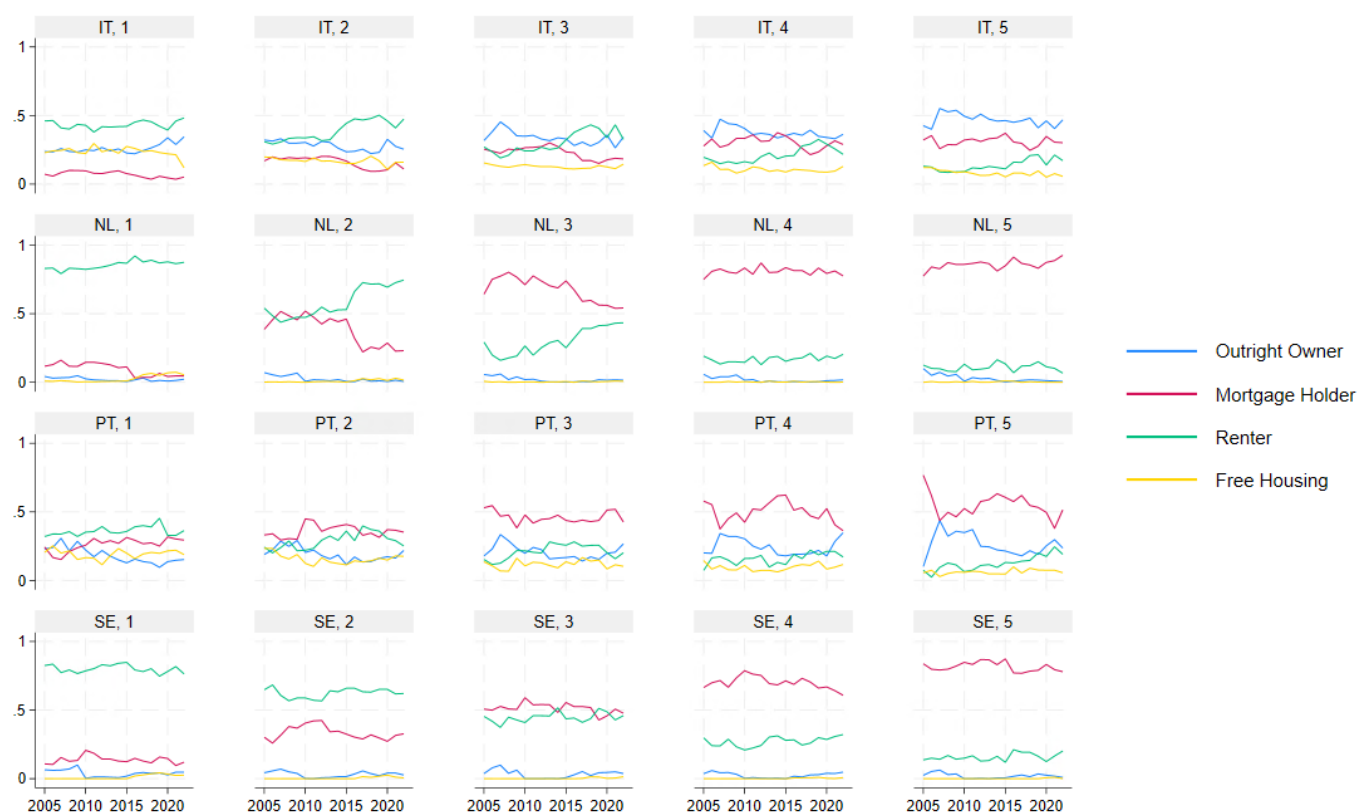
The combined effects of income and age on tenure are apparent across a number of countries. Ireland, Belgium, Denmark, Finland, France, the Netherlands and Sweden show a significant divergence in the tenure choices of the bottom two income quintiles (largely dominated by renters) and the highest two income quintiles (dominated by mortgage holders).

Meanwhile, in Greece and Italy, higher income households are more likely to own outright rather than own with a mortgage or rent. In Austria, renting is the dominant tenure choice for households aged 40 and below for every income group except the highest income quintile, where owning with a mortgage accounts for a slightly larger share of households than renting.

Considering the time dimension as well it becomes visible that in Ireland as well as Austria, Italy, the Netherlands, Spain and Denmark, the share of households in the rental sector appears to be increasing over time, although this is most apparent for those in the first three income quintiles. Meanwhile, in France, the share of young households renting has remained stable while those with a mortgage appear to be increasing over time.

Figure 22: Distribution by tenureship within each income quintile by country for the population aged 40 and below





Note: For Austria, Spain, and Greece the data for 2005 and 2006 is missing.

Urbanisation

Figure 23 shows the distribution of mortgage holders by their geographic distribution (as measured by ‘Urban’, ‘Medium-Urban’ or ‘Rural’), which displays significant cross-country variations.¹⁹ In Austria, for example, just 13 per cent of mortgage holders resided in urban areas in the most recent period while the share in Spain and Portugal is just over 50 per cent.

¹⁹ Unfortunately, data on degree of urbanisation are not available for the Netherlands

Figure 23: Share of mortgage holders by degree of urbanisation



Note: The population we are looking at are mortgage holders, so all the shares of the mortgage holders in each period sum to 100 per cent.

The overall distribution of rural, medium-urban, and urban mortgage holders is relatively equal in Ireland when compared to other countries. However, it is clear that after the financial crisis, the share of mortgage holders in urban areas declined, as those in rural areas became more likely to hold a mortgage. Several countries show similar patterns, to varying degrees. A gradual decline in the share of urban households with a mortgage can be seen in Austria, Belgium, Greece, France and Portugal. In many countries, the decline in mortgage holders in urban areas has been met with an increase in the share of medium-urban households. One notable example is France, which has experienced a more dramatic movement in mortgage holding households than Ireland. In the pre-crisis period, just 18 per cent of mortgage holders resided in urban areas in rural areas; by 2022, this cohort increased to 42 per cent. The group that, in turn, experienced a decrease in mortgage holders were people living in medium urban areas – also similar to Ireland. The rise in rural mortgage holders also mirrors a decline in urban mortgage holders, as this cohort fell from 40 per cent of all mortgage holders at the beginning of the time period to just 30 per cent.

The only country in which the majority of mortgage holders are in rural areas for the full time period is Austria. This could be a result, in part, to the secure rental market in Austria, especially in Vienna. Sweden and Finland also exhibited a higher share of mortgage holders in rural areas prior to the financial crisis. After the crisis, however, both countries experienced a significant decline in the proportion of mortgage holders living in rural areas. The percentages dropped from over 60 per cent in both countries in the 2005-2007 period to 20 and 30 per cent, respectively, in the 2020-2022 period. Meanwhile, medium-urban households have followed similar trends in both countries, with this share of mortgage holders increasing significantly in the 2011-2013 period and have remained relatively steady since.

Discussion of the Findings

A number of key findings on tenure patterns and changes in mortgage homeownership over time are clearly evident from the analysis:

1. Homeownership rates have declined across a number of countries, including Ireland, since 2005, but much variation persists in homeownership. While Ireland experienced the most significant decline in ownership during the Great Financial Crisis (GFC), ownership has stabilised more recently.
2. In countries with a high homeownership rate, outright ownership by older households accounts for a large share of the home-owning population. In Ireland, on average 62 per cent of the share of all homeowners own their home outright. The average age of these outright owners is 61 years.
3. As those who own outright are largely of pension age and do not need to make housing payments, the focus of the report is on the mortgage-holding population of owners. Half of the 12 countries examined in this report have a greater share of mortgage holders than Ireland while in Spain, a similar share of the population are mortgage holders. Owning a home with a mortgage is less common in France, Austria, Italy and Greece than in Ireland.
4. Homeowners with a mortgage in Ireland have a significantly higher income than people living in other tenures. The gap in disposable income between mortgage holders and renters has widened in recent years, with mortgage holders earning more than double the income of renters in 2022.
5. Across all countries, the majority of mortgage holders earn more than the median income and, in most countries, mortgage holders are more commonly in the highest two

income quintiles. However, in Denmark, Sweden and Finland, the distribution of mortgage holders by income is much more equal.

6. With the exception of Denmark, Finland, Sweden and Spain, the share of mortgage holders in urban areas has been declining over time.
7. The share of mortgage holders among young households (≤ 40 years) in Ireland has declined significantly, from 42 per cent in 2005 to 30 per cent in 2022.
8. The share of middle- and higher-income households ≤ 40 in the rental sector have increased over time in many countries, including Ireland, Spain, Greece, Austria and Denmark.
9. For households ≤ 40 , renting is the most common tenure for the lowest income cohort in all countries across the full time period, although the overall share varies greatly on a country-by-country basis; meanwhile, owning with a mortgage is the most common tenure for those in the highest income cohort in all countries except Italy and Greece.

Concluding comments

Many western economies have, as a stated policy, the desire to increase homeownership rates across the general population. Whilst greater rates of homeownership are often associated with fostering a sense of pride, belonging, and connection to the community and promoting long-term well-being, there are a number of financial and economic benefits associated with it as well. These include the opportunity to build equity over time, as property values often appreciate, providing stability, as owning a home protects against rising rent costs and gives individuals the freedom to customize their living space. Additionally, homeownership often comes with tax benefits, such as mortgage interest deductions, which can reduce overall tax liabilities. However, it is evident that European countries, and Ireland in particular, face significant challenges in increasing homeownership rates or even halting the decline experienced in rates over the past number of years.

In particular, the full impacts of the global financial crisis (GFC) are still being experienced by many countries. This has resulted in residential supply being considerably constrained across countries with a number of recent studies (OECD (2021) and Frayne, Szczypińska, Vašíček and Zeugner (2022)) highlighting the relatively low level of supply in the European residential market compared to the level of housing demand. This has ultimately resulted in an increase in house prices across European countries as the imbalance between supply and demand persists. Ultimately, the increase in house prices, while providing greater wealth for present

homeowners, does mean that average mortgage levels are continually increasing in size. This coupled with the more conservative credit regime introduced across European mortgage markets after the GFC has all resulted in greater levels of income being required for households to become homeowners. The impact of changing credit conditions on the housing market is compounded by its implications for the supply-side of the market where financing of construction has become more challenging since the GFC (see Disch, Egan, McQuinn and Kenny (2024)). The relative increase in house prices and average mortgage levels, does itself result in greater levels of wealth inequality in terms of home-owners versus the rest of the population.

One obvious policy response to achieving greater homeownership is for Governments to reduce the cost of housing through facilitating greater levels of residential supply across the European Union. Greater levels of supply, *ceteris paribus*, should improve affordability pressures in individual markets. Ultimately, this will require national Governments to commit significant fiscal resources to this end. As noted in *State of Housing in Europe* (2023), public funding has been made available in some countries through the use of EU resources from Resilience and Recovery Funds (for instance in Belgium, Spain and Italy), for funding opportunities. However, it is evident that a significant increase in resources is required, particularly given the implications of the recent surge in inflation which has seen a sizeable increase in costs for construction and renovation and the increase in the cost of finance which has accompanied the pick-up in inflation. Inevitably, there is an opportunity cost to such State interventions and increasing homeownership above certain target levels can, as noted by MacLennan, D., Meen, G., Gibb, K. and Stephens, M. (1997), induce certain macroeconomic risks. However, homeownership rates will only increase if house prices and hence mortgage finance become more affordable for the general population.

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Appendix

Table 1: Average age of Outright and Mortgage Holding homeowners

Country	Data	2005- 2007	2008- 2010	2011- 2013	2014- 2016	2017- 2019	2020- 2022
AT	Avg Age OO	53	58	58	58	58	59
	Avg Age MH	46	47	47	47	47	42
BE	Avg Age OO	61	63	64	64	65	66
	Avg Age MH	42	43	44	45	44	47
DE	Avg Age OO	56	57	63	62	62	64
	Avg Age MH	49	49	50	50	52	49
DK	Avg Age OO	58	59	61	61	63	63
	Avg Age MH	49	51	52	53	53	47
EL	Avg Age OO	59	56	59	60	61	61
	Avg Age MH	48	50	53	53	41	41
ES	Avg Age OO	54	58	60	62	62	62
	Avg Age MH	45	46	48	43	44	45
FI	Avg Age OO	62	63	65	66	67	67
	Avg Age MH	46	47	47	43	43	43
FR	Avg Age OO	62	63	65	65	66	67
	Avg Age MH	43	44	45	42	41	42
IE	Avg Age OO	57	59	61	62	62	63
	Avg Age MH	44	45	44	45	44	44
IT	Avg Age OO	60	59	60	61	62	62
	Avg Age MH	46	47	48	47	48	49
NL	Avg Age OO	59	61	65	68	66	67
	Avg Age MH	50	51	52	43	43	43
PT	Avg Age OO	59	58	61	63	64	63
	Avg Age MH	45	46	47	50	50	52
SE	Avg Age OO	61	62	69	67	65	66
	Avg Age MH	53	50	51			

Note: For Austria, Spain, and Greece the data on mortgage holders for the years 2005 and 2006 is missing.

Table 2: Share of Outright and Mortgage holding owners over the age of 60

	Age	2005- 2007	2008- 2010	2011- 2013	2014- 2016	2017- 2019	2020- 2022
AT	MH 60+	12%	12%	12%	12%	14%	14%
	OO 60+	34%	46%	45%	46%	46%	49%
BE	MH 60+	3%	4%	5%	5%	7%	7%
	OO 60+	55%	60%	63%	65%	67%	69%
DK	MH 60+	21%	22%	27%	28%	31%	32%
	OO 60+	53%	55%	59%	61%	64%	63%
EL	MH 60+	12%	10%	17%	19%	25%	27%
	OO 60+	48%	44%	49%	52%	53%	54%
ES	MH 60+	6%	5%	6%	8%	10%	12%
	OO 60+	37%	49%	53%	56%	57%	58%
FI	MH 60+	9%	11%	13%	16%	17%	17%
	OO 60+	56%	61%	65%	69%	72%	73%
FR	MH 60+	7%	6%	7%	7%	8%	9%
	OO 60+	56%	60%	65%	67%	70%	71%
IE	MH 60+	3%	3%	4%	5%	5%	5%
	OO 60+	44%	49%	56%	57%	57%	60%
IT	MH 60+	10%	9%	10%	10%	11%	13%
	OO 60+	51%	48%	52%	54%	54%	56%
NL	MH 60+	17%	20%	23%	25%	26%	29%
	OO 60+	53%	57%	70%	78%	73%	75%
PT	MH 60+	7%	6%	7%	8%	10%	11%
	OO 60+	50%	50%	56%	61%	65%	65%
SE	MH 60+	27%	33%	35%	34%	28%	28%
	OO 60+	57%	60%	82%	74%	70%	72%

Note: For Austria, Spain, and Greece the data on mortgage holders for the years 2005 and 2006 is missing.

Table 3: Distribution of mortgage holders by age

	Data	2005-2007	2008-2010	2011-2013	2014-2016	2017-2019	2020-2022
AT	<25	2%	2%	2%	2%	2%	3%
	25-39	29%	26%	23%	25%	27%	28%
	40-54	48%	51%	51%	50%	44%	42%
	55-69	17%	18%	19%	19%	23%	22%
	70+	4%	4%	4%	5%	4%	5%
BE	<25	1%	2%	1%	1%	1%	1%
	25-39	40%	39%	37%	36%	35%	36%
	40-54	49%	48%	47%	47%	45%	44%
	55-69	9%	11%	14%	16%	18%	19%
	70+	0%	0%	1%	1%	1%	1%
DK	<25	1%	1%	1%	1%	1%	1%
	25-39	27%	27%	22%	19%	18%	18%
	40-54	36%	36%	37%	38%	36%	34%
	55-69	27%	28%	29%	30%	29%	30%
	70+	8%	8%	11%	12%	16%	17%
EL	<25	0%	1%	1%	0%	1%	0%
	25-39	26%	29%	25%	18%	12%	10%
	40-54	50%	47%	43%	47%	46%	44%
	55-69	21%	20%	26%	29%	33%	36%
	70+	3%	3%	5%	5%	8%	9%
ES	<25	2%	2%	1%	1%	1%	1%
	25-39	49%	47%	44%	35%	26%	22%
	40-54	37%	40%	43%	48%	53%	53%
	55-69	9%	9%	11%	14%	17%	21%
	70+	2%	2%	2%	2%	3%	3%
FI	<25	2%	2%	2%	2%	1%	1%
	25-39	36%	34%	34%	33%	32%	32%
	40-54	42%	41%	40%	38%	38%	38%
	55-69	16%	19%	20%	22%	23%	22%
	70+	3%	3%	4%	5%	6%	7%
FR	<25	1%	1%	1%	1%	1%	1%
	25-39	42%	42%	40%	37%	34%	33%
	40-54	43%	43%	44%	46%	48%	46%
	55-69	13%	13%	14%	14%	15%	17%
	70+	1%	1%	1%	1%	1%	3%
IE	<25	3%	2%	1%	1%	1%	1%
	25-39	42%	43%	40%	33%	28%	30%
	40-54	46%	44%	47%	52%	56%	56%
	55-69	8%	10%	11%	13%	14%	13%
	70+	1%	1%	1%	1%	1%	1%
IT	<25	1%	1%	1%	1%	1%	0%

NL	25-39	38%	38%	33%	28%	25%	24%
	40-54	43%	44%	48%	51%	51%	49%
	55-69	15%	14%	15%	17%	19%	22%
	70+	3%	3%	3%	3%	4%	4%
	<25	1%	1%	1%	1%	1%	1%
PT	25-39	30%	28%	25%	23%	24%	23%
	40-54	39%	39%	39%	38%	36%	34%
	55-69	24%	26%	26%	28%	28%	29%
	70+	6%	7%	8%	10%	12%	13%
	<25	1%	1%	1%	1%	1%	1%
SE	25-39	43%	41%	37%	32%	26%	22%
	40-54	40%	44%	45%	49%	52%	52%
	55-69	15%	13%	14%	16%	18%	22%
	70+	2%	1%	2%	2%	2%	3%
	<25	1%	2%	2%	2%	2%	2%
	25-39	26%	24%	21%	21%	25%	26%
	40-54	31%	29%	30%	31%	33%	32%
	55-69	30%	30%	30%	28%	26%	26%
	70+	11%	15%	16%	17%	14%	14%

Note: For Austria, Spain, and Greece the data on mortgage holders for the years 2005 and 2006 is missing.

Table 4: Median income per country over time

	2005- 2007	2008- 2010	2011- 2013	2014- 2016	2017- 2019	2020- 2022
AT	€27,735	€30,099	€32,726	€34,794	€36,980	€39,937
BE	€24,090	€26,817	€28,799	€30,773	€32,716	€36,493
DK	€28,609	€30,252	€34,564	€36,009	€37,784	€39,492
EL	€16,206	€18,899	€15,009	€12,001	€12,744	€14,432
ES	€19,340	€24,396	€22,804	€21,695	€23,531	€26,487
FI	€24,704	€27,520	€30,446	€31,706	€31,984	€32,284
FR	€24,517	€29,403	€30,680	€31,617	€32,460	€32,100
IE	€34,667	€37,090	€33,769	€36,516	€40,692	€45,523
IT	€22,701	€24,364	€24,341	€24,235	€25,283	€26,664
NL	€26,605	€29,936	€30,323	€30,651	€32,839	€35,352
PT	€13,134	€14,405	€14,221	€14,139	€15,754	€18,336
SE	€24,411	€25,659	€30,833	€33,350	€32,646	€33,029

Table 5: Overview of Homeownership in selected European Countries (averages of 2005-2022)

	Average Homeownership rate	Average Share of Mortgage Holders	Average Share of Outright Owners
AT	50%	34%	66%
DK	55%	73%	27%
NL	57%	86%	14%
SE	59%	80%	20%
FR	60%	37%	63%
FI	66%	49%	51%
BE	67%	48%	52%
IE	72%	38%	62%
IT	72%	17%	83%
EL	73%	13%	87%
PT	74%	39%	61%
ES	78%	31%	69%

Note: These are the averages of the years 2005-2022. For Austria, Spain, and Greece the mortgage data for 2005 and 2006 is missing.

Table 6: Overview of the number of observations per quintile per year and country

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AT	Q1	1,010	1,183	1,336	1,119	1,152	1,214	1,213	1,222	1,172	1,159	1,185	1,176	1,194	1,197	1,173	1,181	1,180	1,164
	Q2	1,009	1,181	1,332	1,119	1,152	1,213	1,213	1,222	1,172	1,158	1,185	1,176	1,194	1,196	1,173	1,180	1,180	1,164
	Q3	1,010	1,181	1,334	1,118	1,152	1,213	1,213	1,221	1,172	1,158	1,185	1,176	1,194	1,196	1,173	1,180	1,179	1,164
	Q4	1,009	1,182	1,334	1,119	1,152	1,213	1,213	1,222	1,172	1,158	1,185	1,176	1,194	1,196	1,173	1,180	1,180	1,164
	Q5	1,009	1,181	1,334	1,118	1,152	1,213	1,213	1,221	1,171	1,158	1,185	1,176	1,194	1,196	1,173	1,180	1,179	1,164
BE	Q1	1,009	1,150	1,245	1,236	1,203	1,202	1,159	1,141	1,208	1,181	1,178	1,158	1,191	1,166	1,331	1,390	1,478	1,319
	Q2	1,007	1,148	1,244	1,234	1,203	1,202	1,158	1,140	1,207	1,180	1,177	1,158	1,183	1,166	1,331	1,390	1,478	1,319
	Q3	1,007	1,149	1,245	1,235	1,202	1,202	1,159	1,140	1,208	1,180	1,177	1,157	1,186	1,165	1,330	1,389	1,477	1,318
	Q4	1,008	1,149	1,244	1,235	1,203	1,202	1,158	1,140	1,207	1,180	1,177	1,158	1,187	1,166	1,331	1,390	1,478	1,319
	Q5	1,007	1,148	1,244	1,234	1,202	1,202	1,158	1,140	1,207	1,180	1,177	1,157	1,186	1,165	1,330	1,389	1,477	1,318
DK	Q1	1,168	1,120	1,134	1,133	1,150	1,151	1,028	1,042	1,063	1,129	1,181	1,228	1,158	1,099	1,141	1,287	1,536	1,324
	Q2	1,168	1,119	1,134	1,133	1,150	1,150	1,028	1,042	1,062	1,129	1,181	1,228	1,158	1,098	1,140	1,286	1,536	1,323
	Q3	1,169	1,120	1,134	1,133	1,150	1,150	1,027	1,042	1,062	1,128	1,181	1,228	1,158	1,099	1,140	1,287	1,536	1,323
	Q4	1,167	1,119	1,134	1,133	1,150	1,150	1,028	1,042	1,062	1,129	1,181	1,228	1,158	1,098	1,140	1,286	1,536	1,323
	Q5	1,167	1,119	1,133	1,132	1,150	1,150	1,027	1,042	1,062	1,128	1,181	1,227	1,157	1,098	1,140	1,286	1,536	1,323
EL	Q1	1,092	1,119	1,122	1,277	1,387	1,373	1,213	1,103	1,460	1,694	2,764	3,584	4,467	4,766	3,518	2,959	2,492	2,006
	Q2	1,092	1,117	1,091	1,275	1,380	1,373	1,156	1,103	1,457	1,686	2,763	3,584	4,455	4,764	3,517	2,956	2,455	1,999
	Q3	1,091	1,119	1,109	1,275	1,386	1,374	1,187	1,103	1,459	1,689	2,768	3,584	4,459	4,776	3,523	2,957	2,478	2,003
	Q4	1,092	1,118	1,104	1,274	1,382	1,373	1,172	1,103	1,457	1,690	2,758	3,584	4,457	4,752	3,511	2,957	2,469	2,006
	Q5	1,091	1,116	1,105	1,275	1,381	1,372	1,181	1,102	1,458	1,689	2,763	3,583	4,459	4,761	3,517	2,957	2,473	1,998
ES	Q1	2,537	2,382	2,417	2,551	2,619	2,666	2,570	2,492	2,380	2,346	2,425	2,792	2,694	2,621	3,115	2,949	4,118	4,766
	Q2	2,535	2,381	2,417	2,551	2,619	2,665	2,569	2,492	2,379	2,345	2,424	2,791	2,693	2,621	3,114	2,949	4,117	4,765
	Q3	2,536	2,382	2,422	2,551	2,619	2,666	2,570	2,492	2,380	2,346	2,424	2,791	2,693	2,620	3,114	2,948	4,118	4,766
	Q4	2,536	2,381	2,411	2,551	2,619	2,665	2,569	2,492	2,379	2,345	2,424	2,791	2,693	2,620	3,114	2,949	4,117	4,765
	Q5	2,535	2,381	2,416	2,550	2,618	2,665	2,569	2,492	2,379	2,345	2,424	2,791	2,693	2,620	3,114	2,948	4,117	4,765
FI	Q1	2,201	2,131	2,083	2,053	1,987	2,155	1,833	2,021	2,229	2,162	2,103	2,082	2,002	1,928	1,891	1,858	1,844	1,778

FR	Q2	2,201	2,130	2,083	2,053	1,987	2,154	1,833	2,020	2,229	2,162	2,102	2,082	2,001	1,927	1,891	1,857	1,844	1,778
	Q3	2,201	2,131	2,082	2,053	1,987	2,155	1,833	2,021	2,229	2,162	2,103	2,081	2,001	1,927	1,891	1,857	1,844	1,778
	Q4	2,201	2,130	2,082	2,053	1,987	2,153	1,833	2,019	2,229	2,162	2,102	2,083	2,001	1,927	1,891	1,857	1,844	1,778
	Q5	2,201	2,130	2,082	2,052	1,987	2,154	1,833	2,020	2,228	2,162	2,102	2,080	2,001	1,927	1,890	1,857	1,844	1,777
	Q1	1,912	1,968	2,059	2,045	2,079	2,170	2,229	2,354	2,184	2,232	2,238	2,250	2,173	2,135	2,303	2,137	2,748	3,424
IE	Q2	1,912	1,968	2,057	2,040	2,078	2,162	2,225	2,351	2,182	2,234	2,228	2,243	2,167	2,129	2,299	2,138	2,746	3,419
	Q3	1,912	1,966	2,058	2,046	2,080	2,165	2,228	2,353	2,180	2,230	2,236	2,248	2,169	2,132	2,301	2,135	2,747	3,419
	Q4	1,912	1,968	2,058	2,041	2,078	2,164	2,226	2,352	2,182	2,231	2,230	2,245	2,171	2,132	2,301	2,138	2,747	3,421
	Q5	1,912	1,966	2,058	2,040	2,077	2,164	2,226	2,351	2,181	2,231	2,232	2,246	2,168	2,132	2,299	2,135	2,747	3,420
	Q1	1,193	1,144	1,100	1,029	1,017	910	850	901	965	1,076	1,069	1,023	986	860	821	832	950	914
IT	Q2	1,193	1,144	1,099	1,029	1,016	910	850	900	965	1,076	1,069	1,023	986	860	821	832	950	915
	Q3	1,193	1,144	1,099	1,028	1,016	910	850	901	965	1,076	1,069	1,023	986	858	819	832	950	912
	Q4	1,193	1,144	1,099	1,029	1,016	910	850	900	965	1,076	1,069	1,023	986	859	820	832	950	914
	Q5	1,193	1,144	1,099	1,028	1,016	910	850	900	964	1,075	1,068	1,022	985	859	820	831	950	913
	Q1	4,319	4,215	4,113	4,104	4,017	3,753	3,804	3,838	3,625	3,855	3,548	4,202	4,394	4,152	4,116	2,813	3,665	4,409
NL	Q2	4,320	4,214	4,113	4,102	4,017	3,754	3,803	3,839	3,623	3,854	3,548	4,201	4,393	4,152	4,116	2,812	3,663	4,408
	Q3	4,317	4,215	4,113	4,101	4,017	3,752	3,802	3,837	3,624	3,854	3,547	4,201	4,394	4,151	4,116	2,812	3,663	4,409
	Q4	4,318	4,214	4,113	4,102	4,017	3,753	3,803	3,838	3,624	3,854	3,550	4,200	4,393	4,152	4,116	2,812	3,664	4,408
	Q5	4,318	4,214	4,112	4,102	4,016	3,753	3,802	3,837	3,623	3,854	3,545	4,200	4,393	4,151	4,115	2,812	3,663	4,408
	Q1	1,834	1,762	2,004	2,027	1,907	1,987	2,058	1,994	1,986	1,995	1,922	2,499	2,614	2,449	2,698	2,590	2,988	2,815
PT	Q2	1,834	1,762	2,003	2,027	1,907	1,986	2,058	1,993	1,986	1,994	1,922	2,499	2,611	2,449	2,698	2,589	2,988	2,814
	Q3	1,834	1,761	2,003	2,025	1,907	1,988	2,057	1,993	1,986	1,995	1,922	2,499	2,613	2,449	2,698	2,590	2,988	2,814
	Q4	1,835	1,762	2,003	2,026	1,907	1,985	2,058	1,993	1,986	1,994	1,922	2,499	2,612	2,449	2,698	2,589	2,988	2,813
	Q5	1,833	1,761	2,003	2,026	1,906	1,986	2,057	1,993	1,985	1,994	1,922	2,498	2,612	2,449	2,698	2,589	2,987	2,814
	Q1	905	857	846	874	973	1,016	1,126	1,227	1,273	1,343	1,714	2,082	2,372	2,689	2,661	2,229	2,152	2,473
	Q2	905	856	844	873	973	1,016	1,125	1,227	1,273	1,343	1,713	2,081	2,369	2,689	2,660	2,228	2,150	2,473
	Q3	904	856	845	873	972	1,016	1,125	1,226	1,272	1,343	1,713	2,082	2,370	2,688	2,660	2,228	2,151	2,473
	Q4	905	856	845	873	973	1,016	1,125	1,227	1,273	1,343	1,713	2,081	2,370	2,690	2,660	2,228	2,151	2,473
	Q5	904	856	844	873	972	1,016	1,125	1,226	1,272	1,342	1,713	2,081	2,370	2,687	2,660	2,228	2,151	2,472

SE	Q1	1,203	1,335	1,409	1,461	1,479	1,407	1,317	1,300	1,216	1,137	1,149	1,135	1,162	1,143	1,102	1,134	1,743	1,686
	Q2	1,202	1,332	1,408	1,461	1,479	1,406	1,317	1,299	1,215	1,137	1,149	1,135	1,162	1,143	1,102	1,133	1,743	1,686
	Q3	1,202	1,334	1,408	1,461	1,479	1,406	1,316	1,299	1,216	1,137	1,148	1,134	1,162	1,143	1,102	1,134	1,742	1,686
	Q4	1,202	1,333	1,408	1,461	1,479	1,406	1,317	1,299	1,215	1,137	1,149	1,135	1,162	1,143	1,102	1,133	1,743	1,686
	Q5	1,202	1,333	1,408	1,460	1,478	1,406	1,316	1,299	1,215	1,136	1,148	1,134	1,162	1,143	1,101	1,133	1,742	1,685

Table 7: Overview of the number of observations per quintile per year and country for the population aged 40 and below

			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AT		Q1	314	345	384	323	319	328	317	313	294	296	300	302	296	305	292	288	290	278
		Q2	313	344	383	323	318	327	316	313	294	296	299	302	296	305	291	287	290	277
		Q3	313	344	383	323	319	328	316	312	294	296	300	302	295	304	292	287	290	277
		Q4	313	344	383	323	318	327	316	313	294	296	299	302	296	305	291	287	290	277
		Q5	313	344	383	323	318	327	316	312	293	295	299	302	295	304	291	287	289	277
BE		Q1	312	352	389	359	355	355	330	311	318	312	310	299	298	289	323	325	354	307
		Q2	312	352	388	358	354	354	330	311	317	312	310	299	298	289	323	325	354	307
		Q3	311	351	389	358	355	354	330	311	318	311	310	299	298	289	323	325	354	307
		Q4	312	352	388	358	354	354	330	311	317	312	310	299	298	289	323	325	354	307
		Q5	311	351	388	358	354	354	329	310	317	311	309	298	298	289	322	324	353	307
DK		Q1	365	337	318	305	285	276	228	210	194	200	221	226	219	195	213	282	345	269
		Q2	365	336	318	305	285	275	227	209	193	200	220	226	218	195	213	281	345	269
		Q3	365	337	317	304	285	275	227	209	193	200	220	226	219	194	212	282	344	268
		Q4	365	336	318	305	285	275	227	209	193	200	220	226	218	195	213	281	345	269
		Q5	364	336	317	304	284	275	227	209	193	200	220	226	218	194	212	281	344	268
EL		Q1	229	228	219	333	353	341	247	228	299	323	539	638	753	741	456	366	293	253
		Q2	229	227	216	324	353	339	246	227	299	325	534	636	752	709	455	368	292	253
		Q3	227	228	220	329	352	341	247	227	299	321	537	636	753	724	456	363	293	252
		Q4	228	227	215	327	353	339	246	227	300	323	536	637	752	725	456	365	292	253
		Q5	228	226	217	328	352	339	246	227	298	322	535	636	752	724	454	365	292	252
ES		Q1	558	711	699	728	740	720	637	569	517	490	485	534	478	457	529	490	686	774
		Q2	558	711	699	727	739	719	637	569	517	489	485	533	478	457	528	490	686	773
		Q3	558	712	699	727	739	719	636	569	516	489	485	534	478	457	528	489	685	773
		Q4	558	710	699	727	739	719	637	569	517	489	485	533	478	457	528	490	686	773
		Q5	558	710	699	727	739	719	636	569	516	489	484	533	478	457	528	489	685	773
FI		Q1	674	651	600	584	561	578	491	523	583	575	549	555	521	497	475	460	449	427

FR	Q2	673	650	600	583	560	578	491	522	583	575	547	555	521	497	475	460	449	428
	Q3	673	650	600	584	561	578	490	523	582	575	548	554	521	497	475	460	449	426
	Q4	673	651	600	583	560	578	491	522	583	575	548	555	521	497	475	460	449	427
	Q5	673	649	599	583	560	577	490	522	582	574	547	554	520	496	475	459	449	427
	Q1	594	585	594	583	584	586	583	621	543	546	521	507	472	454	486	477	605	722
IE	Q2	593	585	593	581	582	585	585	623	543	546	520	501	473	454	486	475	605	721
	Q3	593	586	593	582	583	585	584	620	543	545	520	504	470	454	486	477	603	721
	Q4	593	584	593	582	582	585	580	619	543	545	520	504	472	454	488	475	604	721
	Q5	593	584	593	581	582	585	582	620	543	544	520	503	471	453	484	476	604	721
	Q1	306	264	235	219	265	269	256	284	302	308	275	236	214	195	188	169	151	128
IT	Q2	306	264	235	219	265	269	256	283	302	307	275	235	214	195	188	168	150	127
	Q3	306	264	235	218	265	269	255	284	301	307	275	236	214	194	188	168	150	128
	Q4	306	264	235	219	265	269	256	283	302	307	275	235	214	195	188	168	150	127
	Q5	305	264	235	218	264	269	255	283	301	307	274	235	213	194	187	168	150	127
	Q1	875	812	1011	988	944	869	791	776	687	718	596	745	768	696	607	364	465	596
NL	Q2	875	812	1011	988	944	869	791	775	687	718	596	744	768	695	606	363	464	596
	Q3	874	812	1011	987	943	868	790	776	686	717	596	744	768	696	606	363	464	596
	Q4	875	812	1011	988	944	869	791	774	687	718	596	744	768	695	606	363	464	596
	Q5	874	811	1010	987	943	868	790	775	686	717	595	744	768	695	606	363	464	596
	Q1	578	514	558	539	499	486	480	448	408	405	380	500	529	466	491	459	545	460
PT	Q2	578	514	558	539	499	485	480	447	408	405	379	499	529	466	490	458	544	459
	Q3	578	513	558	539	499	485	478	448	408	405	380	500	529	466	490	459	545	459
	Q4	578	514	558	539	499	485	479	447	408	405	379	499	529	466	490	458	544	460
	Q5	577	513	558	538	498	485	479	447	408	404	379	499	529	465	490	458	544	458
	Q1	164	142	198	193	216	210	242	271	275	281	357	422	448	487	457	325	250	353
PT	Q2	164	139	197	193	216	209	242	271	275	281	354	422	448	486	457	325	250	353
	Q3	163	141	197	193	216	209	242	270	275	281	356	422	448	486	457	325	249	352
	Q4	164	140	197	193	216	209	242	271	275	281	355	422	448	486	457	325	250	353
	Q5	163	140	197	192	216	209	242	270	274	280	355	421	447	486	456	325	249	352

SE	Q1	377	431	443	438	431	401	352	337	314	284	285	280	294	294	295	301	460	445
	Q2	376	431	442	437	430	401	352	337	313	284	284	279	294	294	294	301	459	445
	Q3	377	431	443	437	431	401	351	337	313	283	284	280	294	293	294	301	460	445
	Q4	376	431	442	437	430	401	352	337	313	284	284	279	294	294	294	301	459	445
	Q5	376	431	442	437	430	401	351	336	313	283	284	279	293	293	294	301	459	445