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Exploring Affordability in the Irish Housing Market

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Abstract: This paper examines housing affordability in Ireland by looking at the distribution of housing costs across households. Using microdata from the SILC survey over the period 2005-2015, the contribution of this paper is threefold. First, the paper considers the trends in the cost of housing in Ireland across groups of households split by age, region, household structure, and their position in the income distribution. Second, we apply selected international housing affordability definitions and explore the share, and composition, of households in Ireland that would be captured by these definitions. We do not find evidence of universal affordability difficulties in the Irish market. However, certain groups do face acute affordability challenges. Third, working towards a definition of housing cost affordability for use in Irish policy discussions, we provide some guidance as to what such a definition could look like.

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Non-Technical Summary

This paper examines housing affordability in Ireland by looking at the distribution of housing costs across households. Using microdata from the Survey on Income and Living Conditions (SILC) over the period 2005-2015, the contribution of this paper is threefold. First, the paper presents the trends in the cost of housing in Ireland across groups of households split by age, region, household structure, and their position in the income distribution. Second, having reviewed previous housing affordability studies, we explore the share and composition of Irish households captured by two internationally used definitions of high housing costs. The first definition uses a simple rule which defines housing costs as high if they exceed 30 per cent of net income (the 30% rule). The second definition retains the 30% housing cost to income rule and builds on it by adding an income constraint which limits the definition to those in the bottom 40 per cent of the income distribution (the 30/40 rule); as such to satisfy this definition of high housing costs households must be in the bottom 40 per cent of the income distribution and must also have housing costs which exceed 30 per cent of their income. Finally, we examine whether these internationally used definitions of high housing costs provide suitable thresholds in the Irish context. Note that while much of the initial analysis refers to all households which make housing payments, the majority of the findings in this paper focus on households which make either mortgage or private rental payments, as opposed to a more narrow analysis of new entrant households such as those which have recently purchased a home.

Key Findings

- On average, households were paying approximately one fifth of their income on housing costs in 2015, only a very slight increase from 2005.
- While housing affordability challenges are not universal, certain groups do face acute affordability challenges.
- Households in the private rental sector, those living in Dublin (and the surrounding commuter regions) and those on low incomes face the greatest challenges. Indeed, private renter and mortgaged households in the lowest 25% of the income distribution pay on average two fifths of their income on housing costs.
- In the mortgage market, the mortgage repayment to income ratio increased considerably for low income households between 2008 and 2015. While a variety of factors are determining this trend, the severity of the shocks to the Irish labour market is undoubtedly of critical importance.
- We find that, throughout the period under evaluation, low income households (bottom 25% of the income distribution) who are in the private rental sector have always faced high housing payments, which suggests affordability challenges are a structural rather than a cyclical issue.

- Using international definitions, in 2014-2015 16% of households had high housing costs, but this figure was double for private renters and 70% for private renter and mortgaged households in the lowest quarter of the income distribution. It was particularly acute for private market renters in the Dublin region where between 30 and 40% of households faced high housing costs.
- The 30/40 rule does capture households with affordability challenges. However, for Ireland, a more tailored rule would be preferable which balances housing cost and the income remaining after its payment.

Policy Implications:

- Certain categories of households have faced persistent affordability challenges, for instance, some low income urban households renting in the private market and these are a feature throughout our sample period.
- Furthermore, low income mortgage holders have seen a large rise in repayment burdens since 2008, partially due to very loose credit conditions at origination. The continued operation of a strong macroprudential framework limiting the credit conditions for new mortgage lending, such as has been in place since February 2015 in Ireland, is critical to ensure financial resilience and also to protect low income mortgage holders from exposure to unsuitable lending.
- Several policy responses could potentially assist low income households who are unsuitable for mortgage finance and facing high costs in the private rental sector.
 - Long-term investment in, and expansion of, local government housing stock for rent, should provide suitably priced accommodation to shield many lower income households from market pricing.
 - Policies to provide low cost rental options for households such as cost rental or housing cooperatives can form part of the new rental landscape.
 - Other policies such as rental price controls or subsidisation can be effective in providing a short term alleviation of price pressures. However such responses may have possible unintended consequences on supply and price inflation respectively.
 - Certain policy measures which are in place are aimed at improving affordability and can help address the current challenges. Examples include investment in the social housing stock under Rebuilding Ireland and the review of the eligibility rules for social housing.
- While planning legislation does include a definition of income adequacy, our research points to the appropriateness of international methodologies to develop a

more comprehensive definition of housing affordability. There would be considerable benefit from a policy perspective in adopting such a definition.

- If such a definition were recognised, it would facilitate constant monitoring of the sector relative to this threshold. An annual monitoring exercise which maps the relative affordability of housing across households, in particular focusing on the income distribution, would allow developments in affordability to be benchmarked. This could also be used to test the sensitivity of households to shocks relative to this benchmark.
- The evidence in this report would suggest an amended version of the 30/40 benchmark, which is cognisant of the potential for a sliding scale income limit which reduces the impact of strict cut offs, would be the most appropriate.
- The affordability measures proposed in this paper could also be used to help ensure that extant and potential new housing supports perform well in terms of tackling housing affordability.
- An affordability criterion for housing supports which would apply both for initial eligibility and for continued access over time could help promote greater equity in terms of the housing burden among households, regardless of tenure.

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Abstract

This paper examines housing affordability in Ireland by looking at the distribution of housing costs across households. Using microdata from the SILC survey over the period 2005-2015, the contribution of this paper is threefold. First, the paper considers the trends in the cost of housing in Ireland across groups of households split by age, region, household structure, and their position in the income distribution. Second, we apply selected international housing affordability definitions and explore the share, and composition, of households in Ireland that would be captured by these definitions. We do not find evidence of universal affordability difficulties in the Irish market. However, certain groups do face acute affordability challenges. Third, working towards a definition of housing cost affordability for use in Irish policy discussions, we provide some guidance as to what such a definition could look like.

Results presented in this paper are based on analysis of strictly controlled Research Microdata Files provided by the Central Statistics Office (CSO). The CSO does not take any responsibility for the views expressed or the outputs generated from this research.

1 Introduction

A functioning and affordable housing market is an important component of any economy and society. As the cost of housing is often the largest single item in household budgets, the share of income it takes up matters from both an economic and social perspective. If housing costs are high relative to household income, this will reduce expenditure on other goods and services which will in turn lead to lower levels of consumption and ultimately economic growth (Quigley and Raphael, 2004). A high housing cost burden can also leave households vulnerable to income, interest rate or other economic shocks that would impair their ability to service debt obligations or maintain rental payments. Indeed, the recent financial crisis laid bare the vulnerabilities that can build up in the housing market through poorly managing the link between incomes and indebtedness (McCarthy, 2014; Mian and Sufi, 2010).

A high cost of housing also has other macroeconomic consequences. By feeding through into earnings demands, a high level of housing cost can impact economic competitiveness and the ability of a country to maintain production cost advantages and attract foreign investment. From a human well-being perspective, high housing cost levels have also been linked to poorer cognitive outcomes for children (Newman and Holupka, 2014) and act to limit the independence of housing choices for single mothers and other at risk groups (Winkler, 1992).

In Ireland, considerable focus amongst policymakers, academics and market commentators is given to developments in the housing market. The credit-fuelled housing market expansion in Ireland, and its subsequent price reversal, has highlighted the risks emanating from housing and the requirement for policies which aim to provide a more stable market footing. Since 2013, the Irish economy has begun to recover; unemployment has fallen rapidly and households have begun to experience modest increases in earnings. In the housing market, the recovery has been much more rapid with house prices and rents increasing substantially over the period 2014-2017.

Such a rapid rebound in prices and rents has brought to the fore the issue of housing affordability. A number of recent studies have considered affordability from a policy perspective. In its “National Statement of Housing Supply and Demand 2016”, the Housing Agency (2017) notes that the supply shortages for affordable market housing in some regions has quickly translated into increased pressure on the private rented market and on social rental supports. They note the regional imbalance in affordability with housing costs outside Dublin classified as at worst, “moderately unaffordable” (Housing Agency, 2017, p.29). In cities and amongst renters, they note that housing costs are becoming more problematic. These findings are reinforced by the 2017 International Housing Affordability Survey produced by Demographia (2017) which similarly classes housing in Ireland as a whole as “moderately unaffordable”, but classifies Dublin as “seriously unaffordable”. Research completed by Indecon (2016) for the National Competitiveness

Council (NCC) also explored the issue of housing affordability. They consider a range of international indicators of housing costs and proposed two measures of mortgage and rental affordability that should be monitored by the NCC. They note the primary challenge at present is to deliver housing supply sufficient to meet demand at a price that is affordable, accessible and sustainable.

While these studies provide important insights into aggregate housing costs in Ireland and a comparison with international peers, they are not able to consider the trends in housing affordability across different households within Ireland using household level data. These distributional considerations are important as a high housing cost burden may be concentrated amongst particular at-risk groups. Additionally, these studies mainly focus on the high housing costs of new borrowers and renters, and do not focus on the housing cost burden of existing mortgage holders and tenants. Understanding housing affordability trends across households is critical to ensure policies are targeted at the groups most affected by high housing costs. A critical input to such policy targeting is a working definition of housing affordability that can hone in on the most affected groups. To date, a holistic, market wide definition of housing affordability, has not been considered by studies in Ireland.

With a view to building on these aggregate studies, and addressing the gaps in the existing literature, the contribution of this paper is threefold. Using microdata from the Survey on Income and Living Conditions (SILC) over the period 2005-2015, the paper first presents the trends in the cost of housing in Ireland across groups of households split by age, region, household structure, and their position in the income distribution. Second, having reviewed previous housing affordability studies, we explore the share and composition of Irish households captured by two internationally used definitions of high housing costs. The aim is to explore whether such definitions would be useful in an Irish policy context. The first definition uses a simple rule which defines housing costs as high if they exceed 30 per cent of net income (the 30% rule). The second definition, following Baker et al. (2015), Wood and Ong (2011) and Borrowman et al. (2017), builds on the simple rule by adding an income constraint which limits the definition to those in the bottom 40 per cent of the income distribution (the 30/40 rule). We then examine whether these internationally used definitions of high housing costs provide suitable thresholds in the Irish context and provide some operational guidance for policy in terms of a workable housing affordability definition in Ireland.

Exploring the trends in housing payment costs across households, we show that on average households were paying one fifth of their income on housing costs in 2015¹, but that there was substantial variation across households. Our measurement of housing costs relates only to the payment of rent or mortgage and does not cover other costs

¹The latest SILC data available at present for this research covered the period to 2015. A nowcasting exercise, presented in an appendix to this paper, grows forward the data to 2017 and shows a continued increase in housing costs for private renters but some reduction for existing mortgage holders.

such as insurance or utilities. The analysis indicates that private renters, those living in Dublin and the surrounding Mid-East region and low income households were paying a significantly higher proportion of their incomes on housing payments. In particular, households in the bottom 25 per cent of the income distribution are spending on average over two-fifths of their income on housing costs.

Although we find relatively moderate rises overall in housing payment to income ratios between 2005-2015, in the mortgage market, the repayment to income ratio has increased considerably for low income households since the onset of the financial crisis in 2008. While all households faced a reduction in incomes during the downturn which stretched repayment capacity, the impact was much more dramatic for the bottom 25 per cent of the income distribution than for other earners in terms of how much income the repayment accounted for. This is likely a consequence of the poor underwriting of credit to such households during the boom phase of the economic cycle as well as the susceptibility of low income households to labour market shocks during times of economic difficulty.

We find that throughout the period under evaluation (2005-2015), low income households (bottom 25 per cent of the income distribution) who are in the private rental sector have always faced high housing payments. While rental price inflation has been high in the very recent period, the fact that low income households in the private rental market always faced high average rental costs suggests affordability challenges are structural rather than cyclical in nature. The recent increases in rental prices are likely to therefore have exacerbated a structural issue.

With regard to using international affordability benchmarks, we explore two rules suggested by the international literature. First, using the simple 30% rule, we find that 16 per cent of households² had housing payment to income ratios greater than 30 per cent in 2014-2015, but that this figure was double for private renter households and increased to 70 per cent for private renter and mortgaged households in the lowest quarter of the income distribution. We also find that, using this definition, households defined as having high housing costs had higher levels of economic strain: they had higher rates of mortgage or other payment arrears, higher rates of consistent poverty, and a lower level of residual income³.

The second international benchmark adds an income limit to capture those households in the bottom 40 per cent of the income distribution (the 30/40 rule). Focusing on households with high housing costs as defined by this benchmark, we show that the majority of these households were private renters, with very low residual incomes after paying their housing payment costs. Indeed, using this definition to classify households

²This figure calculates the share of households who had some housing payment (mortgaged households and private or other renters). Outright owners are excluded.

³We define residual income as the Euro value of disposable income remaining after the housing payment has been paid.

points towards a considerable affordability challenge and economic strain on low income households at present in Ireland.

Reflecting on the appropriateness of the international benchmarks for Ireland, and in moving towards a blueprint for an operational policy definition of housing affordability, we finally test whether the strict cut offs of 30/40 are appropriate for Ireland. In moving towards a definition of high housing cost, the evidence suggests that an income clause added to the 30% rule is appropriate. It reflects the fact that, while some higher income households may choose to spend over 30 per cent of their income on housing in preferring to purchase or rent more expensive properties, this does not cause undue economic strain for higher income households and therefore housing cost affordability is less likely to be a challenge for such households.

However, the evidence for Ireland points towards a potential refinement of the international definition. We find that, while the international benchmark of 30/40 does capture households with acute housing affordability challenges, residual incomes (the amount of income left after housing payments are met) do not start to rise substantially until we reach the sixtieth percentile of the income distribution, indicating that the 40 per cent income threshold may be too low in the Irish case. Our illustrative example, using a specific minimum income definition, would suggest a graduated refinement of the housing affordability definition which increases the housing payment to income threshold as households move up the income distribution but still allows them to be classed as facing housing affordability challenges.

The rest of this paper is structured as follows: Section 2 discusses the concept of housing affordability and the associated measurement challenges, as well as providing a review of previous affordability work both internationally and for Ireland. Section 3 documents the trends in housing affordability across households using the SILC microdata. Section 4 examines which households are captured by two international definitions of high housing costs. Section 5 summarises our findings and discusses policy implications.

2 Background and Measurement

2.1 International Evidence on Defining and Measuring Housing Affordability

Housing affordability refers to the ability of a household to cover both housing costs and non-housing expenditures from its income. Expanding on this idea, MacLennan and Williams (1990) define housing affordability as the ability to secure “some given standard of housing at a price or rent which does not impose, in the eyes of some third party (usually government), an unreasonable burden on household incomes.” Quigley and Raphael (2004) note that the concept of affordability differs greatly between those

at the lower end of the income distribution, who tend to think in terms of rental contract terms, and medium to high income earners, for whom affordability typically relates to the mortgage terms they are able to secure. Given the wide ranging nature of the definition, and differences across population sub-groups, measuring housing affordability poses a significant challenge to both researchers and policymakers. Below we describe the methods most commonly used in the existing literature.

The simplest approach to measuring housing affordability is to classify housing as not affordable when it costs more than a certain proportion of income (either gross or disposable income). In early work, Hulchanski (1995) used “one week’s pay for a month’s rent” as a basic rule of thumb, while more recent work tends to use 30 per cent as the benchmark. Quigley and Raphael (2004) choose this threshold because many US federal housing assistance programs typically subsidise housing costs so that households do not have to pay more than 30 per cent of their incomes on housing costs. While 30 per cent has become the widely accepted benchmark, ratios ranging from 25-50 per cent are commonly used.

The major advantage of the ratio income approach is its simplicity and the ease of comparison through time. However, this method does have a number of limitations. First, this approach does not allow for any differentiation between low and high income households. A high housing payment cost to income ratio for a higher income household may simply represent a household choosing to spend a higher proportion of their income on housing due to preferences for higher quality housing (Kutty, 2005), whereas a low income household may instead be forced to spend a large fraction of their income on housing payments. Second, this approach does not take into account differences in household size and composition. Finally, housing affordability can arguably be thought of as a continuum, and the ratio income method instead imposes an arbitrary cut-off which is based on repeated use stemming from what households actually spend, and has no theoretical justification (Stone, 2006).

In order to address these limitations, a series of Australian studies (Wood and Ong (2011); Baker et al. (2015); Borrowman et al. (2017)) use an alternative variation on the ratio income approach, the 30/40 measure. They classify housing as unaffordable if a household spends more than 30 per cent of their income on housing payments and if that household is in the bottom 40 per cent of the income distribution. Furthermore, by using equivalised income, which allocates each household a weight according to the number and age of its members, which is then applied to household income, this approach can also account for household composition (Baker et al., 2015).

In light of the arbitrary cut-off imposed by both the basic ratio income and 30/40 approaches, a number of papers including Stone (2006), Kutty (2005) and Kelly et al. (2012) propose a method based on how much income a household has left after having paid its housing costs. This residual income approach is typically calculated by sub-

tracting housing expenses from household income and then determining whether the remaining income allows the household some minimum level of consumption, based on budget standards constructed according to the average spending behaviour of different types of household. While this method does address several of the limitations of the ratio income approach, it requires more complicated calculations as well as more sophisticated data which are often not available. In addition, the construction of budget standards based on average spending behaviour makes cross-country comparison very difficult.

2.2 Housing Affordability Applications

The majority of the literature on housing affordability has traditionally focused on developed nations, particularly the US, UK and Australia, with many papers focusing specifically on low income households. Using 2006 Australian Census data, Wulff et al. (2011) show that only 37 per cent of private renter households in the bottom 40 per cent of the income distribution had access to affordable housing, defined as costing less than 30 per cent of household income and that this was due to both an absolute shortage of affordable housing units and due to those in higher income groups occupying housing which would be affordable for these lower income groups. Leopold et al. (2015) focus specifically on the lack of affordable rental properties in the US for those on extremely low incomes (ELI), defined as those earning less than 30 per cent of the area median income. Using Census and American Community Survey data, they show that between 2000 and 2013, the number of adequate, affordable, and available rental units for every 100 ELI renter households nationwide declined from 37 to 28. The authors conclude that without federally assisted rental housing schemes, virtually no affordable units would be available for those on extremely low incomes.

Sunega and Lux (2016) conduct a cross-country study using cross-sectional EU-SILC data to examine subjective versus objective indicators of both housing affordability and overcrowding. They use the housing cost to income ratio and the inverse of Eurostat's 60 per cent of median income poverty threshold⁴ as objective measures, and the question which asks households if they perceive their housing costs to be a burden as a subjective measure of housing affordability. They find higher rates of affordability problems and overcrowding using the subjective measure compared to the objective ratio income threshold, although interestingly not in the Netherlands, Sweden and Denmark. The subjective findings were instead more closely aligned with the alternative inverse median income poverty threshold measure.

A series of papers note that simply studying housing affordability at one point in time using cross-sectional data provides only a limited understanding of housing affordability

⁴The poverty threshold is set at 60 per cent of the median equivalised income, so the authors set the threshold for the housing expense ratio at the inverse value of 60 per cent, i.e. at 167 per cent of the median housing cost ratio.

and its determinants. Wood and Ong (2011), Baker et al. (2015) and Borrowman et al. (2017) therefore exploit the Household Income and Labour Dynamics Australia (HILDA) panel survey data which enables them to examine both the duration of affordability stress and the characteristics of households facing these types of housing affordability issues. The authors argue that this more nuanced understanding is crucial for policy makers because different policies are required for households facing short-term housing affordability stress than for those facing more prolonged difficulties. Wood and Ong (2011) show that the unemployed and those who do not participate in the labour market are the most likely to suffer prolonged spells of housing affordability stress, but that younger, better qualified individuals are more likely to suffer short-term affordability issues. Baker et al. (2015) find evidence of substantial movements in and out of affordability, a finding reinforced by Borrowman et al. (2017) who show that two thirds of the sample move out of housing stress after 1 year, but that the longer an individual suffers affordability stress, the harder it is to escape. In terms of characteristics, renters, single individuals <65, the unemployed and those with lower levels of education are most likely to suffer housing affordability problems. Using British Household Panel Survey data, Bramley (2012) also finds evidence of significant churning, with only a minority of households displaying housing affordability problems in successive periods. In addition, he shows that material hardships such as not having a warm home, wearing second hand clothes and not eating meat or fish every second day are three times more likely for those with housing affordability problems according to housing cost to income ratios, and 4.4-4.7 times higher for those self-reporting difficulties making payments.

2.3 Applications in Ireland - previous studies

For Ireland, previous research has examined expenditure on housing costs by Irish households. The 1999 Bacon report (Bacon et al., 1999) discussed purchase price affordability, but did not make any normative judgement regarding a threshold level of affordability. The report did state that the single most serious problem in the Irish housing market at that time was the position of households which previously would have been capable of purchasing a property but no longer has the capacity to do so due to declining affordability.

Fahey et al. (2004) use Household Budget Survey data to provide estimates of household expenditure by tenure, expressing rent and mortgage payments as a percentage of total household expenditure over the period 1973 to 2000. Fahey et al. note heterogeneous growth across tenure groups, ranging from a 68 per cent increase among private renters to zero growth among social renters. They also note that overall trends and influences on mortgage payments undoubtedly masked sharply different experiences for different categories of mortgage holder, particularly between new entrants and those with older mortgages.

With regards to affordability, Fahey et al. (2004) opted to use 35 per cent of household expenditure as a threshold, noting that such a measure echoes the threshold of 35 per cent of net household income and is the upper limit of local authority mortgage burden for tenant purchasers. They found that in 1999-2000 20 per cent of private renters had housing expenditure above the 35 per cent affordability threshold, as compared to 1 per cent of households with a mortgage. With respect to regional variation, Fahey et al. (2004) identified a considerable difference between the affordability circumstances of households renting in the private market in Dublin households and in rural areas; the rent burdens of 26 per cent of households in Dublin exceeded the 35 per cent threshold as compared to 12 per cent of rural households. The main negative affordability effects of higher Dublin prices arose for private market tenants rather than for households with a mortgage.

In further work comparing housing expenditures in Ireland with those in 13 other European countries, based on 1996 and 1999-2000 data, Fahey and Nolan (2005) found that expenditures were relatively low in Ireland in general, even when excluding households with no housing payment costs (such as owner occupiers without a mortgage), albeit relatively high for Irish home-owning households with a mortgage and in the 25-39 age group.

More recently, McCarthy and McQuinn (2011) use SILC to examine the ability of Irish households to sustain their mortgage repayments, while Kelly et al. (2012) focus on the interaction between delinquency and solvency to examine credit default in the mortgage market. While this previous work focuses specifically on the mortgage market, in this paper we explore housing affordability for both mortgaged and rental households.

2.4 Public Policy and Housing Affordability in Ireland

As we move toward developing a definition of high housing cost suitable to the Irish specificities, it is useful to explore whether such definitions have been used previously in policy making in Ireland. In general, affordability is not the sole consideration in designing and deploying housing policy measures. Alongside affordability, institutional considerations and employment incentives are also highly relevant. However, concerns regarding the cost of housing especially, although not exclusively, for low to moderate income households have been central to the Irish State's housing policies since its inception.

While a formal, comprehensive definition of housing affordability has not been explicitly established in statute or in policy terms, there are some specific examples from individual schemes where explicit affordability criteria have been used. A 35 per cent income adequacy threshold is defined in Part V of the Planning and Development Act 2000 (Act), which categorises a person as being eligible for affordable housing if (i) in

need of accommodation, and, (ii) if payments on a mortgage for the purchase of a house would exceed 35 per cent of that person’s annual income net of income tax and pay related social insurance. In the recent past, policy measures intended to support first time buyers purchasing newly built residential units at a below market price have incorporated affordability thresholds, such as the Local Authority Affordable Housing Scheme and the Shared Ownership Scheme. The income tests applied to administer such schemes were not uniform, however a common eligibility requirement was a 35 per cent income threshold⁵; if 35 per cent of income was insufficient to enable a purchase at market price the individual or household satisfied the income requirement. Owing to a reorientation of policy towards tenure neutrality, all such affordable housing programmes were stood down in 2011. However, the income adequacy threshold as defined in the Act 2000 remains on a legislative footing.

As regards the current suite of social housing supports, net household income (excluding child benefit and other “disregarded” income) is the basic measure of whether a household is eligible for such support, that is, access to local authority owned accommodation and subsidised units sourced from the private market. Income limits, adjusted for different categories of household composition, establish whether a household is eligible for social housing in each of three different geographic bands. For instance, at the time of writing a household composed of two adults and one child, could have a maximum assessable net income of €37,625 in Dublin, Cork, Galway or the Mid East. The income limits were set most recently in June 2016.

However, despite the frequent use of affordability criteria on a specific scheme conditionality, no universal definition of high housing cost burden or housing affordability has been broadly used.

3 Exploring Trends in Housing Affordability in Ireland

To contextualise our discussion of housing affordability in Ireland, in this section, we first provide a brief discussion of some of the key macroeconomic and housing market variables over the period 2005-2015. We then document the trends in housing affordability for Irish households over the same period. This time frame covers much of the boom, bust and recovery periods experienced in the Irish housing market in recent years. Building on the literature outlined in the previous section, we first present overall trends in housing costs, before then examining housing costs for different groups of households according to age, region, household structure and their position in the income distribution, in order to understand how housing cost burdens are distributed differently across the country and across different groups.

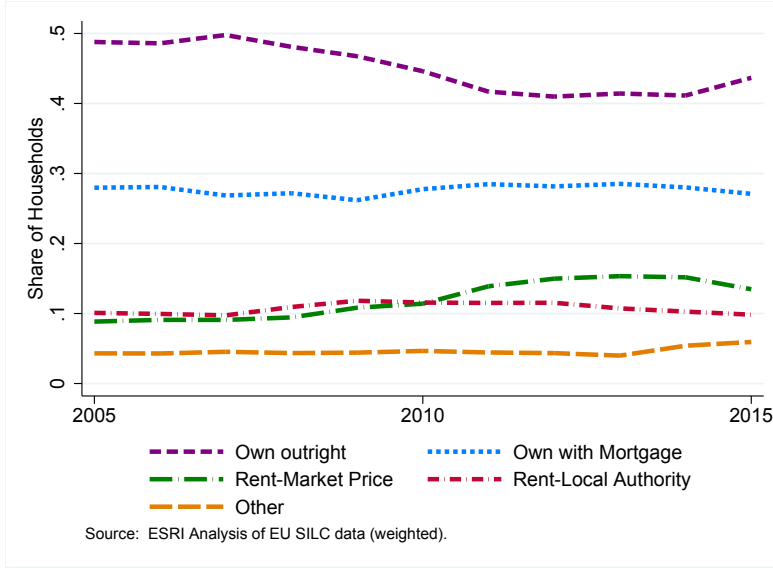
⁵For Part V affordable housing, the Affordable Housing Initiative and Mortgages for Affordable Homes.

3.1 Affordability Trends Across Irish Households

3.1.1 Data overview and definitions

To assess trends in affordability across households in Ireland we use the SILC survey. SILC provides a comprehensive micro-level dataset surveying income and living conditions across different types of households. As a survey of private households, it is voluntary and is carried out under EU legislation. In Ireland, the survey is conducted on an annual basis by the Central Statistics Office (CSO) and, while it is primarily focused on collecting information used to derive indicators of poverty, deprivation and social exclusion, the survey also contains a significant amount of information for each household on home ownership, details of mortgage debt, monthly mortgage instalments, monthly rental payments and income. It therefore allows us to examine the proportion of household income that is absorbed by mortgage repayments and to benchmark rental payments to income.

Figure 1. Housing Tenure of Irish Households 2005-2015



To begin, we document the trends in housing payment costs in Ireland relative to the net after tax income that the household earns from employment and non-employment income. Our focus in this research will mainly be on households with a mortgage and those in the private rental sector. As can be seen from Figure 1, in 2015 households with a mortgage made up just under 30 per cent of households, while approximately 15 per cent of households were private renters, defined in SILC as households paying market price rents. An additional 10 per cent of households were residing in Local Authority rental accommodation, while 40+ per cent of households owned their properties outright.

Given our focus on households with a mortgage and those in the private rental sector, we define three indicators of housing costs relative to income which we will use through-

out the research. First, we define the total housing payment to income ratio (HPTI) as the ratio of housing payments to total net, after-tax income. We calculate this ratio for all households who report housing payment costs. We therefore do not include the 40+ per cent of households who own their properties outright in any of our analysis. For mortgaged households, in line with McCarthy and McQuinn (2011), we define the mortgage repayment to income ratio (MRTI) as the monthly instalment on all outstanding mortgages to net after tax income. For renters, we define the rent to income ratio (RTI) as the monthly rental payment to income ratio. All results presented in this analysis are weighted using the CSO provided population survey weights. It should be noted that when we refer to housing costs in this research this purely relates to the payment for the dwelling through rent or mortgages. It does not cover other housing related costs like insurance, maintenance or utilities. For this reason, the results presented in this analysis could be considered to be a lower bound. For ease of exposition, the indicators are outlined in equations 1-3 below:

$$HPTI = \frac{Payment_m}{NetIncome_m} \quad (1)$$

$$MRTI = \frac{Instalment_m}{NetIncome_m} \quad (2)$$

$$RTI = \frac{Rent_m}{NetIncome_m} \quad (3)$$

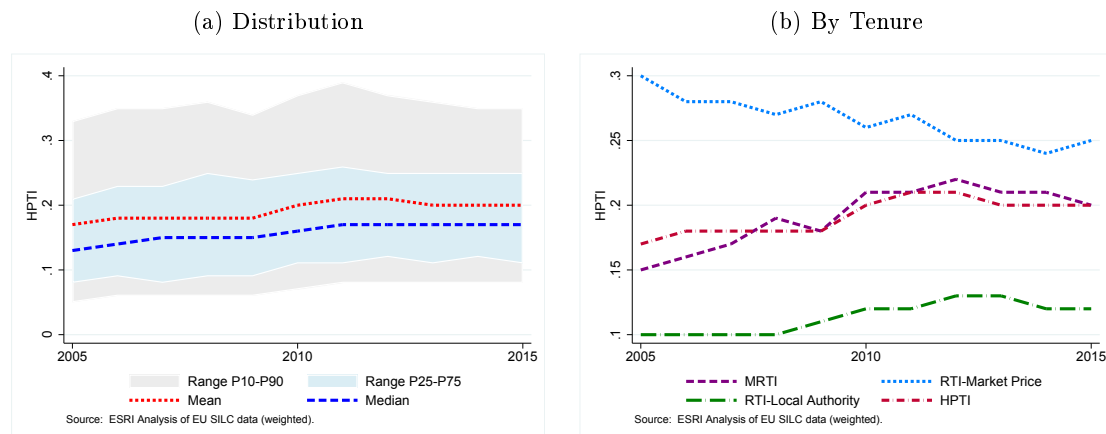
An important element of this definition is the inclusion in the denominator of net household income. Given the many changes to the fiscal system, the social welfare transfers, and changes in other transfers over time, the most important gauge for what households have at their disposal to cover housing payments is net of taxation and not just limited to earned employment income. Using this broad net figure also allows us to capture the variation in incomes that has arisen due to changes in fiscal and social welfare policy over time.

Figure 2a presents the distribution of housing payments to income for all households which report housing payment costs. The chart presents the average, median and distributions of the HPTI. In 2015, the average was approximately 20 per cent indicating that roughly one-fifth of household income went on housing payments. The median payment lies just below the average at circa 15 per cent. In general, over the period 2005-2015, there has been a slight upward trend in the average housing payment ratio.⁶ Focusing

⁶To date, 2015 is the latest year available of SILC data to the researchers for analytical purposes. However, since 2015, affordability pressures have continued to build in both the private rental sector as well as through rising house prices. To provide a more current exploration of the trends, we have undertaken a nowcasting exercise in Appendix B which grows forward affordability trends to the end of 2017. In general, while housing costs have continued to rise for renters, costs for existing mortgage holders have begun to moderate as interest rates have eased somewhat. It is not possible within the scope of this assessment to consider the cost of new mortgage purchased housing.

on the tails of the distribution, the grey shaded bar captures the 10th-90th percentiles of the HPTI distribution. In other words, ten per cent of households were above and below this area. At the top end of this distribution, the data indicate that only 10 per cent of Irish households faced a HPTI over 35 per cent of net income in 2015. The housing payment to income distribution charts plotted separately for mortgaged, private renter and Local Authority renter households are presented in Figure 15 in the Appendix.

Figure 2. Housing Payment to Income Ratio Over Time



While the overall HPTI ratio provides aggregate insight into how housing payment costs are developing in Ireland, it, by definition, potentially masks different trends across tenure. As price developments in the owner occupier and rental markets can differ considerably, considering these segments separately is important. To explore this aspect in more detail, Figure 2b captures the HPTI, MRTI and RTI for different market segments: mortgage holders, private renters, local authority renters and overall. Of note is that the cost of housing relative to income is higher for private renters than mortgage holders. This has been the case throughout the period reviewed. In fact, in 2005, the rent to income ratio was considerably higher than the MRTI. In 2015, the average RTI for private renters was 25 per cent, down from 30 per cent in 2005. In general, the private rent to income ratio declined in all years until 2015, where the recent emergence of price pressures in the rental sector can be seen in our data. In 2015, the average MRTI was 20 per cent. It has risen from 15 per cent in 2005, and peaked at just over 20 per cent in 2011. There was a marginal decline in 2015 relative to 2014. The gap between the average MRTI and average private RTI was lowest in 2014. Renters in local authority housing experienced the lowest housing payment cost of all households at circa 10 per cent of income on average.⁷

⁷In order to see whether the composition of our samples changes across time, we regress the MRTI and RTI separately on household characteristics (household composition, income quartile, age, region) and year dummy variables. In Figure 18 we plot the coefficients on the year dummy variables from both the MRTI and RTI regressions. Comparing the shapes of the curves with those in Figure 2b, we see that both the MRTI and RTI lines controlling for characteristics have the same pattern over time as those raw correlations shown in Figure 2b, so this does not appear to be a major concern.

3.1.2 A Deeper Look at Trends Across Households in Ireland

To explore the differences across households, we calculate the average housing payment to income ratio separately for the following groups of private renters and mortgage holders:

- Quartiles of the income distribution (Q1,Q2,Q3,Q4)
- Age groups of the population (18-35,36-45,46+)
- Single and two adult households

The motivations for focusing on these categories of household are threefold. First, Section 2 provides clear evidence from the international literature that housing affordability concerns can be concentrated in particular pockets of the income distribution. We therefore focus on four quartiles of the income distribution to display these differences for Ireland. Second, across the households' life cycle, a combination of real income growth, and the effects of inflation on nominal debt burdens, would normally lead older households to face lower debt burdens. It is therefore interesting to focus on household age. To explore trends across age groups, we use the age of the household head as the indicator of household age. We split households into three groups: aged 18-35, 36-45 and 46+.⁸ Third, in terms of the number of adults present in a household, recent research has found that lone parents are particularly likely to suffer from persistent poverty (Grotti et al., 2017). Furthermore, having two incomes in a household is likely to provide a better buffer, through income diversification, against labour market shocks. While we do not focus specifically on lone parents here, we do split households according to whether one or two adults are present.

The housing payment to income ratios across the income distribution are presented in Figure 3. Focusing firstly on the mortgage market, Figure 3a shows that in 2015, the average MRTI was approximately 40 per cent for the bottom 25 per cent of the income distribution. This was considerably higher than for any other income quartile as the second, third and fourth income quartiles had average MRTIs of approximately 25, 20 and 15 per cent respectively. The differential between the bottom and rest of the income quartiles has widened since 2005. In 2005, the average MRTI was 30 per cent for households in the bottom 25 per cent of the income distribution, this compared to just over 20 per cent for households in the second, 15 in the second and 12 in the top quartile. While there has been some increase in housing payment costs over time for households, these data suggest that it was lower income households who experienced the most severe increase in repayment burdens during the crisis. The credit boom in Ireland saw a major expansion of mortgages to low income families at very loose credit conditions (McCarthy and McQuinn, 2017). Indeed, the loosening of credit conditions was much greater for

⁸These groups are selected on the basis of data availability and no further disaggregation was possible due to small sample sizes.

low income households than for those on higher incomes (Lydon and McCann, 2017). It is clear this left such households with few buffers to withstand shocks and therefore the relative impact of the crisis has been more severe.

Moving now to trends in the private rental cost to income ratio by income quartile, Figure 3b shows that as with the MRTI, the average RTI for households in the bottom income quartile was approximately 40 per cent in 2015. This was circa 10 percentage points above the figure for the second quartile. The households in the third and fourth quartiles of the income distribution have average RTIs of approximately 22 and 15 per cent respectively. In general the average RTI has been trending downwards for the bottom and second quartile between the years 2005-2014. A marginal pick up in 2015 was evident. A clear picture emerges across both the rental and mortgage market: households in the bottom income quartile have substantially higher housing payments as a share of income relative to higher income households. There is little difference between the mortgage and rental market cost for these groups. Indeed, the fact that on average private renting households have, throughout the period evaluated, experienced high average housing payments indicates the issue is structural rather than cyclical in nature.

The trends in the MRTI and RTI across age groups are presented in Figures 3c&d. Over the period presented, in Figure 3c we do observe lower MRTI ratios for older households which would be consistent with the discussion above. However, in 2015, the relative costs converge as the MRTI of the youngest households have fallen. While this is not fully explored in this paper, the relative change in new lending rates versus existing outstanding rates could provide some explanation as to this convergence. In terms of the RTI trends by age, there appears to be little actual difference between age groups over time (Figure 3d)⁹

Figures 3e&f present the trends in housing payment costs by the number of adults in the household. In general across both the mortgage market and the private rental market, single adult households have higher housing payment to income ratios. The average MRTI (RTI) for single adult households was 30 per cent (32 per cent) in 2015 as compared to 18 per cent (22 per cent) for households with more than one adult. There is little variation in these trends over time.

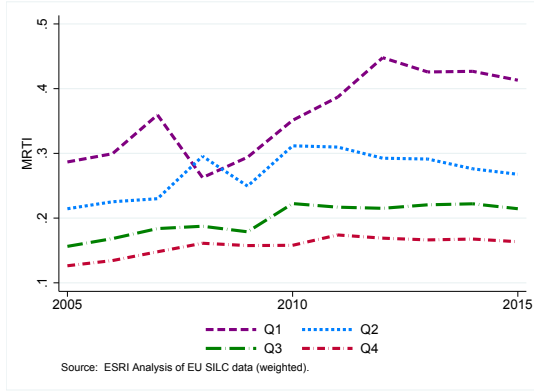
3.1.3 Exploring Differences Across Regions

Housing markets are by their nature very localised. Households often make strategic housing decisions within very narrow geographic boundaries. These choices are often

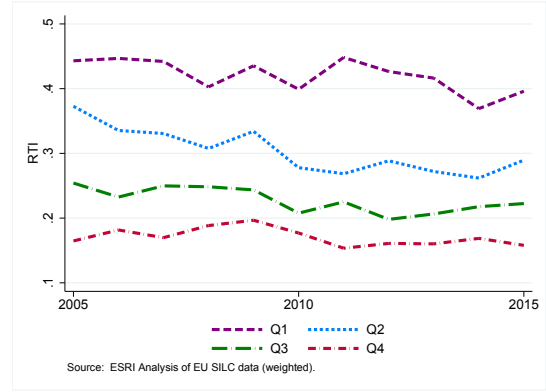
⁹It is important to clarify that this does not mean that individuals of all age groups face the same affordability challenge. There are fewer private rental households in the older two age groups compared to the 18-35 age group. This is unsurprising as the younger cohort of households will include a portion of households who will go on to become home owners in the future and will therefore have different characteristics than those older households who remain in the private rental market.

Figure 3. Housing Payment to Income Ratios by Income Quartile, Age and Household Composition

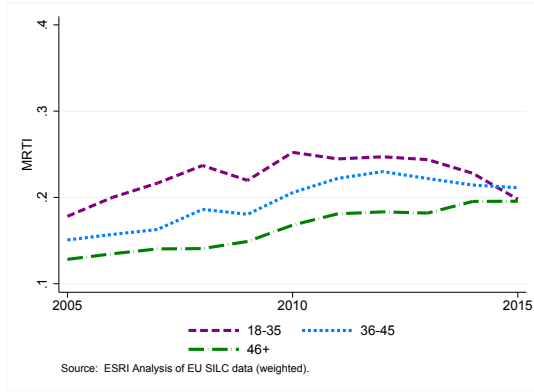
(a) Mortgaged Households - Income Quartile



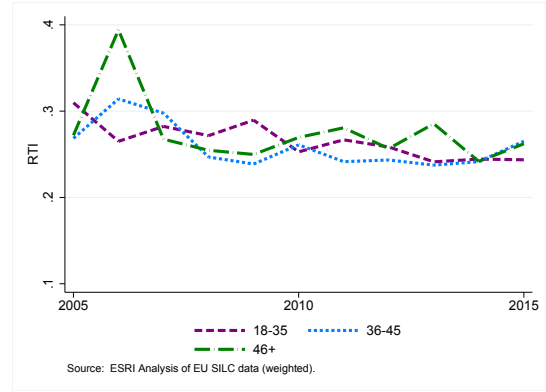
(b) Private Renter Households - Income Quartile



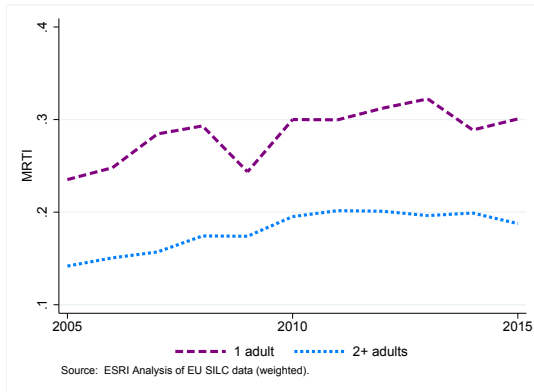
(c) Mortgaged Households - Age



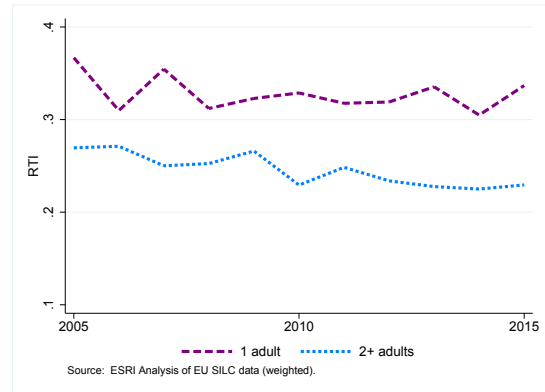
(d) Private Renter Households - Age



(e) Mortgaged Households - Household Composition



(f) Private Renter Households - Household Composition



conditioned by proximity to family, friends, amenities, infrastructure and employment opportunities and a considerable literature has built up considering housing location choice determinants (Curran et al., 1982; Freedman and Kern, 1997). With proximity to employment a strong factor, this can lead to particularly strong housing pressures building near major urban centres. In Ireland, Dublin and the surrounding commuter counties would be subject to particular constraints and it could be expected that housing payment costs would be higher in absolute terms in these areas.

To explore the spatial dimension in the distribution of housing payments, this section presents a number of heatmaps which depict geographically the differences across the country in housing payments in the mortgage and private rental markets. Given the data available in the SILC, the analysis is presented at a NUTS III regional level, which covers the following regions: Border, West, Midlands, Mid-East, Dublin, South-East, South-West, and Mid-West.

Figure 4a presents the regional variation in the level of MRTI for 2014-2015. MRTIs are highest in Dublin, the Mid-East and the South-West regions which would be the areas with the highest house prices. For the rental market, the average RTI per region is presented in Figure 4b. The highest average RTI levels can be seen in Dublin, followed by the Mid-East. This is not unexpected as the strongest initial economic recovery occurred in the Dublin region, particularly in 2015. The lowest rental price to income levels were in the Border region and the Mid-West.

Figure 4. Housing Payment to Income Ratios by Region 2014-2015

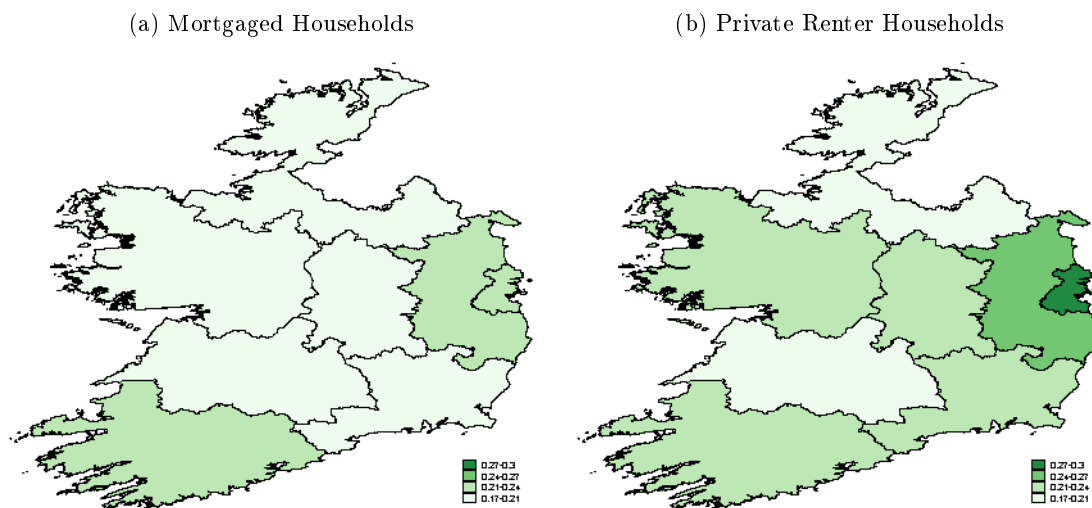
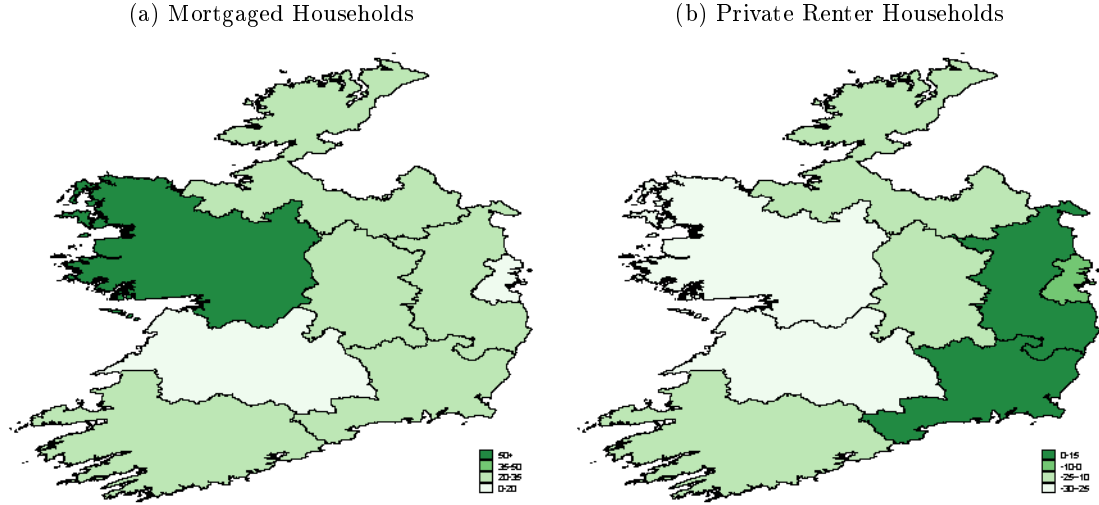


Figure 5a presents the percentage change in the MRTI by region between the years 2007 and 2015 to capture the regional cost dynamics from before the crisis to the present. The change was smallest in Dublin and the Mid-West. Considerable changes were evident in the West. In the rental market, Figure 5b illustrates that the average RTI increased

Figure 5. Growth in Housing Payment to Income Ratios by Region 2007-2015



considerably in Dublin, the Mid-East and the South East. Large declines, of between 20-25 per cent, were experienced in the West and Mid-West regions.

4 High Housing Cost Definitions

From a policy perspective, it is crucial to identify which types of households face a high housing cost burden. Internationally, there are a large number of examples where policymakers and academics have specifically operationalised a rule to define certain groups of households as facing high housing costs. This is important from a policy perspective if such a definition is to be used as an ongoing monitoring tool to assess market progress as well as potentially being incorporated into the targeting of specific subsidies, reliefs or benefits. In this case, it would be a necessary condition that defining criteria for affordability would capture groups of households with the greatest need for state support.

While Irish policy has not to date been specifically built around such a benchmark, it is useful to understand which groups of households would be captured if such a rule were to be considered. In this section, we take two international definitions for households facing “high housing costs” and explore the share, and composition, of households that would be covered by such a definition if it were to be applied to Ireland.

4.1 Which Households face High Housing Costs? Using the 30 per cent rule

The most common numerical rule is to determine households as facing high housing costs if they spend more than 30 per cent of their income on housing. This metric, as outlined

in Section 2, is used extensively in an international context.¹⁰ In this section, we take the simple 30 per cent benchmark and document the share, and composition, of households in Ireland that fall above and below this limit over time.

4.1.1 Trends in High Housing Costs Using the 30% Rule

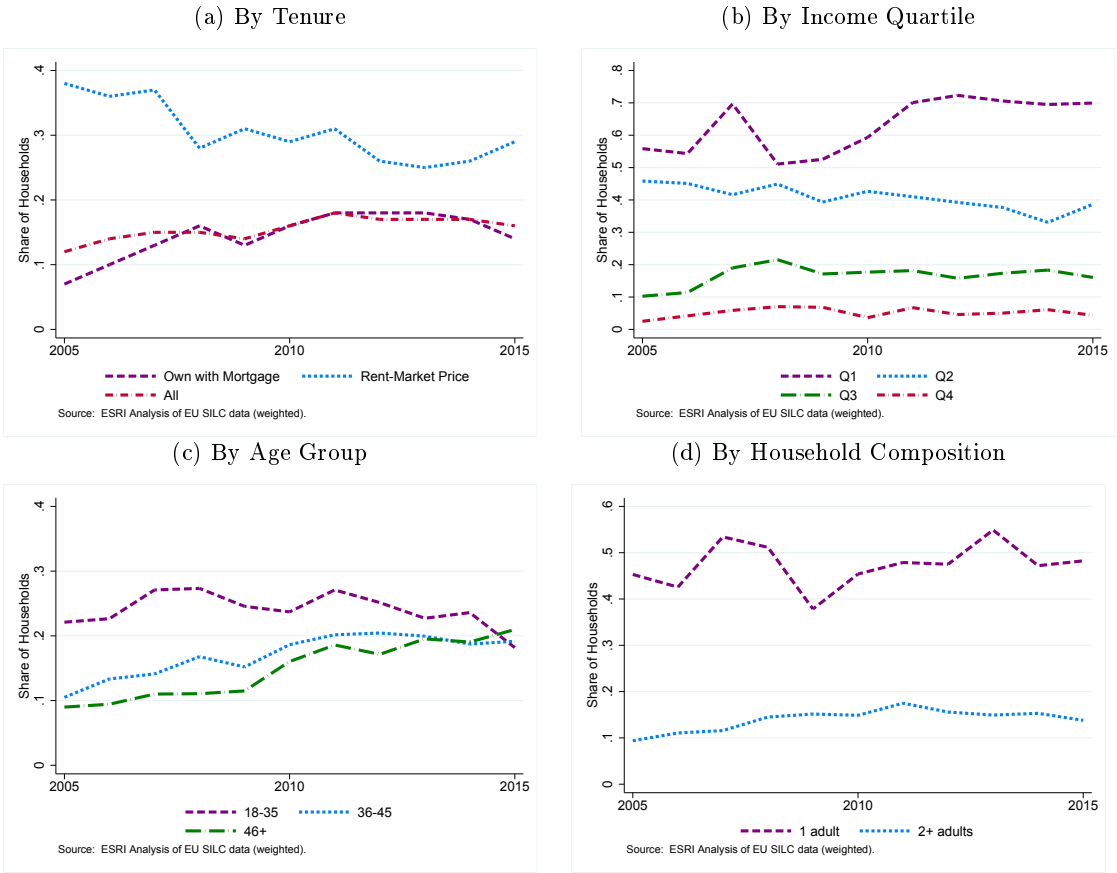
Figure 6a presents the share of Irish households with a housing payment to income ratio of greater than 30 per cent over the period 2005-2015 by tenure. In 2005, the overall share was just under 13 per cent and this rose over the period to approximately 16 per cent in 2015. The share peaked in 2014 at 17 per cent. With regards to tenure, of note is the fact that more households in the private rental market face high housing costs relative to those in the mortgage market: in 2015 nearly thirty per cent of private rental households would be classed as facing high housing costs using this definition compared to less than 15 per cent of mortgaged households. Focusing on the trend over time, for renters, the share of households classified as facing high housing costs has fallen from 2005 through to 2014; the share of such households was nearly 40 per cent in 2005. For mortgaged households, there was a moderate increase in the share of high housing cost households over time.

To provide more granularity in terms of the distribution of housing payment costs across groups of households in Ireland, in the remaining panels of Figure 6 we consider the share of “high housing cost” households by three categorisations as before: income quartiles, age groups and household composition. Figure 6b presents the share of households with high housing costs by income quartile. It is clear that the share of households with high housing costs was higher for households in the bottom 25 per cent of the income distribution. In 2015, approximately 70 per cent of these households faced housing payment costs greater than 30 per cent of their income. This increased steadily by 20 percentage points throughout the crisis period from 2007-2011. Figure 17 in the Appendix indicates that this increase in the HPTI was driven by a rise in housing payment costs rather than by declining incomes. Furthermore, the difference between the share of households with high housing costs in the bottom and second income quartile has increased over the crisis period. Nearly 40 per cent of households in the second income quartile faced high housing costs in 2015. This fell through the crisis period from 2010-2011 from over 40 per cent to just over 30 per cent. The share of households with high housing costs in the top two quartiles of the income distribution was circa 18 per cent and 5 per cent respectively. These shares have been relatively stable over time.

Figure 6c presents the share of households with high housing costs across three age groups. As was the case with the average HPTI across age, there is little variation across

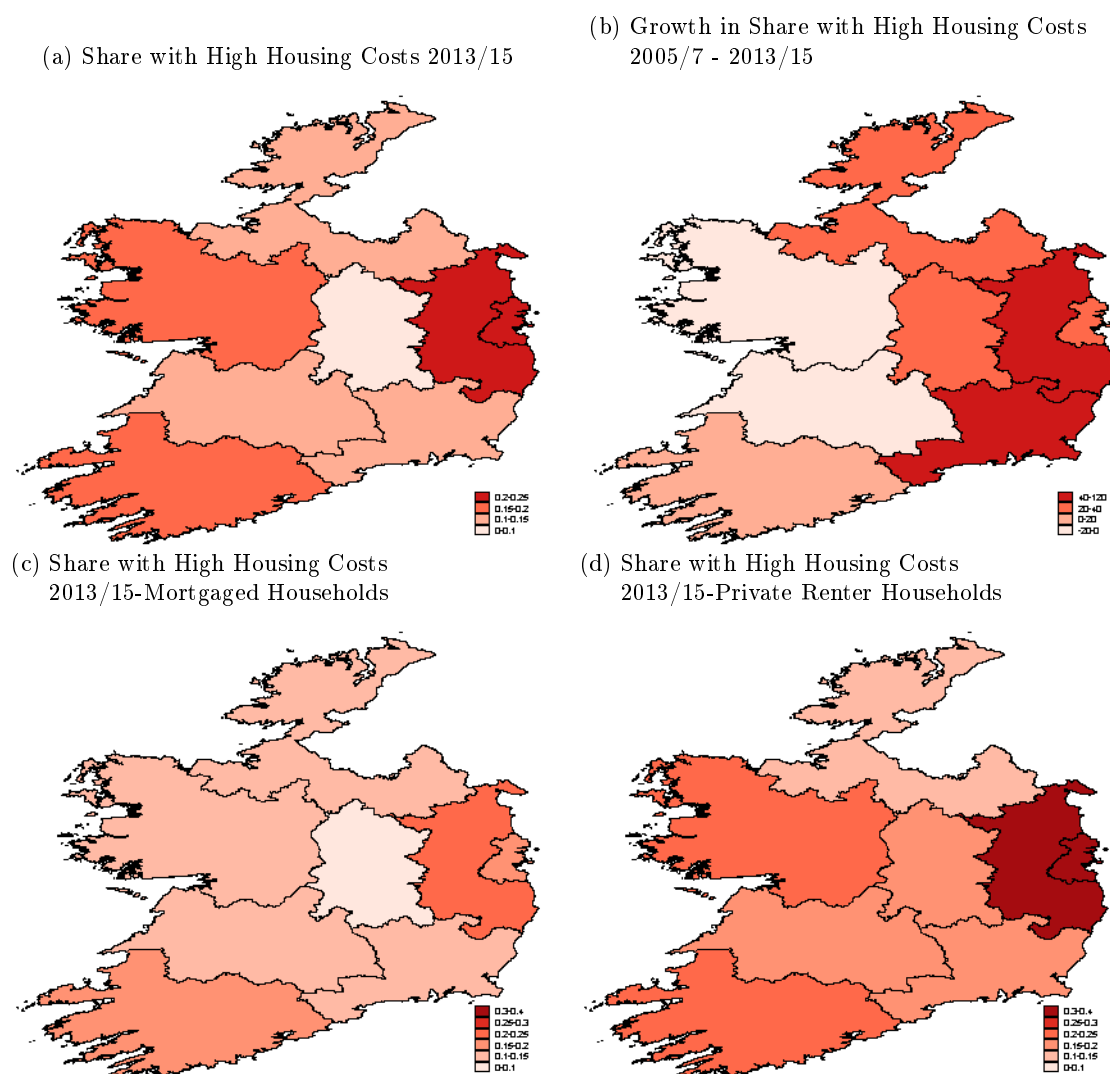
¹⁰ A number of studies in Ireland, as well as some Irish policy documents, use a threshold of 35 per cent. We do not use a 35 per cent benchmark and instead follow the international experience using the 30 per cent limit.

Figure 6. Share of Mortgaged and Private Renter Households in Ireland Above 30% Benchmark



groups in 2015. However, in terms of the intertemporal dynamics, the share of older age groups (>35 years) has risen by approximately 10 percentage points to 20 per cent. The share for younger households has remained relatively constant over time. To explore the differences across household composition, Figure 6d presents the share of households with high housing costs for households with single or multiple adults in the household. As was the case with the average HPTI across these groups, the share of households with a single adult present facing high housing costs is much greater than for double adult households: nearly 50 per cent in the former case and approximately 12 per cent in the latter. The difference between these groups has been relatively stable over time. However, the share of multiple adult households with high housing costs increased from 10 per cent in 2005 to just under 20 per cent in 2011 at the height of the economic crisis.

Figure 7. Households with High Housing Costs ($>30\%$)



To explore the spatial variation in the proportion of households facing high housing costs, Figure 7 presents a series of heatmaps to geographically depict the differences

across the country. Figure 7a shows that unsurprisingly the share of households with high housing costs 2013-2015 is highest in Dublin and the surrounding Mid-East region, followed by the South-West and Western regions containing Cork and Galway. This reflects the more pronounced high housing cost challenges faced in urban areas. Figures 7c&d split households into mortgaged and private renter households respectively. They show that the proportion of households facing high housing costs is higher amongst private renters than mortgaged households in all regions. In Dublin, 38 per cent of private renter households face high housing costs compared to 19 per cent of mortgaged households, while the corresponding figures for the Mid-East region are 35 per cent and 23 per cent respectively. Figure 7b instead shows that the highest growth in the proportion of households facing high housing costs between 2005/07 and 2013/15 is observed in the Mid-East and South-East regions, with strong growth also seen in Dublin, the Midland and Border regions.

4.1.2 High Housing Costs and Household Economic Strain

While the above analysis documents trends in the types of household which face high housing costs, it does not provide any insight into the economic burden that these costs place on the household. For example, high income households may choose to spend a large share of their income on housing but continue to have enough funds left over to enjoy a comfortable lifestyle. This may not be the case for lower income households, whose absolute level of remaining funds may be low.

To explore the economic strain associated with high housing costs, we introduce a number of measures of household stress and consider whether there are considerable differences in the stress indicators between the group of households that have housing cost to income greater than or less than 30 per cent. We focus on the following measures: residual income (net income minus the housing payment); residual income equivalised; the persistent poverty rate; arrears in housing payments; and arrears in utilities. The residual income is a particularly important concept as it shows in monetary terms the level of finance remaining to the household to cover all other expenditure.

Table 1 presents the average of these aforementioned variables (and other contextual variables) for the most recent years of the survey, 2013 to 2015, for those households above and below 30 per cent housing costs. A number of important points arise. The annual disposable income of high housing cost households is approximately two thirds that of households not facing high housing costs (€29768 v €49220) and their mean monthly residual income is only approximately €1500, less than half that of households not facing high housing costs. Furthermore, there are a higher share of households in persistent poverty and facing arrears on the housing payment or utilities amongst the high housing cost households.

While the above table shows average results, it is not possible to determine whether

Table 1. Characteristics of Households with and without High Housing Costs 2013-2015

	High (> 30%)	Not High (< 30%)	Difference
Income			
<i>Share of households:</i>			
Q1	0.33	0.13	0.20
Q2	0.32	0.20	0.12
Q3	0.25	0.29	-0.04
Q4	0.10	0.38	-0.28
Mean disposable income (annual)	29768	49220	-19452
Mean equivalised income (annual)	17424	23533	-6109
Mean residual income (monthly)	1517	3513	-1996
Mean equiv. residual income (monthly)	472	1333	-861
Housing			
Mean HPTI	0.42	0.16	0.26
Share of private renters	0.44	0.24	0.20
Share in persistent poverty	0.14	0.09	0.05
Share in housing arrears	0.27	0.15	0.12
Share in utilities arrears	0.27	0.19	0.08
No. obs.	1244	6099	-

these differences are statistically significant. To explore in more detail the extent to which actual differences are meaningful, we run some simple models which predict the probability that a household pays more than 30 per cent of its income on housing payments, based on the following characteristics:

$$Pr(HPTI > 30\% = 1) = f(\text{age}, \text{tenure}, \text{householdcomposition}, \text{maritalstatus}, \text{employment}, \text{arrears}, \text{utilityarrears}, \text{lnincome}) \quad (4)$$

The results are presented in Table 2. In Column 1 we include tenure, age, household composition, marital status, employment status, urban/rural and whether the household is in arrears, while in Column 2 we also include the log of household income. In Column 1 we can see that private renters are as likely as mortgaged households (the base group) to face high housing costs. However, in Column 2 we see that once we control for income, they are actually nearly 8 per cent less likely to face high housing costs. Regarding household composition, households containing two or more adults are less likely to face high housing costs, but again once we control for household income, this effect becomes much smaller. Interestingly, households where the head of household is divorced were 5.5 per cent more likely to face high housing costs, but this effect disappears completely once we control for income.

Given our interest in household income, in Figure 8 we use the results presented in Column 2 of Table 2 to plot the predicted probability that a household faces high housing costs by income decile. Households at the tenth income percentile face approximately a 50 per cent likelihood of facing high housing costs, which falls rapidly to only 10 per cent

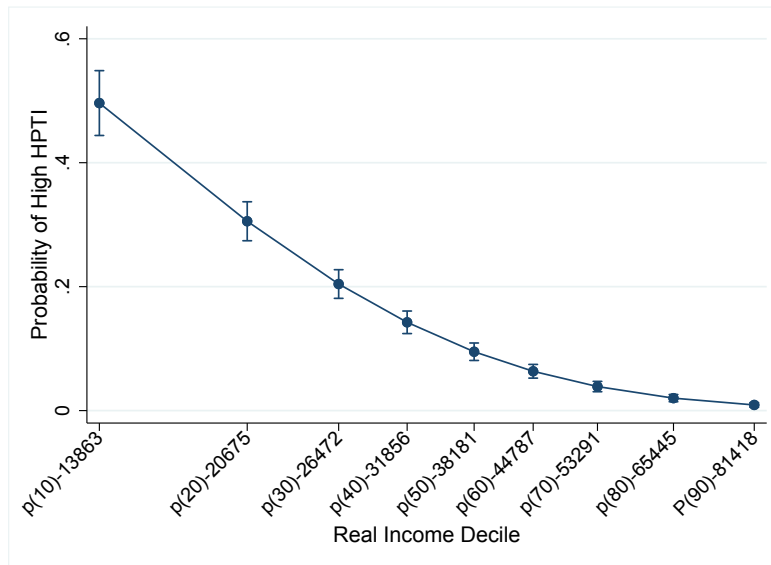
Table 2. Characteristics of Households with and without High Housing Costs 2013-2015- marginal effects

	1	2
Tenure		
Own-TPS	-0.163*** (0.025)	-0.226*** (0.015)
Rent-market price	0.0026 (0.017)	-0.079*** (0.017)
Rent <market price	-0.121*** (0.023)	-0.206*** (0.016)
Rent-LA	-0.190*** (0.010)	-0.235*** (0.012)
Age		
36-45	0.004 (0.013)	0.001 (0.012)
46+	-0.015 (0.014)	-0.030** (0.012)
Household Composition		
2+ adults	-0.200*** (0.020)	-0.037** (0.015)
Marital Status		
Single	0.032** (0.013)	0.008 (0.012)
Widowed	0.030 (0.038)	-0.015 (0.027)
Divorced	0.055** (0.023)	0.002 (0.017)
Employment Status		
Unemployed	0.139*** (0.022)	0.012 (0.015)
Other	0.117*** (0.015)	0.020 (0.012)
Retired	0.121*** (0.035)	0.036 (0.031)
Urban/Rural		
Rural	-0.042*** (0.010)	-0.060*** (0.008)
Arrears		
Arrears	0.080*** (0.014)	0.056*** (0.013)
Arrears-utilities	-0.001 (0.014)	-0.020 (0.012)
Income		
Ln real income		-0.224*** (0.016)
No. obs.	7204	7204

We report the marginal effects from probit regressions which also included year dummy variables in addition to the variables presented above. The dependent variable equals 1 if the household pays >30% of their income on housing costs and 0 otherwise. The categorical variable base groups for comparison are: Tenure - Own with mortgage; Age - 18-35, Household Composition - Single adult households; Marital Status - Married; Employment Status - Employed; Urban/Rural - Urban.

at the median income.

Figure 8. Marginsplot - Probability of High Housing Costs at Real Income Deciles 2013-2015



4.1.3 Are Differences Evident from Pre-Crisis Periods?

The final comparison that we present in this section looks at whether changes have occurred since the onset of the financial crisis. Given the turbulence in the Irish economy as well as the extensive labour market shocks over the period 2007-2013, it is likely that the groups of households facing high housing costs may have changed.

To explore whether this is in fact the case, we re-estimate the model above but interact the variables with a time identifier for the years 2012 onwards. The results are presented in Table 3. We see that many of the characteristics remain fairly stable over time. Notable exceptions are that private renters were more likely to face high housing costs than mortgaged households pre crisis, but that the reverse was true in the post crisis period. We can also observe a narrowing of the differences across age groups, with those in the 36-45 age bracket no less likely to face high housing costs than the 18-35 age group in the post crisis period. In addition, the prevalence of arrears in the post crisis period is clear in Column 2.

In Figure 9 we use the results presented in Table 3 to plot the predicted probability that a household faces high housing costs by income decile, for the pre and post crisis periods. We can see that the probability of a household at the tenth percentile of the income distribution facing high housing cost increased from approximately 33 per cent between 2005-2008 to 50 per cent between 2012-2015. Households at the median income saw little change in their likelihood of facing high housing costs between these periods. These developments can be reconciled to the previous data which show low income mort-

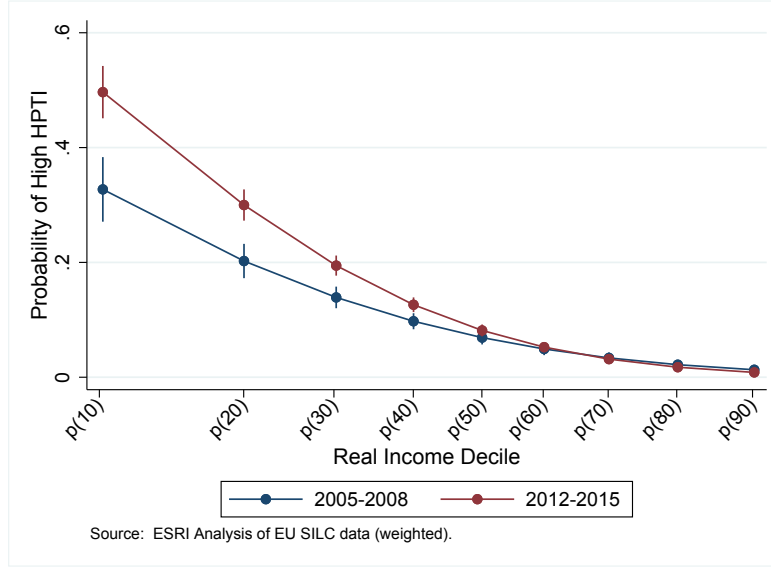
gage holders as those who faced very large increase in housing payments since the onset of the crisis.

Table 3. Characteristics of Households with and without High Housing Costs- pre and post crisis - marginal effects

	2005-2008	2012-2015
Tenure		
Own-TPS	-0.133*** (0.023)	-0.218*** (0.013)
Rent-market price	0.036* (0.019)	-0.087*** (0.014)
Rent <market price	-0.094*** (0.021)	-0.206*** (0.013)
Rent-LA	-0.157*** (0.010)	-0.228*** (0.010)
Age		
36-45	-0.034*** (0.012)	-0.005 (0.009)
46+	-0.067*** (0.011)	-0.035*** (0.010)
Household Composition		
2+ adults	-0.054*** (0.016)	-0.032*** (0.012)
Arrears		
Arrears	-0.013 (0.015)	0.058*** (0.014)
Arrears-utilities	0.018 (0.016)	-0.008 (0.009)
Income		
real income	-0.131*** (0.011)	-0.199*** (0.010)
No. obs.	17784	17784

We report the marginal effects from probit regressions. The dependent variable equals 1 if the household pays >30% of their income on housing costs and 0 otherwise. The categorical variable base groups for comparison are: Tenure - Own with mortgage; Age - 18-35, Household Composition - Single adult households. Categorical variables for marital status, employment status and urban/rural are also included in the regression but not reported.

Figure 9. Marginsplot - Probability of High Housing Costs at Real Income Deciles



4.2 The 30/40 calibration

As discussed in Section 2.1, one weakness of the simple 30 per cent high housing cost benchmark is that it does not allow for any distinction between higher income households who may choose to allocate a higher proportion of their income to spending, and low income households which may instead be forced to spend a large fraction of their income on housing costs. From our assessment of the differences in economic strain across households with high and not high housing costs, it is clear that those households spending more than 30 per cent of income on housing have fewer resources left after payment. However, the previous analysis pools all households with high housing costs together and it may be the case that within this group, particular subsets of the population are more affected. A key risk group being those with low income.

In order to address this critique, we use the alternative 30/40 measure used in a series of Australian studies (Wulff et al. (2011); Wood and Ong (2011); Baker et al. (2015); Borrowman et al. (2017)), which classifies housing as unaffordable if a household spends more than 30 per cent of their income on housing payments and if that household is in the bottom 40 per cent of the income distribution.

Figure 10 shows that the proportion of households with high housing costs according to this 30/40 definition increased from 6 to 8 per cent between 2005-2015. However, this masks significant differences across tenure types, as this included 18 per cent of private renters and only 5 per cent of mortgaged households in 2015.

In Table 4 we examine the characteristics of households in this 30/40 group (Column 1), relative to those who face high housing costs but are not in the lowest 40 per cent of the income distribution (Column 2), and those who do not face high housing costs

Figure 10. Share of Households in Ireland in 30/40 Group by Tenure

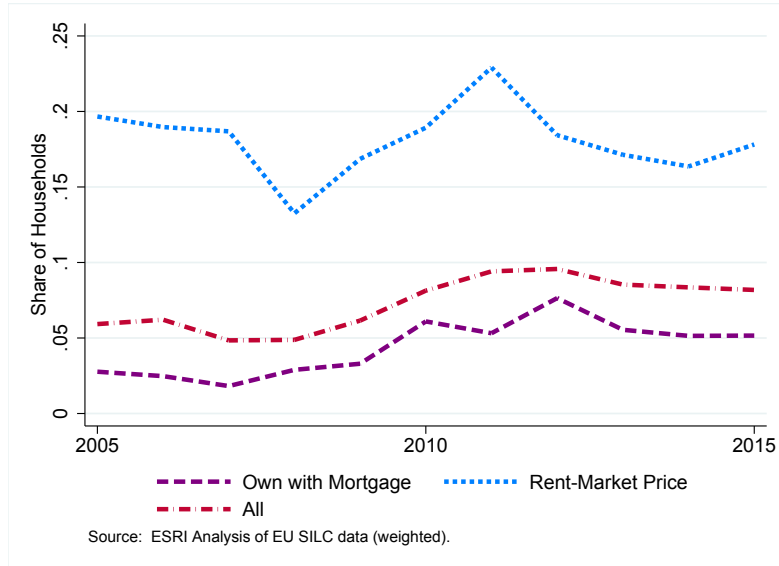


Table 4. Characteristics of Households split by High Housing Costs and Income 2013-2015

	>30% & <p(40)	>30% & >p(40)	<30% & <p(40)	<30% & >p(40)
Age				
Mean age	42.06	40.67	48.73	41.29
Household Composition				
<i>Share of households:</i>				
1 Adult	0.54	0.26	0.51	0.07
2+ Adults	0.46	0.74	0.49	0.93
Mean no. children	0.63	1.02	0.54	1.09
Income				
Mean disposable income (annual)	17312	42394	18819	58932
Mean equivalised income (annual)	11751	23163	12541	27057
Mean residual income (monthly)	792	2210	1339	4167
Mean equiv. residual income (monthly)	320	616	796	1495
Housing				
Mean HPTI	0.47	0.38	0.15	0.16
Private Renters	0.57	0.32	0.19	0.26
Share in housing arrears	0.30	0.24	0.21	0.13
Share in utilities arrears	0.33	0.22	0.31	0.16
No. obs.	690	554	1679	4420

split by whether they are in the lowest 40 per cent of the income distribution (Column 3) or not (Column 4). Again we focus our analysis on the most recent years available in the survey, 2013-2015. Households in the 30/40 group have a similar annual income to those in the bottom 40th percentile of the income distribution but who do not face high housing costs. However, when we instead consider monthly residual income, households in the 30/40 group have a much lower average of €792 per month compared to €1339 for low income households without high housing costs. From Column 2 we see that the residual income of high housing cost households who do not fall in the lowest 40 per cent of the income distribution is just under three times that of the 30/40 group. Another key thing to note is the high proportion of private renters in the 30/40 group, at 57 per cent compared to only 19 per cent for the low income households who do not face high housing costs, a group that contains the majority of Local Authority renters.¹¹

4.3 Are Strict Cut Offs Appropriate?

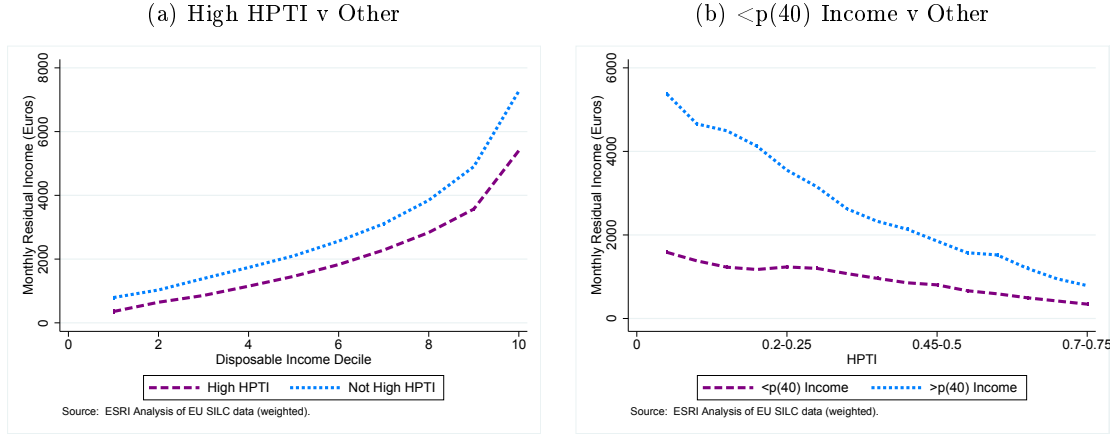
If the goal of housing affordability policy is to have sufficient income left over to ensure some minimum level of consumption, then it is important to carefully consider whether imposing strict cut-offs in defining affordability is appropriate. Indeed, if a numerical threshold is chosen, it may be the case that marginal households just above the threshold differ little in terms of economic stress to those below but are excluded from consideration due to the parameterisation.

In this section we consider in turn whether using the bottom 40 per cent of the income distribution and >30 per cent of income spent on housing payment costs are indeed suitable thresholds in the Irish context. Our aim is to explore whether there is any material change in economic strain either side of the cut-offs that would be suggestive of these limits being suitable as a definition of households with affordability difficulties that could be used in policy targeting and monitoring.

In Figure 11a we take households with housing payments >30 per cent of their income and plot the mean residual income (the amount of income left once housing payments have been met) by income decile. We focus on residual income as our main indicator of household economic strain. It is not until the 60th percentile of the income distribution that the mean residual income reaches €2000 and begins to increase more rapidly after this point. This indicates that only considering those with high housing costs in the bottom 40 per cent of the income distribution would exclude households at a slightly higher point in the income distribution, such as the median, with similarly low levels of residual income. This suggests that using the bottom 40 per cent of the income distribution as a threshold may not be suitable in the Irish context.

¹¹Ideally we would formally model the characteristics of households in the 30/40 group compared to those with housing costs >30 per cent but with incomes above the 40th percentile, but due to insufficient observations we are unable to do so.

Figure 11. Residual Incomes, HPTI and the Income Distribution



In Figure 11b we look at households in the bottom 40 per cent of the income distribution and plot the mean residual income by HPTI ratio. There is a general downward trend in residual income, particularly once the HPTI increases above 30 per cent. While there is no obvious turning point, the 30 per cent threshold seems to be reasonable in the Irish context.

Figure 12. Residual Income by Income Decile and HPTI

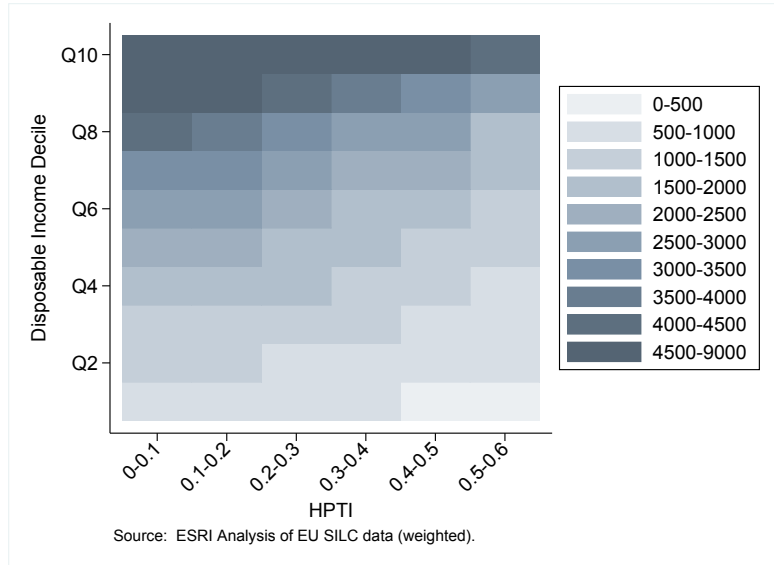


Figure 12 plots the residual income across disposable income decile and HPTI groupings. It shows that for those households with very high housing costs (HPTI between 50 and 60 per cent of their income) we only achieve a residual income between €1500-2000 per month for households at or above the 70th percentile of the income distribution. The highest residual income band reached by households in the bottom 40 per cent of the income distribution is €1500-2000 per month, and this is only possible for those at the 40th income percentile with HPTI < 30 per cent. The residual income for households

in the lowest two income deciles and a HPTI of 30-40 per cent is only €500-1000 per month.

We conclude that income rather than the housing payment to income ratios seems to be more important when considering which households face high housing costs. Furthermore, considering only those in the bottom 40 per cent of the income distribution may, in the Irish case, cut off many households who face difficulties just above the 40th percentile. Indeed, circumstances do not appear to change considerably until we reach the 60th percentile.

While focusing on residual income allows us to highlight those households with relatively few resources available after paying for housing, it does not indicate how much residual income is sufficient to ensure some minimum level of consumption. To address this issue, and provide more insight into our parametrisation of what a defined affordability concept could look for Ireland, we take the Minimum Essential Standard of Living (MESL) Income defined by the Vincentian Partnership for Social Justice, over the period in our sample and use the ratio of residual income to MESL income to explore which households' residual incomes meet this minimum level. We map the urban/rural income levels from the MESL income for 6 aggregate household composition groups per year. We define the ratio of residual income to MESL income as the income affordability indicator. It is important to note that any measure of the minimum level of required income is somewhat subjective¹². In this paper we use the Vincentian MESL measure for illustrative purposes, but alternative measures could be used. If such a concept were to be parametrised for policy purposes, a fuller discussion of what constitutes required income would be warranted; this is outside the scope of this paper.

Figure 13. Ratio of Residual Income to Vincentian MESL Income, HPTI and the Income Distribution

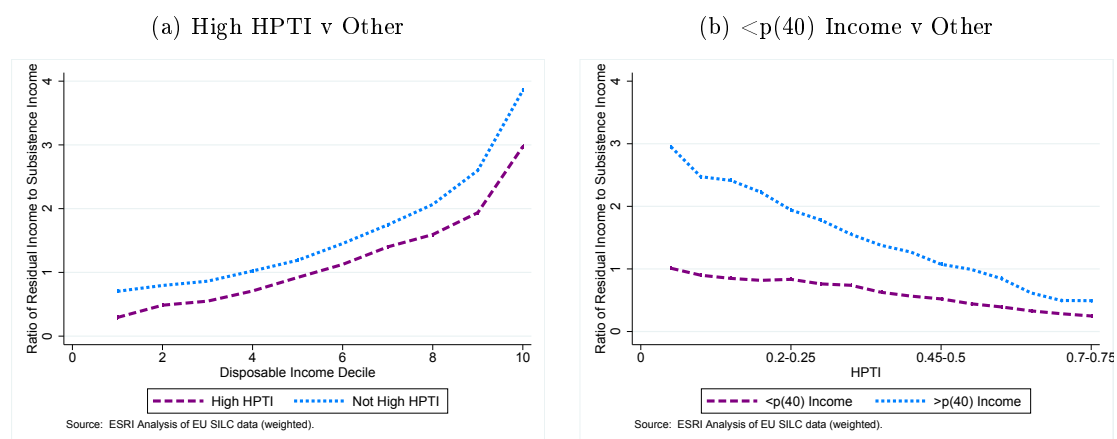


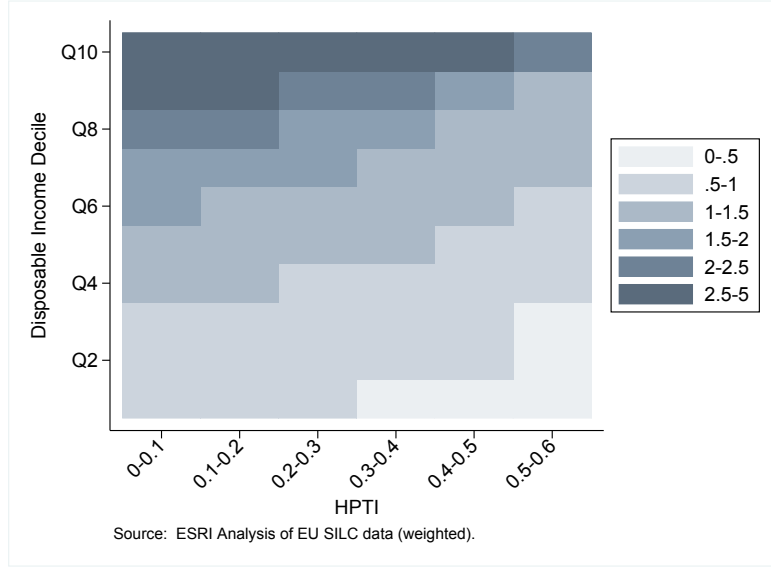
Figure 13b shows that households in the bottom 40 per cent of the income distribution

¹²The Vincentian Minimum Essential Standard of Living (MESL) measure allocates spending for the following: food, clothing, personal care, health, household goods, household services, communications, social inclusion, education, transport, household energy, personal costs, insurance, savings and contingencies. This measure excludes childcare and the effects of secondary benefits.

have a residual income that does not cover the MESL income (ratio < 1), regardless of their HPTI. This suggests that these households primarily face an income maintenance issue rather than a housing affordability challenge per se. Nevertheless, we do observe that the ratio of residual income to MESL income begins to fall more steeply once the HPTI becomes greater than 30 per cent, which is consistent with this group facing a housing affordability challenge. From Figure 13a we see that for households with HPTI greater than 30 per cent, their residual income does not cover the MESL income (ratio $=1$) until we reach just under the sixtieth percentile of the income distribution. Any definition of housing affordability challenge set at the 40 per cent income limit would not capture these households. However, Figure 13b also indicates that households not in the bottom 40 per cent of the income distribution, but whose HPTI is above 45, also have a residual income to MESL income ratio less than one. This suggests that there are pockets of households above the 40th percentile of the income distribution who have few resources left after covering housing cost. This indicates that the relationship between housing costs and sufficient income remaining is complex and non-linear. Any definition of housing cost affordability should be broad enough to capture these complexities.

The heatmap presented in Figure 14 enables us to further explore potential thresholds for a housing affordability challenge indicator that could be used as an instrument across a broad range of policy scenarios. The heatmap approach allows us to visualise the complex non-linearities. Figure 14 indicates that housing payment costs above 30 per cent of net income is a reasonable benchmark for households in the bottom 40 per cent of the income distribution because their residual income does not meet the Vincentian MESL income level (ratio < 1). In addition, for households between the 40th and 50th percentiles of the income distribution, a HPTI of 40 per cent represents a more suitable benchmark, and for households between the 50th and 60th percentiles of the income distribution, a 50 per cent HPTI benchmark would be more appropriate. A step-wise definition capturing these two parameters would be supported by the empirical evidence, rather than a simpler 30/40 measure.

Figure 14. Ratio of Residual Income to Vincentian MESL Income by Income Decile and HPTI



5 Summary of Empirical Findings

In this paper we document developments in housing affordability in Ireland between 2005-2015, with a particular emphasis on the distribution of housing costs across different types of households. Building on previous work at the aggregate level, the use of SILC microdata enables us to split households according to their age, region, household composition and their position in the income distribution. Below we summarise the key findings.

In Section 3 we establish that on average, households were paying approximately one fifth of their income on housing costs in 2015, only a very slight increase from 2005. However, what is clear from our analysis is that although housing affordability challenges are not universal, simply looking at average housing cost to income ratios masks the fact that certain groups do face significant affordability challenges. In particular, households in the private rental sector, those living in Dublin (and the surrounding commuter regions) and those on low incomes face the greatest challenges. Indeed, households in the lowest 25 per cent of the income distribution were paying on average two fifths of their income on housing costs as compared to just under one-fifth on average.

Furthermore, although we only observe a very modest rise in overall housing payment to income ratios between 2005-2015, in the mortgage market, the repayment to income ratio has increased considerably for low income households between 2008 and 2015. Many of these households took out mortgages under very loose credit conditions during the boom which left few buffers available for such households to absorb shocks.

We find that throughout the period under evaluation, low income households (bottom 25 per cent of the income distribution) who are in the private rental sector have always

faced high housing payments. While rental price inflation has been high in the very recent period, the fact that low income households in the private rental market always faced high average rental costs suggests affordability challenges are structural rather than cyclical in nature i.e. they are not just a product of recent price rises which have undoubtedly compounded affordability pressures¹³

The notable difference in the average cost of housing across groups of households begs the question: how do we define housing affordability in Ireland such that any definition would capture these specific at risk groups. To address this issue, we look to international experience. In Section 4 we take two internationally applied benchmarks for high housing costs and explore the share and composition of Irish households that would be covered by such definitions. First, using a simple housing payment to income ratio threshold of 30 per cent, we show that in 2014-2015 16 per cent of households had high housing costs, but this figure was double for private renters and 70 per cent for households in the lowest quarter of the income distribution. It was particularly acute for renters in the Dublin region. We also clearly find that households with housing costs to income greater than 30 per cent are more likely to be in economic strain such as persistent poverty, payment arrears, and have few resources left after housing costs.

As this simple 30 per cent threshold does not allow for any distinction between higher income households who may choose to allocate a higher proportion of their income to housing costs, and lower income households which may be forced to spend a larger fraction of their income on housing costs, the second benchmark we apply restricts analysis to households who spend greater than 30 per cent of their income on housing payment costs and who are in the bottom 40 per cent of the income distribution. What becomes clear is that the majority of households in this 30/40 group are in the private rental sector and have very low levels of residual income after paying their housing costs.

The final empirical contribution of this paper is to explore whether the strict cut offs of 30/40 are appropriate parameters if the international rules were to be used in Ireland to set a working definition of high housing cost. We do so by focusing on how much of their monthly income households have left, after they pay for housing. We define this as residual income. The following findings emerge. While a housing payment to income ratio threshold of 30 per cent seems reasonable, residual incomes for those facing high housing costs do not begin to increase sharply until the sixtieth percentile of the income distribution, meaning that focusing only on households in the bottom 40 per cent may exclude some households with similarly low levels of residual income. We conclude that incomes, not just the housing cost to income ratios, seem to be a critical indicator for establishing which households face the most severe affordability challenges in the Irish case.

¹³Our nowcasting exercise grows forward average rent to income payment to 2017 and shows a continued rise in cost in particular for low income households.

6 Policy Implications

This research points to a number of policy implications. First, it is clear that there are certain categories of households which have faced persistent affordability challenges, for instance, some low income urban households renting in the private market that feature throughout our sample period. It would seem that these challenges have persisted, having been noted by researchers a decade and more ago (Blackwell, 1989; Fahey et al, 2004). This raises the possibility that the issue is structural, as opposed to cyclical. A direct conclusion from this evidence suggests that state intervention is required to provide appropriately priced accommodation for these households.

Low income households in the mortgage market have faced a considerable increase in repayment burden through the crisis and their repayment burdens are now equivalent to those in the private rental market. Many of these households were originated mortgages during the boom phase on imprudent credit conditions without proper credit risk assessment. This left them vulnerable to shocks that occurred during the crisis. Indeed, such households could face further increases in cost as the ECB unwinds its accommodative monetary policy stance and interest rates rise. The deployment of the macroprudential framework on residential mortgages by the Central Bank, as well as better credit risk policies at the commercial banks, should ensure that mortgage financing is provided on a more sustainable basis going forward. However, this may restrict mortgage access to some low income households. As we have seen, the private rental market would be a high cost alternative for such households if they do not enter mortgaged home ownership.

Several policy responses could potentially assist such households. Long-term investment in, and expansion of, local government housing stock for rent, with a view to limiting the reliance of the state on the private rental sector, could provide suitably priced accommodation to shield lower income households from market vicissitudes. It could also lower the requirement to purchase mortgage financed properties at market prices and to help dampen volatility in the rental and wider housing sector associated with the economic cycle. Policies to provide low cost rental options for households such as cost rental or housing cooperatives can form part of the new rental landscape. Other policies such as rental price controls or subsidisation can be effective in providing a short term alleviation of price pressures. However such responses may have limitations or possible unintended consequences; for instance, extending the current system of rental subsidies could have an inflationary impact by driving more demand into the crowded private rental market. Policy changes in train, such as potential changes to the rules governing social housing eligibility, could help improve affordability for recipient households.

Our research also points to the appropriateness of international methodologies for defining housing affordability for Ireland. In particular, the 30/40 benchmark, does capture those households with the most acute housing affordability issues. There would be considerable benefit from a policy perspective in adopting an affordable housing defin-

ition such as this for Ireland. The evidence in this report would suggest an amended version, which is cognisant of the potential for a sliding scale income limit which reduces the impact of strict cut offs, would be the most appropriate. If such a definition were recognised, it would facilitate constant monitoring of the sector relative to this threshold. An annual monitoring exercise which maps the relative affordability of housing across households, in particular focusing on the income distribution, would allow developments in affordability to be benchmarked. This definition could then be used as a benchmark in any microsimulation assessment that tested the sensitivity of households to shocks or policy interventions.

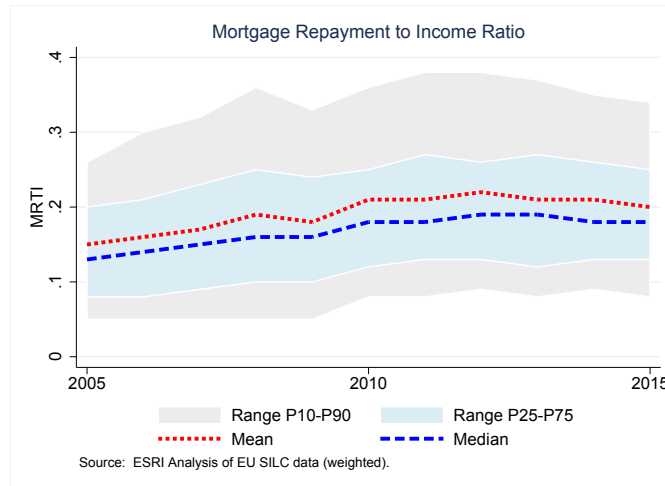
In addition to providing an ongoing method by which housing cost affordability may be monitored by policy makers, the affordability measures proposed in this paper could also be used to help ensure that extant and potential new housing supports perform well in terms of tackling housing affordability. Embedding such a definition as part of policy design would provide an evidence based anchor in terms of operationalising schemes, in a similar vein to the income adequacy threshold in the Planning and Development Act 2000. In particular, by appending such a criteria both for initial eligibility and for continued access over time, could help promote greater equity in terms of the housing burden among households, regardless of tenure. This could act as an input to ensuring correct policy targeting and the achievement of the desired levels of vertical and horizontal equity among households¹⁴

¹⁴Footnote: Horizontal equity requires that equals be treated equally, for instance, households with similar levels of resources and costs receive similar levels of subsidy. Vertical equity is the differential treatment of dissimilar households such that, for instance, subsidies are withdrawn as income increases.

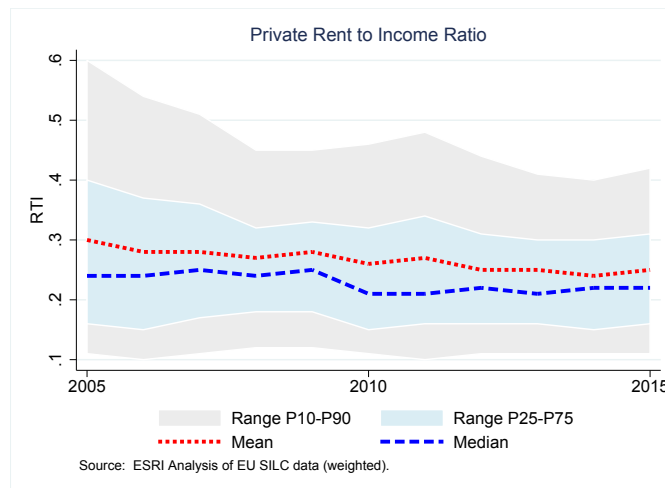
7 Appendix A

Figure 15. Housing Cost to Income Ratio Distribution Plots by Tenure

(a) Mortgage Repayment to Income Ratio



(b) Rent to Income Ratio - Private Market Renters



(c) Rent to Income Ratio - Local Authority Renters

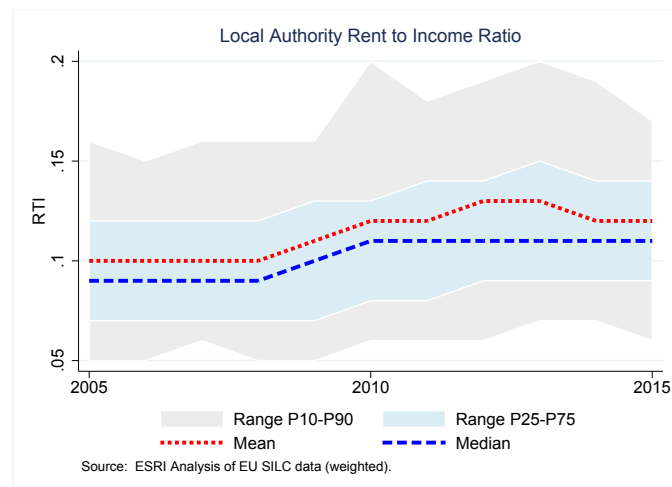


Figure 16. Mean Household Income and Housing Payments by Tenure Over Time

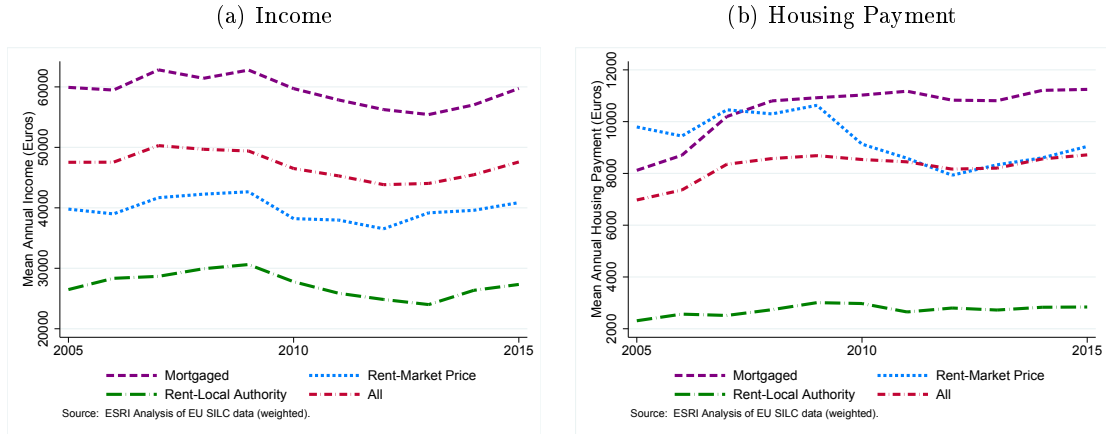


Figure 17. Mean Household Income and Housing Payments by Income Quartile Over Time

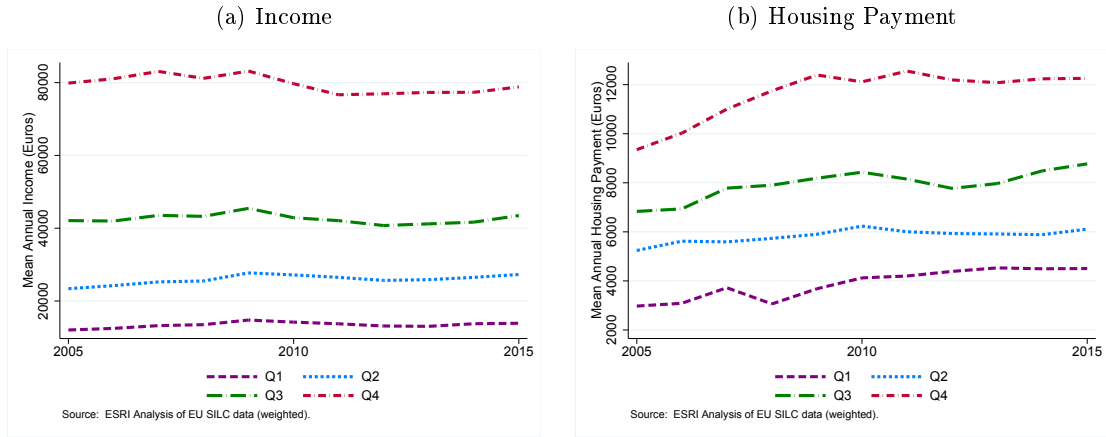
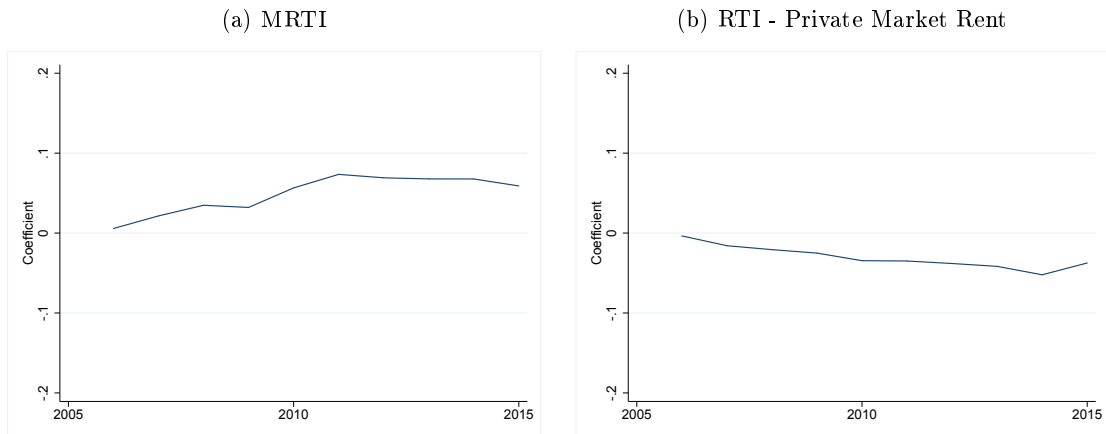


Figure 18. Coefficient Plots of MRTI/RTI Over Time Controlling for Household Characteristics



8 Appendix B: Updating Affordability Trends

To date, SILC 2015 is the latest available year for which we have all the variables required for our analysis. However, since 2015, prices in the owner-purchase market and the private rental sector have continued to accelerate strongly. To provide insight into how these trends have affected affordability, we undertake a simple “nowcasting” exercise whereby we grow forward household incomes and rents in line with national trends and then recalculate the average MRTI and RTIs. We did not have sufficient data (balance, terms, and interest rates for each household in the sample) to adjust interest rates for all existing mortgage holders. This assumption is accurate for fixed and tracker borrowers. However, given the relatively minor change observed in the market in average rates for variable rate holders, we do not see this assumption as problematic.

To adjust incomes, we use the ESRI forecasts of personal disposable income and non-agricultural wages to grow forward incomes for non-employee and employee households respectively. For such forecasts, see McQuinn et al. (2017). As income growth is unevenly distributed across households, we grow forward a household’s income in relation to their position in the income distribution using the 2014/2015 income growth rates across 5 cuts of the distribution.¹⁵ Rents are grown forward in line with the RTB Rental Market Index for the Dublin/non-Dublin geographic split.¹⁶

The trend including 2016 and 2017 for private rental households as well as mortgage holders is presented in Figure 19 below. While income growth has pushed down the cost of payments for existing mortgage holders, it can be seen that the cost of rental payments relative to incomes continues on an upward trajectory.

The nowcast figures across the income distribution for both the mortgaged and private rental sectors are presented in Figure 20 below. While mortgaged households across the income distribution have seen affordability improve somewhat in 2016 and 2017, the difficulties in the rental market are clear. Indeed, as income growth has not kept pace with rental price inflation, we can see a clear trend towards rising payment costs. The trend is particularly striking for households in the bottom 25 per cent of the income distribution with the average rent to income ratio reaching nearly 45 per cent.

¹⁵Please contact authors for more details.

¹⁶Growing all rents forward in line with new tenancies registered with the RTB may overstate the rental growth rates for existing contracts. These estimates should therefore be considered an upper bound.

Figure 19. Nowcast Trends in Housing Payment to Income Ratios 2016-2017

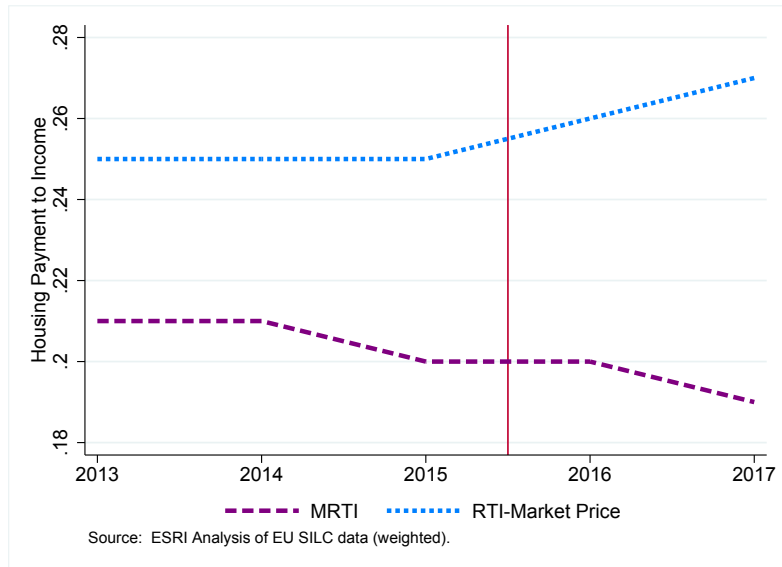
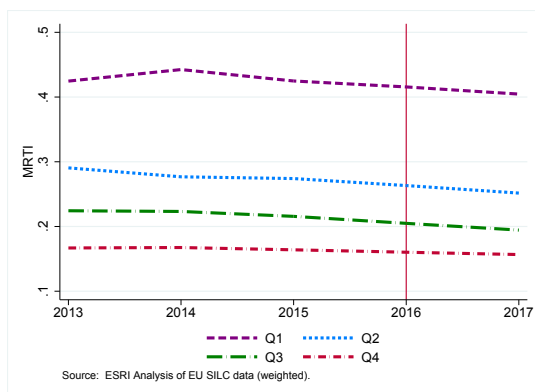
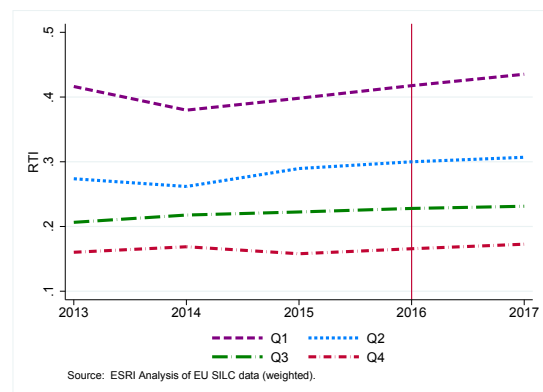


Figure 20. Nowcast Trends in Housing Payment to Income Ratios 2016-2017 Split by Income Distribution

(a) Mortgage



(b) Private Rental



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Year	Number	Title/Author(s)
2018		
	592	Dynamic tax revenue buoyancy estimates for a panel of OECD countries <i>Yota Deli, Abian Garcia Rodriguez, Ilias Kostarakos and Petros Varthalitis</i>
	591	Corporate taxation and the location choice of foreign direct investment in EU countries <i>Ronald B. Davies, Iulia Siedschlag and Zuzanna Studnicka</i>
	590	The role of power-to-gas in the future energy system: how much is needed and who wants to invest? <i>Muireann Á. Lynch, Mel Devine and Valentin Bertsch</i>
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	588	Supporting decision-making in retirement planning: Do diagrams on pension benefit statements help? <i>Pete Lunn and Féidhlim McGowan</i>
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	586	Do consumers understand PCP car finance? An experimental investigation <i>Terry McElvaney, Pete Lunn, Féidhlim McGowan</i>
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