

POLICY PAPER

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 2006-2016, 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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I 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 2006-2016, 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 per cent 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 whose housing payments are at least 30 per cent of their income and who are 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 2016,¹ 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

¹ The latest SILC data available for this research covered the period to 2016.

other costs 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 were spending on average between two-fifths to more than one half of their income on housing costs, depending on tenure.

Although we find relatively moderate rises overall in housing payment-to-income ratios between 2006 and 2016, 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 (2006-2016), 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 therefore to 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 per cent rule, we find that 16 per cent of households² had housing payment-to-income ratios greater than 30 per cent in 2015-2016, but that this figure was double for private renter households, and increased to 75 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 income.³

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

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

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

definition to classify households 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 costs, the evidence suggests that an income clause added to the 30 per cent 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 60th 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 II 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 III documents the trends in housing affordability across households using the SILC microdata. Section IV examines which households are captured by two international definitions of high housing costs. Section V summarises our findings and Section VI discusses policy implications.

II 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 programmes 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 subtracting 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 responses to whether households 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 and its determinants. Wood and Ong (2011), Baker *et al.* (2015) and

⁴ The 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.

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 policymakers 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 one year, but that the longer an individual suffers affordability stress, the harder it is to escape. In terms of characteristics, renters, single individuals aged under 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 to 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 have 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.* (2004) 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 threshold;⁵ 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.

III EXPLORING TRENDS IN HOUSING AFFORDABILITY IN IRELAND

In this section we document the trends in housing affordability for Irish households over the period 2006-2016. This timeframe 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.

3.1 Affordability Trends across Irish Households

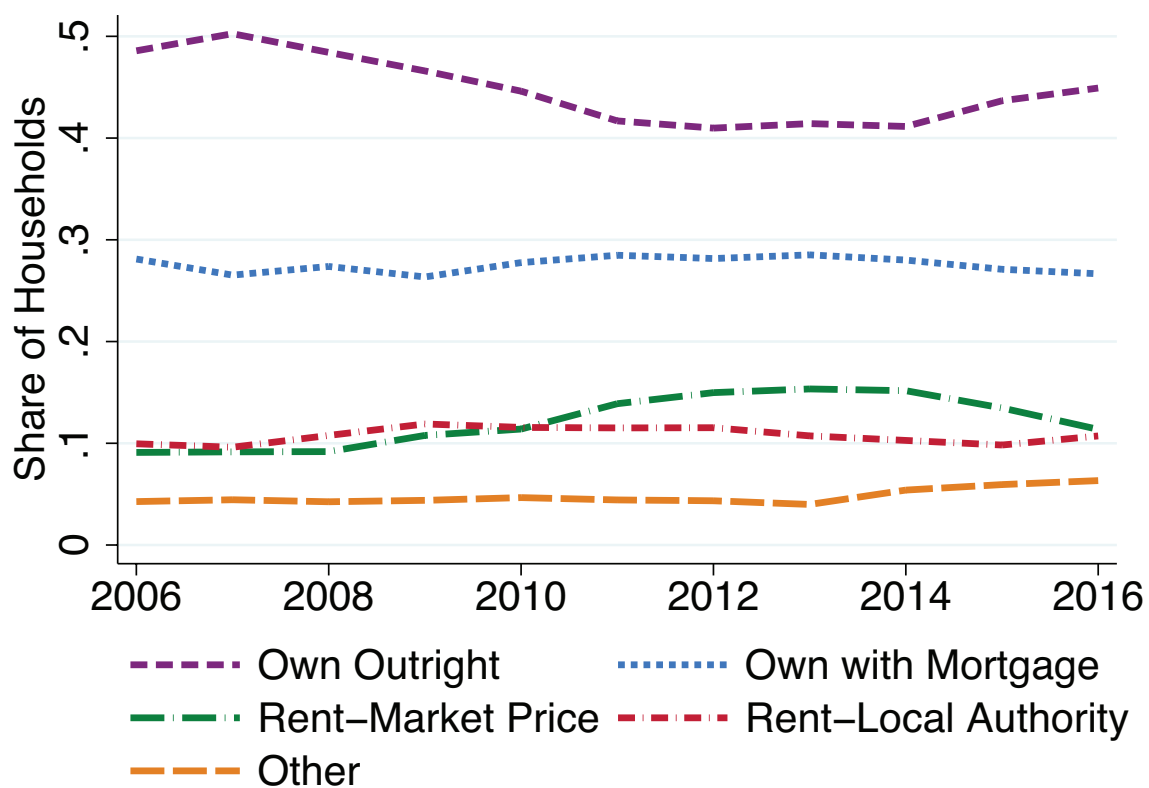
3.1.1 Data Overview and Definitions

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

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

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 2006-2016



Source: Authors' analysis of SILC.

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 2016 households with a mortgage made up just under 30 per cent of households, while approximately 11 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 45 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 throughout the paper. 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 45 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 to 3:

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

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

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

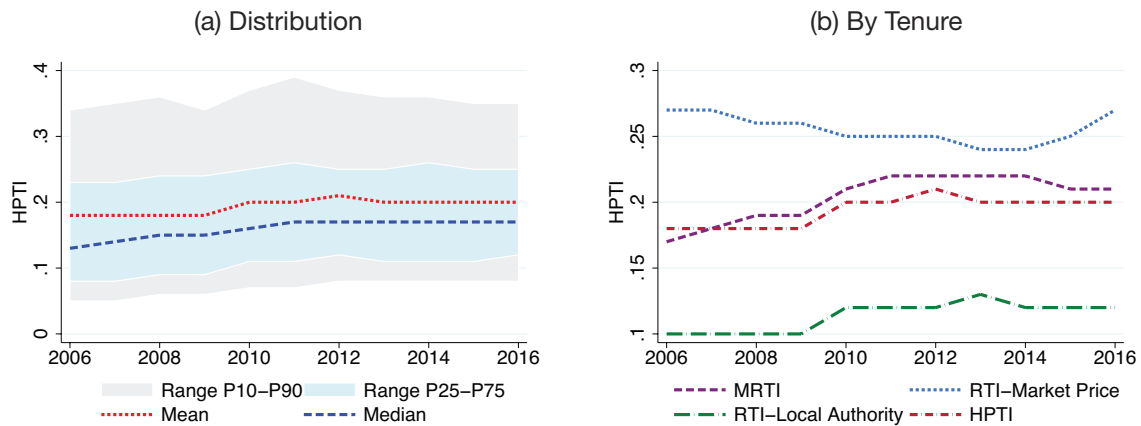
An important element of this definition is the inclusion in the denominator of net household income. Given the many changes to the fiscal system, the social welfare transfers, and changes in other transfers over time, the most important gauge for what households have at their disposal to cover housing 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 2016, 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 17 per cent. In general, over the period 2006-2016, there has been a slight upward trend in the average housing payment ratio.

Focusing on the tails of the distribution, the grey shaded bar captures the 10th-90th percentiles of the HPTI distribution. In other words, 10 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 2016.⁶

Figure 2: Housing Payment-to-Income Ratio 2006-2016



Source: Authors' analysis of SILC.

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 2006, the rent-to-income ratio was considerably higher than the MRTI. In 2016, the average RTI for private renters was 27 per cent, the same as in 2006. In general, the private rent-to-income ratio declined until 2016, where the recent emergence of price pressures in the rental sector can be seen in our data. In 2016, the average MRTI was 21 per cent. It has risen from 17 per cent in 2006, and peaked at 22 per cent between 2011 and 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 12 per cent of income on average.⁷

⁶ The housing payment-to-income distribution charts, plotted separately for mortgaged, private renter and Local Authority renter households, are presented in Figure 15 of an earlier working paper draft of this work (Corrigan *et al.*, 2018).

⁷ In 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 14 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 II 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 2016, the average MRTI was more than 55 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 2006. In 2006, the average MRTI was 36 per cent for households in the bottom 25 per cent of the income distribution; this compared to just under 25 per cent for households in the second, 17 in the second and 13 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

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

(McCarthy and McQuinn, 2017). Indeed, the loosening of credit conditions was much greater for 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 the average RTI for households in the bottom income quartile was just over 40 per cent in 2016. 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 17 per cent respectively. An increase in the average RTI for the bottom and second quartile is evident since 2014. 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. 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.

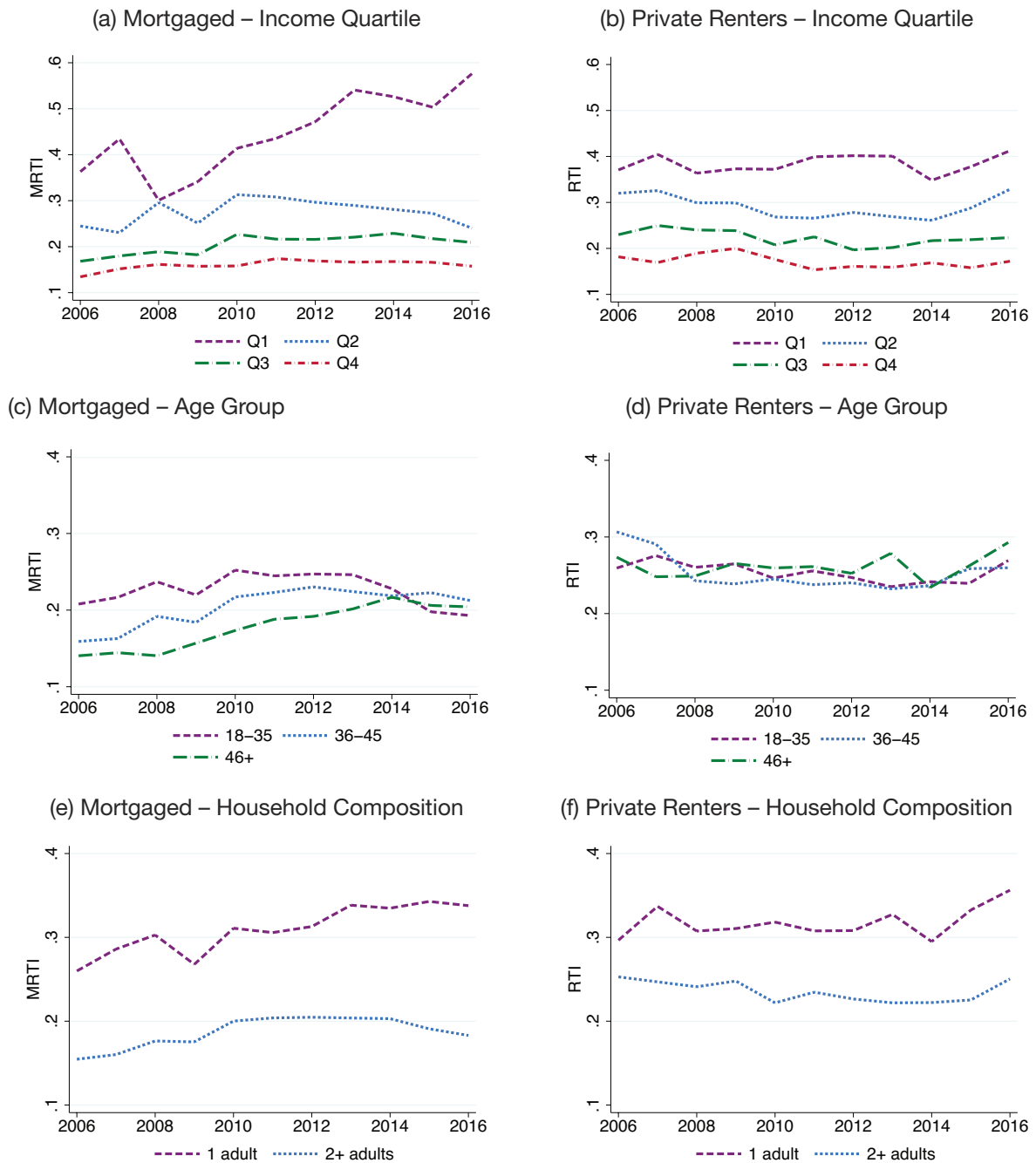
It must be noted that some low income households may be young and therefore early in their income lifecycle. For these households, naturally their housing cost should fall over time as incomes rise (once incomes rise faster than rents and interest rates). The policy interventions for these households would be different than for households who are suffering from long-term, low income situations with little possibility of coming out of this cycle. For younger households, early in their income lifecycle, policies that ensure sound credit provision such as macroprudential limits, as well as affordable purchase price or rental options would be most appropriate. For low income households, income supports as well as policies to reduce housing costs are likely required. This distinction will be important to draw out our policy implications.

To explore in more detail the relationship between age and housing cost, the trends in the MRTI and RTI across age groups are presented in Figures 3c and 3d. 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, from 2014 onwards, the relative costs have converged 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

⁹ It 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.

As we do not find any real material difference between young and older households, it does not appear that the high housing cost for low income households is particularly driven by an age-lifecycle effect. Indeed recently, younger households have experienced a reduction in the housing costs as the trend for low income households has increased.

Figure 3: Housing Payment-to-Income Ratios for Mortgaged and Private Renter Households by Income Quartile, Age and Household Composition



Source: Authors' analysis of SILC.

Figures 3e and 3f 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 34 per cent (36 per cent) in 2016 as compared to 18 per cent (25 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

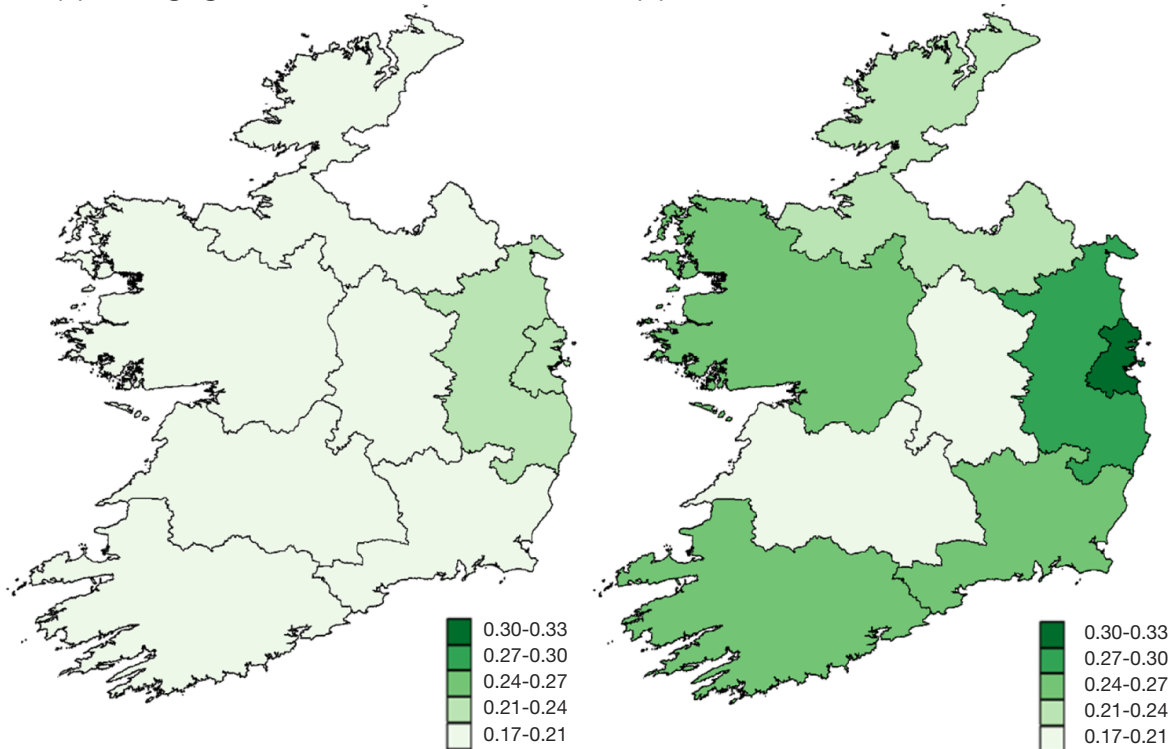
Housing markets are by their nature very localised. Households often make strategic housing decisions within very narrow geographic boundaries. These choices are often conditioned by proximity to family, friends, amenities, infrastructure and employment opportunities and a considerable literature has 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

Figure 4: Housing Payment-to-Income Ratios by Region 2015-2016

(a) Mortgaged Households

(b) Private Renter Households



Source: Authors' analysis of SILC.

across the country in housing payments in the mortgage and private rental markets. Given the data available in SILC, the analysis is presented at a NUTS III regional level, which covers the following regions: Border, West, Midland, Mid-East, Dublin, South-East, South-West, and Mid-West.

Figure 4a presents the regional variation in the level of MRTI for 2015-2016.¹⁰ MRTIs are highest in Dublin and the Mid-East; 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. The lowest rental price-to-income levels were in the Border, Midland and Mid-West regions.

IV 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 is 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 II, is used extensively in an international context.¹¹ 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.

¹⁰ Due to small sample sizes we pool data from 2015 and 2016.

¹¹ 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.

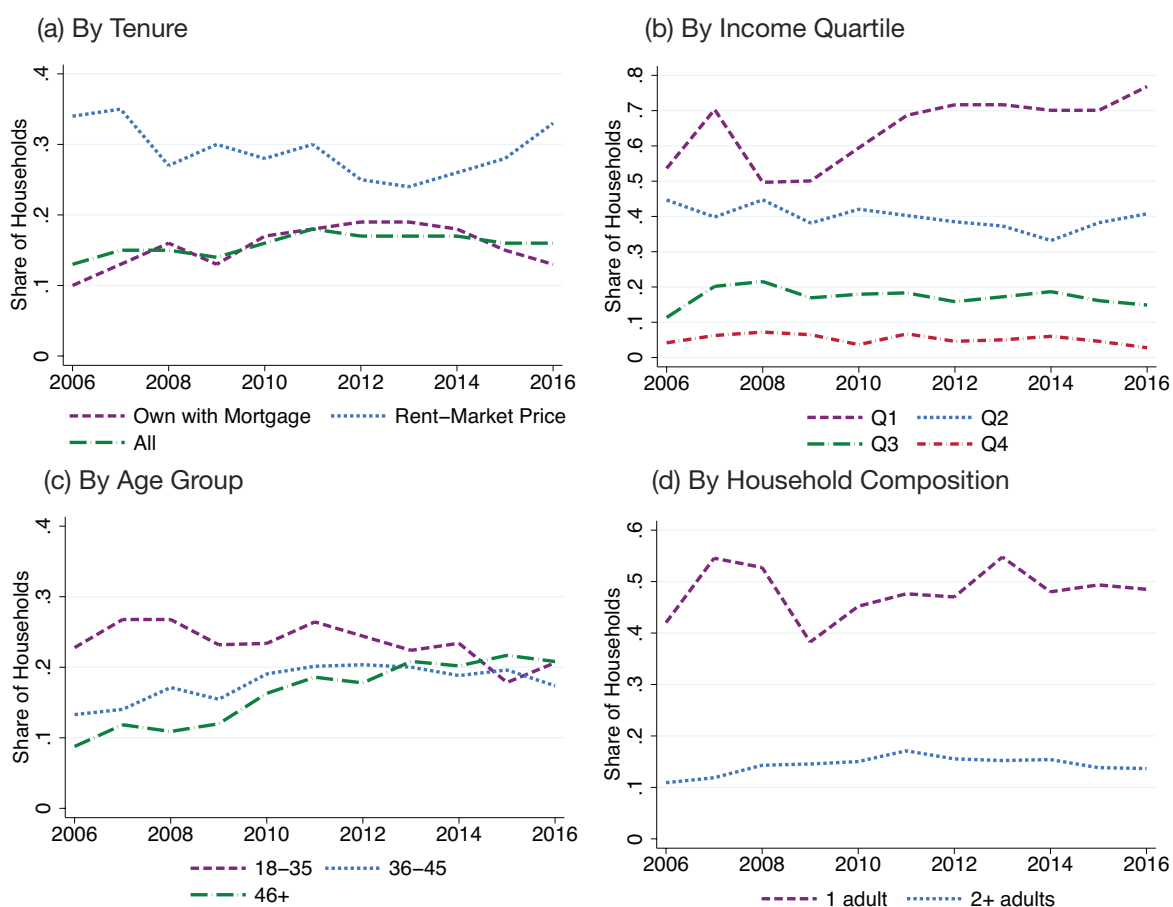
4.1.1 Trends in High Housing Costs Using the 30 Per Cent Rule

Figure 5a presents the share of Irish households with a housing payment-to-income ratio of greater than 30 per cent over the period 2006-2016 by tenure. In 2006, the overall share was just under 13 per cent and this rose over the period to approximately 16 per cent in 2016. The share peaked in 2011 at 18 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 2016, 33 per cent of private rental households would be classed as facing high housing costs using this definition compared to fewer 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 fell from 2006 through to 2013, but increased noticeably between 2014 and 2016. For mortgaged households, there was a moderate increase in the share of high housing cost households until 2014 when it began to decrease again.

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 5 we consider the share of “high housing cost” households by three categorisations as before: income quartiles, age groups and household composition. Figure 5b 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 2016, more than 75 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 2008-2012. 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. Just over 40 per cent of households in the second income quartile faced high housing costs in 2016. The share of households with high housing costs in the top two quartiles of the income distribution in 2016 was circa 15 per cent and 3 per cent respectively.

Figure 5c presents the share of households with high housing costs across three age groups. As was the case with the average HPTI across age, there was little variation across groups in 2016. However, in terms of the inter-temporal dynamics, the shares for the older age groups (36-45 and aged more than 46 years) have risen over time, while the share for younger households has remained relatively constant over time. To explore the differences across household composition, Figure 5d 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 was much greater than for double adult households: nearly 50 per cent in the former case and approximately 14 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 11 per cent in 2006 to just over 17 per cent in 2011 at the height of the economic crisis.

Figure 5: Share of Mortgaged and Private Renter Households in Ireland Above 30 Per Cent Benchmark



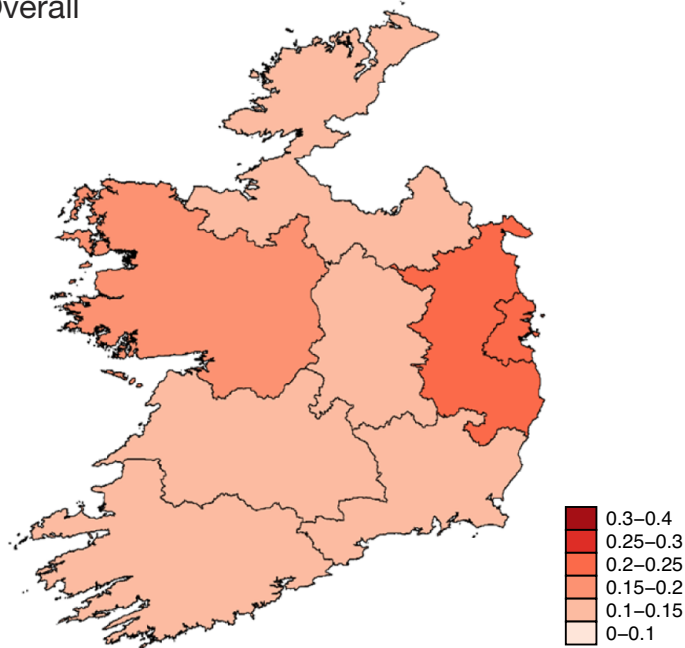
Source: Authors' analysis of SILC.

To explore the spatial variation in the proportion of households facing high housing costs, Figure 6 presents a series of heatmaps to geographically depict the differences across the country. Figure 6a shows that the share of households with high housing costs 2013-2016¹² was highest in the Mid-East and Dublin, followed by the Western region containing Galway. This reflects the more pronounced high housing cost challenges faced in urban areas. Figures 6b and 6c split households into mortgaged and private renter households respectively. They show that the proportion of households facing high housing costs was higher amongst private renters than mortgaged households in all regions. In Dublin, 39 per cent of private renter households faced high housing costs compared to 19 per cent of mortgaged households, while the corresponding figures for the Mid-East region were 37 per cent and 23 per cent respectively.

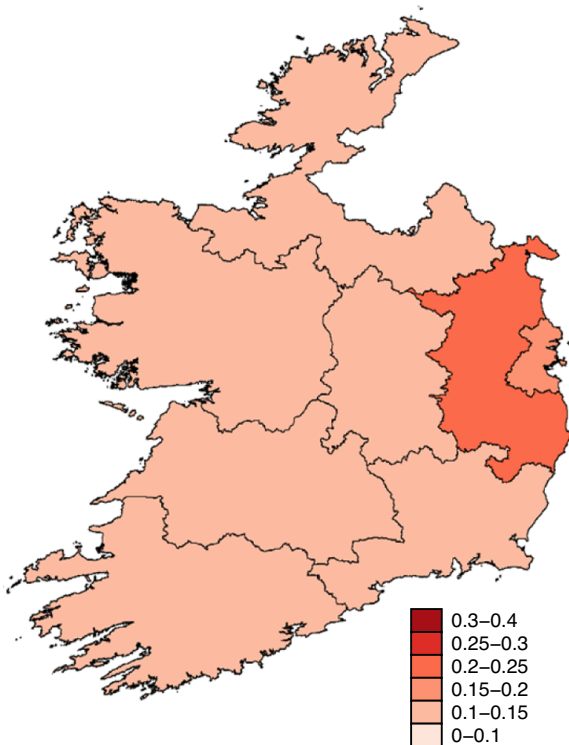
¹² Due to small sample sizes we pool data from 2013 to 2016 and take the average across these years.

Figure 6: Share of Households with High Housing Costs (>30%) 2013-2016

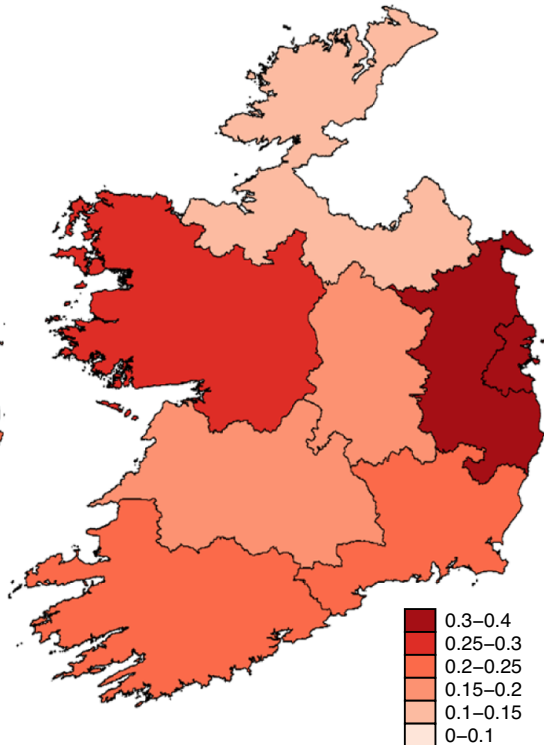
(a) Overall



(b) Mortgaged Households



(c) Private Renter Households



Source: Authors' analysis of SILC.

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, 2014 to 2016, 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 60 per cent that of households not facing high housing costs (€29,442 versus €49,534) and their mean monthly residual income is only approximately €1,500, less than half that of households not facing high housing costs. Furthermore, there is a higher share of households in persistent poverty, and facing arrears on the housing payment or utilities, amongst the high housing cost households.

While Table 1 shows average results, it is not possible to determine whether 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:

$$\Pr(HPTI > 30\% = 1) = f(\text{age, tenure, household composition, marital status, employment, arrears, utility arrears, } \ln(\text{income})) \quad (4)$$

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 7 per cent less likely than mortgaged households (the base group) to face high housing costs. However, in Column 2 we see that once we control for income, this effect disappears. 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

Table 1: Characteristics of Households with and without High Housing Costs 2014-2016

	<i>High (>30%)</i>	<i>Not High (<30%)</i>	<i>Difference</i>
Income			
Share of Households:			
Q1	0.34	0.13	0.22
Q2	0.33	0.20	0.13
Q3	0.24	0.29	-0.05
Q4	0.09	0.38	-0.29
Mean disposable income (annual)	29,442	49,534	-20,092
Mean equivalised income (annual)	17,267	23,576	-6,309
Mean residual income (monthly)	1,466	3,544	-2,078
Mean equiv. residual income (monthly)	429	1,337	-909
Housing			
Mean HPTI	0.44	0.16	0.28
Share of private renters	0.45	0.22	0.23
Share in persistent poverty	0.17	0.10	0.07
Share in housing arrears	0.26	0.13	0.13
Share in utilities arrears	0.27	0.16	0.11
No. Obs.	1,155	6,028	

Source: Authors' analysis of SILC.

effect becomes insignificant. Interestingly, households where the head of household is divorced were 5 per cent more likely to face high housing costs, but this effect disappears completely once we control for income.

Table 2: Characteristics of Households with and without High Housing Costs (> 30 Per Cent of Income) 2014-2016

	(1)	(2)
Tenure		
Own-TPS	-0.157*** (0.0179)	-0.201*** (0.0136)
Rent-Market Price	0.0722*** (0.0183)	-0.0223 (0.0182)
Rent <Market Price	-0.0757*** (0.0241)	-0.154*** (0.0190)
Rent-LA	-0.171*** (0.00972)	-0.204*** (0.0131)
Age		
36-45	0.0162 (0.0125)	0.0110 (0.0117)

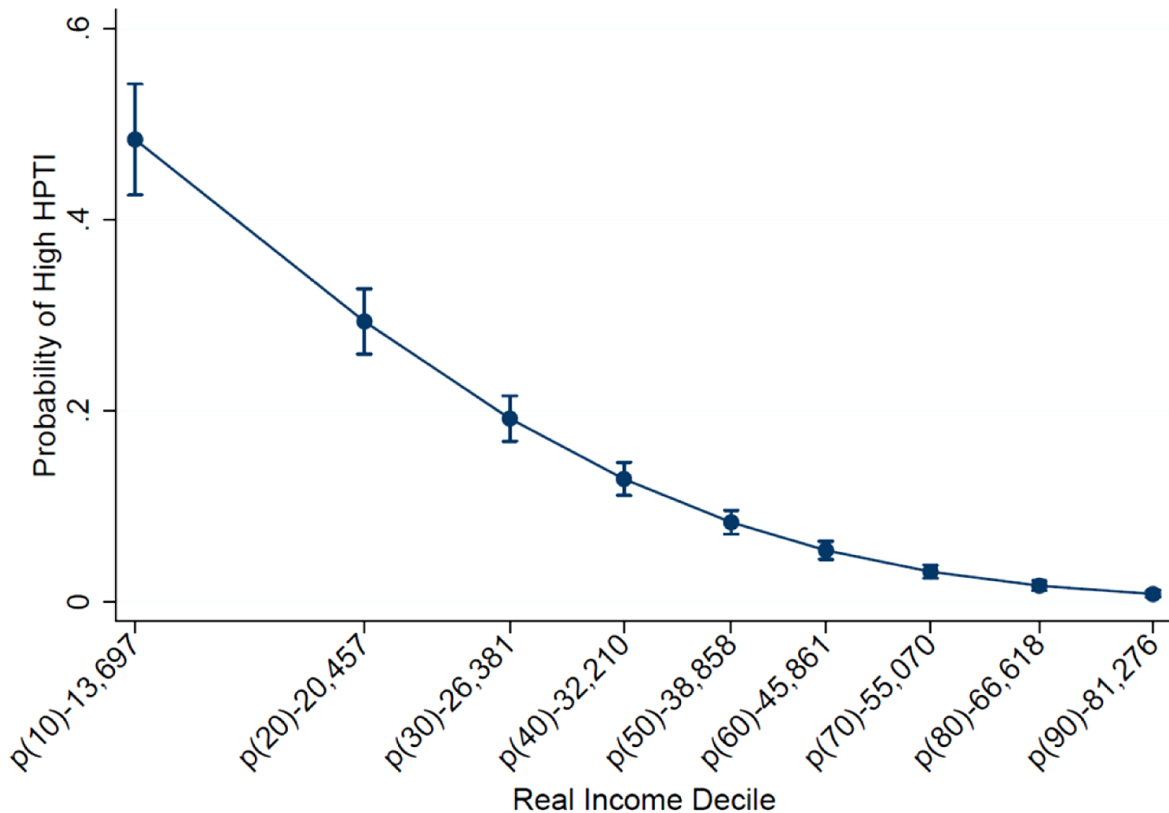
Table 2: Characteristics of Households with and without High Housing Costs (> 30 Per Cent of Income) 2014-2016 (Contd.)

	(1)	(2)
>45	0.0120 (0.0137)	-0.00982 (0.0120)
Household composition		
2+ adults	-0.180*** (0.0203)	-0.0188 (0.0144)
Marital Status		
Single	0.0414*** (0.0138)	0.0144 (0.0122)
Widowed	-0.00281 (0.0253)	-0.0310 (0.0202)
Divorced	0.0478** (0.0216)	0.00571 (0.0165)
Employment status		
Unemployed	0.161*** (0.0246)	0.0346* (0.0189)
Retired	0.117*** (0.0336)	0.0366 (0.0306)
Other	0.109*** (0.0142)	0.0152 (0.0117)
Urban/rural		
Rural	-0.0584*** (0.00958)	-0.0799*** (0.00941)
Arrears		
Arrears	0.0785*** (0.0148)	0.0502*** (0.0136)
Arrears-utilities	0.0164 (0.0146)	-0.00435 (0.0131)
Income		
Ln real income		-0.206*** (0.0164)
Observations	7,052	7,052

Source: Authors' analysis of SILC.

Given our interest in household income, in Figure 7 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 10th income percentile face approximately a 50 per cent likelihood of facing high housing costs, which falls rapidly to only 10 per cent at the median income.

Figure 7: Marginsplot - Probability of High Housing Costs at Real Income Deciles 2014-2016



Source: Authors' analysis of SILC.

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 equally as likely to face high housing costs as mortgaged households pre-crisis, but that they became less likely than mortgaged households to face high housing costs 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 8 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-

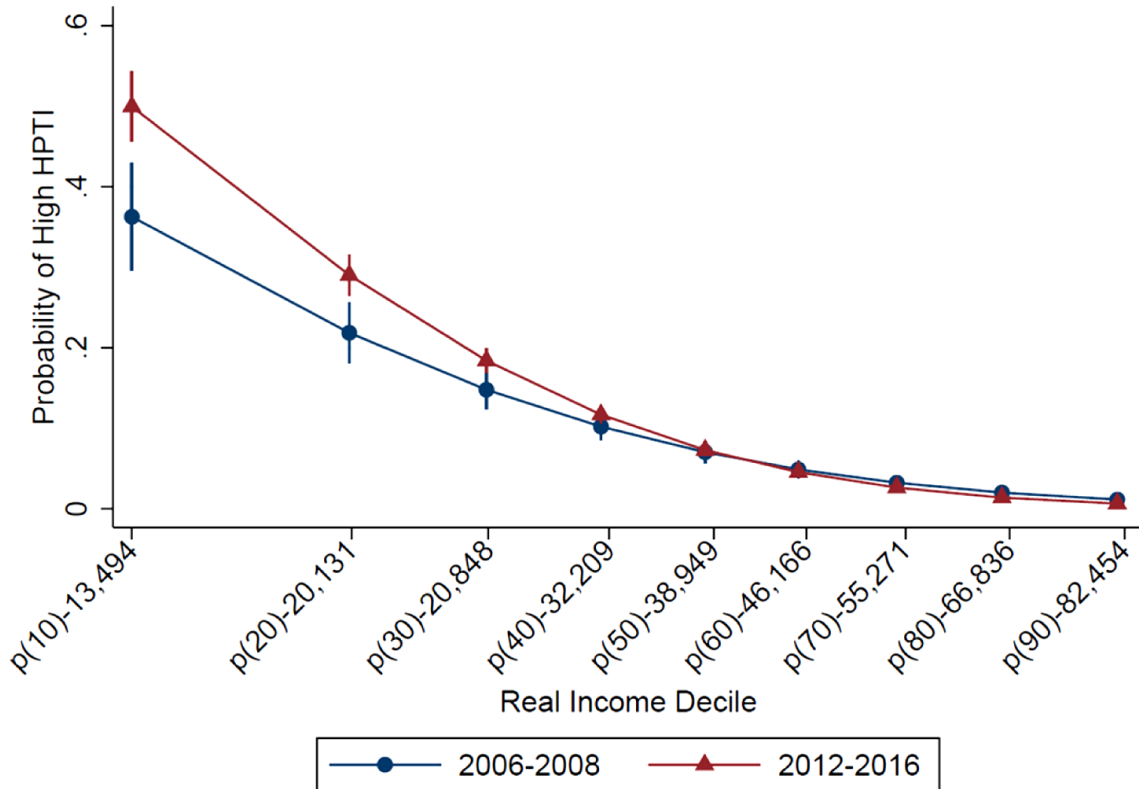
and post-crisis periods. We can see that the probability of a household at the 10th percentile of the income distribution facing high housing cost increased from approximately 33 per cent between 2006-2008 to 50 per cent between 2012 and 2016. Households at the median income saw little change in their likelihood of facing high housing costs between these periods. These developments can be reconciled to the previous data which show low income mortgage holders as those who faced a 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

	(1) 2006-2008	(2) 2012-2016
Tenure		
Own-TPS	-0.144*** (0.0294)	-0.209*** (0.0106)
Rent-Market Price	0.00638 (0.0210)	-0.0642*** (0.0128)
Rent <Market Price	-0.110*** (0.0250)	-0.186*** (0.0121)
Rent-LA	-0.173*** (0.0117)	-0.215*** (0.00897)
Age		
36-45	-0.0448*** (0.0137)	-0.000972 (0.00801)
>45	-0.0736*** (0.0135)	-0.0266*** (0.00816)
Household Composition		
2+ adults	-0.0534*** (0.0176)	-0.0282*** (0.0102)
Arrears		
Arrears	-0.0290* (0.0156)	0.0481*** (0.0117)
Arrears-utilities	0.0390* (0.0235)	0.00101 (0.00830)
Income		
Ln real income	-0.144*** (0.0135)	-0.192*** (0.00899)
Observations	17,657	17,657

Source: Authors' analysis of SILC.

Figure 8: Marginsplot - Probability of High Housing Costs at Real Income Deciles

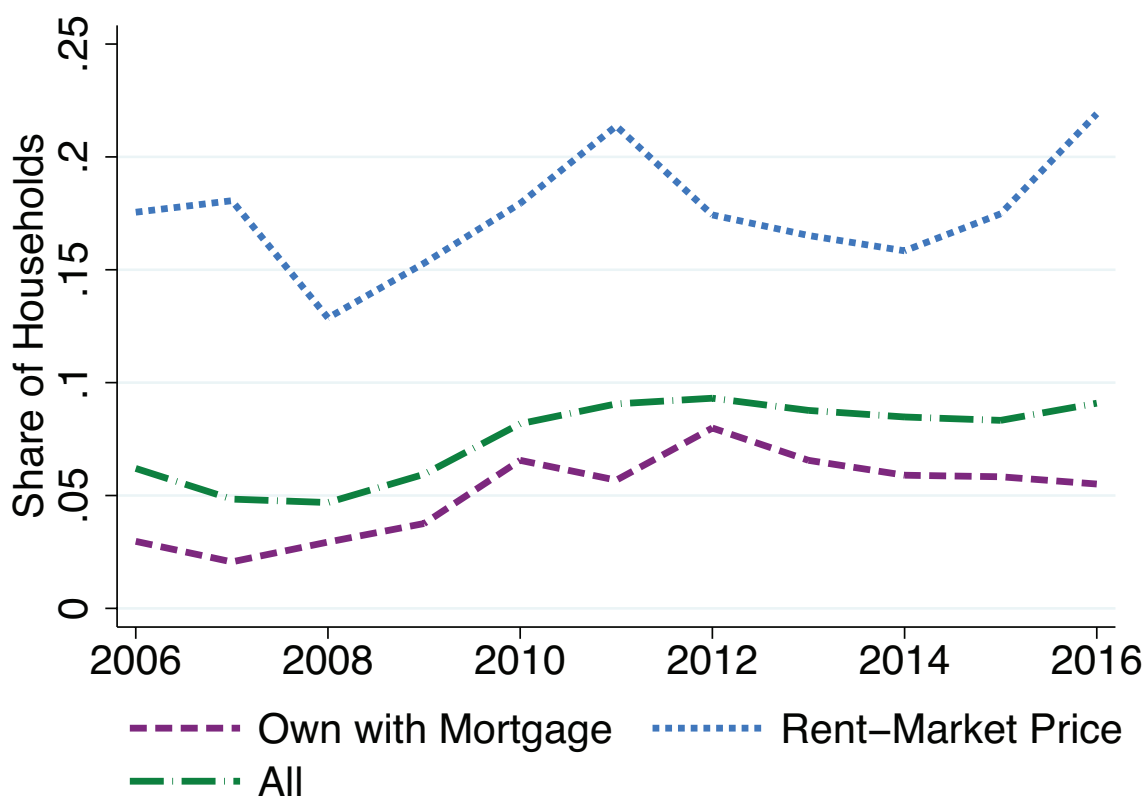


Source: Authors' analysis of SILC.

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 9: Share of Households in Ireland in 30/40 Group by Tenure

Source: Authors' analysis of SILC.

Figure 9 shows that the proportion of households with high housing costs according to this 30/40 definition increased from 6 to 9 per cent between 2006 and 2016. However, this masks significant differences across tenure types, as this included 22 per cent of private renters and only 5.5 per cent of mortgaged households in 2016.

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 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, 2014-2016. Households in the 30/40 group have a similar annual income to those in the bottom 40th percentile of the income distribution but 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 €763 per month compared to €1,352 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 54 per cent compared to only

Table 4: Characteristics of Households split by High Housing Costs and Income 2014-2016

	>30% & <p(40)	>30% & >p(40)	<30% & <p(40)	<30% & >p(40)
Age				
Mean age	43.01	41.53	49.77	41.77
Household Composition				
Share of Households:				
1 Adult	0.58	0.24	0.52	0.07
2+ Adults	0.42	0.76	0.48	0.93
Income				
Mean disposable income (annual)	17,296	43,134	18,981	59,196
Mean equivalised income (annual)	11,878	23,316	12,811	26,995
Mean residual income (monthly)	763	2,207	1,352	4,198
Mean equiv. residual income (monthly)	298	565	820	1,493
Housing				
Mean HPTI	0.49	0.39	0.15	0.16
Share of private renters	0.54	0.36	0.16	0.24
Share in housing arrears	0.31	0.21	0.19	0.11
Share in utilities arrears	0.34	0.19	0.27	0.13
No. Obs.	657	498	1,684	4,344

Source: Authors' analysis of SILC.

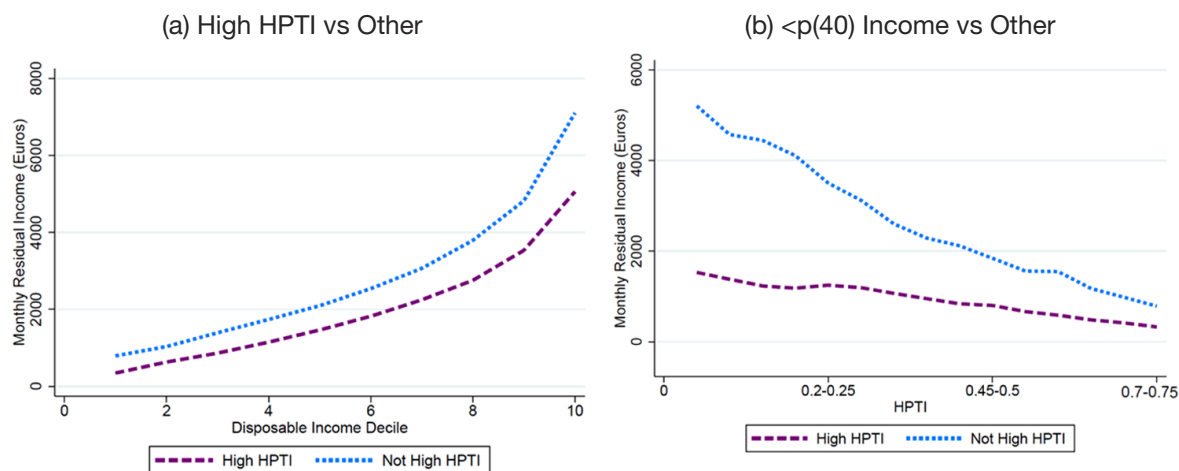
16 per cent for the low income households who do not face high housing costs, a group that contains the majority of Local Authority renters.¹³

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 greater than 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.

¹³ Ideally we would formally model the characteristics of households in the 30/40 group compared to those with housing costs greater than 30 per cent but with incomes above the 40th percentile, but due to insufficient observations we are unable to do so.

Figure 10: Residual Incomes, HPTI and the Income Distribution

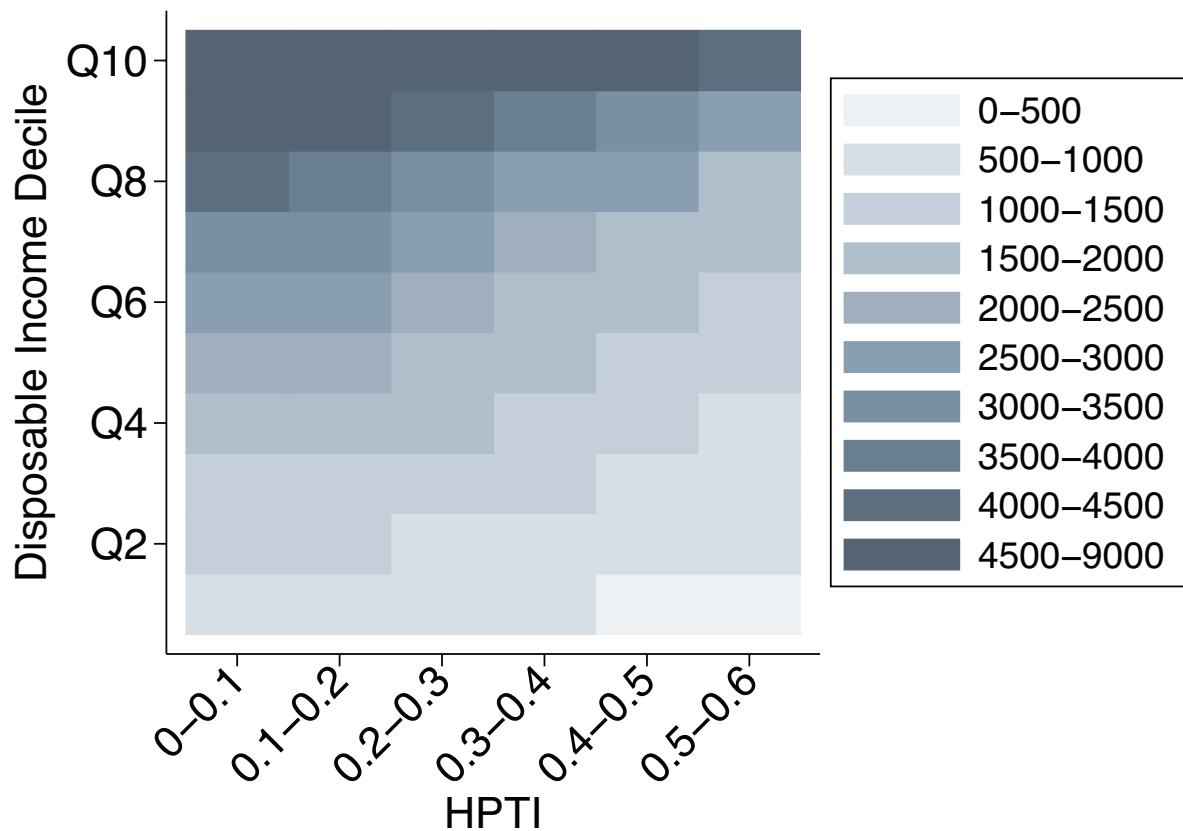
Source: Authors' analysis of SILC.

In Figure 10a we take households with housing payments greater than 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 after the 60th percentile of the income distribution that the mean residual income reaches €2,000 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.

In Figure 10b 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. While there is no obvious turning point, the 30 per cent threshold seems to be reasonable in the Irish context.

Figure 11 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 €1,500-€2,000 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 €1,500-€2,000 per month, and this is only possible for those at the 40th income percentile with HPTI less than 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-€1,000 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

Figure 11: Residual Income by Income Decile and HPTI

Source: Authors' analysis of SILC.

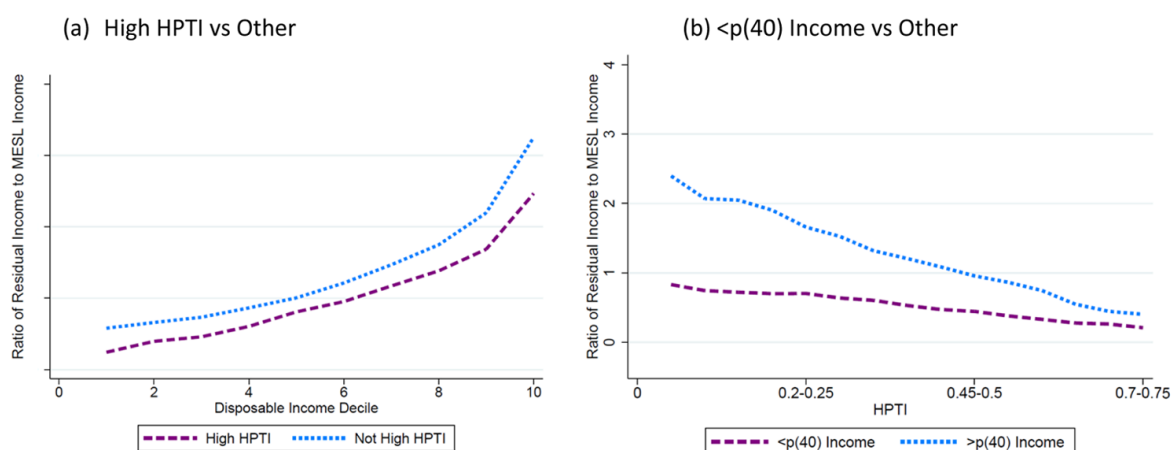
just above the 40th percentile. Indeed, circumstances do not appear to change considerably until we reach the 60th percentile.

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 parameterisation 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 six 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 subjective.¹⁴ In this paper we use the Vincentian MESL measure for

¹⁴ The 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.

illustrative purposes, but alternative measures could be used. If such a concept were to be parameterised for policy purposes, a fuller discussion of what constitutes required income would be warranted; this is outside the scope of this paper.

Figure 12: Ratio of Residual Income to Vincentian MESL Income, HPTI and the Income Distribution



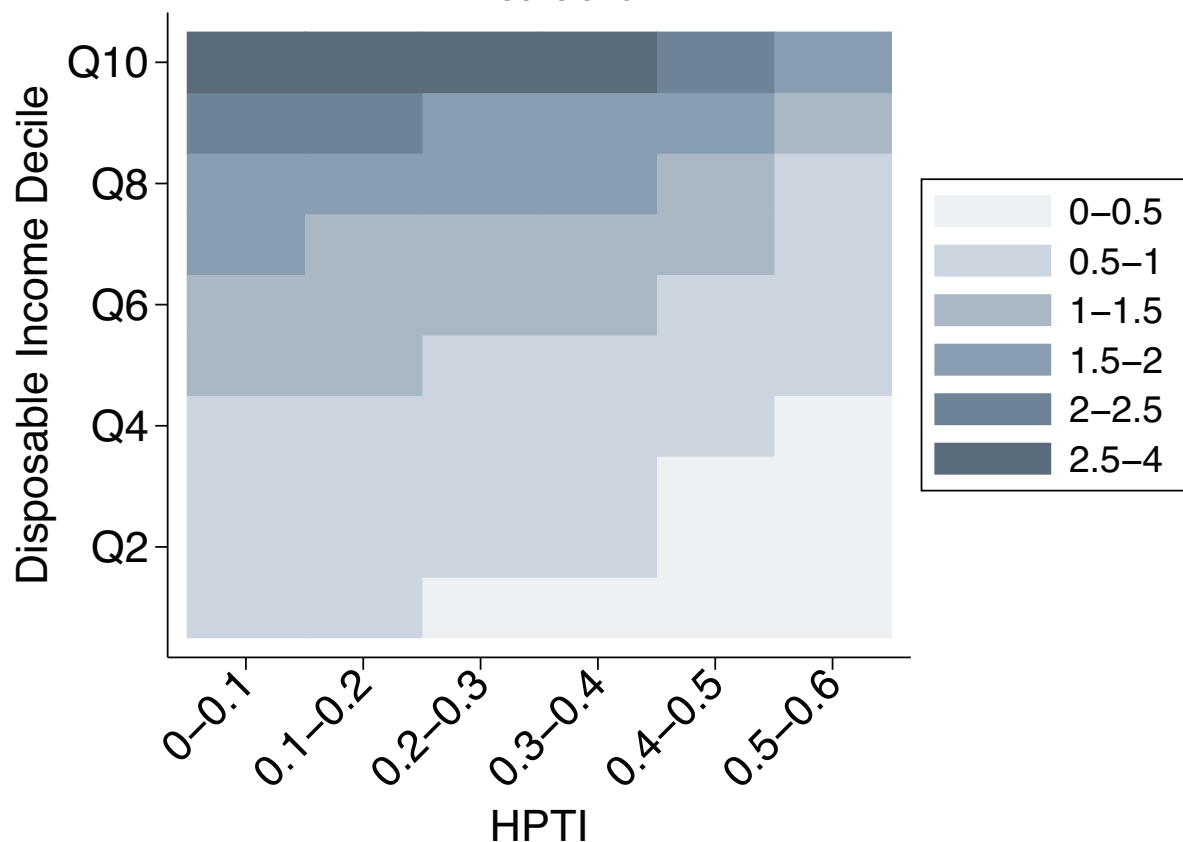
Source: Authors' analysis of SILC.

Figure 12b shows that households in the bottom 40 per cent of the income distribution have a residual income that does not cover the MESL income (ratio less than 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 12a 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 the 60th 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 12b 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 of 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 costs. 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 13 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 13 indicates that housing payment costs above 30 per cent of net income is a reasonable benchmark for households in the bottom 50 per cent of the income distribution because their residual income does not meet the Vincentian MESL income level (ratio less than 1). In addition, for households between the 50th and 60th percentiles of the income distribution, a HPTI of 40 per cent represents a more suitable benchmark. A step-wise definition capturing these two parameters would be supported by the empirical evidence, rather than a simpler 30/40 measure.

Figure 13: Ratio of Residual Income to Vincentian MESL Income by Income Decile and HPTI



Source: Authors' analysis of SILC.

V SUMMARY OF EMPIRICAL FINDINGS

In this paper we document developments in housing affordability in Ireland between 2006 and 2016, 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 III we establish that, on average, households were paying approximately one-fifth of their income on housing costs in 2016, only a very slight increase from 2006. 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 between two-fifths to more than one half of their income on average on housing costs, depending on tenure, as compared to one-fifth on average.

Furthermore, although we only observe a very modest rise in overall housing payment-to-income ratios between 2006 and 2016, in the mortgage market the repayment-to-income ratio has increased considerably for low income households between 2008 and 2016. 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 pressures.

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 IV 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 2016, 16 per cent of households had high housing costs, but this figure was double for private renters and more than 75 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 cost-to-income ratios 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 60th 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.

VI 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 greater than 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 definition 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 policymakers, 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, appending such 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 households.¹⁵

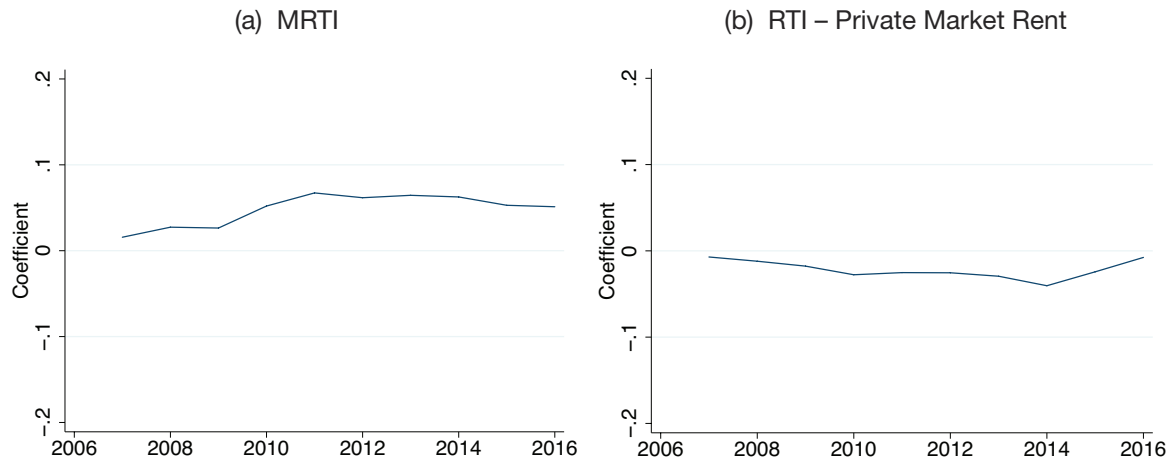
¹⁵ Horizontal equity requires that equals be treated equally, for instance, households with similar levels of resources and costs receive similar levels of subsidy. Vertical equity is the differential treatment of dissimilar households such that, for instance, subsidies are withdrawn as income increases.

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APPENDIX

Figure A.1: Coefficient Plots of MRTI/RTI over Time Controlling for Household Characteristics

Source: Authors' analysis of SILC.

