

## Rental markets, savings and the accumulation of mortgage deposits

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### Abstract

The ability of households to accumulate mortgage deposits has featured prominently in the public debate in Ireland in recent years, due in large part to increases in rental prices and house purchase prices which have been ongoing since 2011 in some markets. In this article we use publicly available information on rental and house purchase prices across sixteen geographic regions in Ireland to calculate the required down-payment for a First-Time Buyer (FTB) purchase of a three-bedroom property. We then utilise this down-payment requirement to estimate the number of years of saving required (*Time to Save*, *TTS*), given current prices, to purchase a three-bedroom property while renting a two-bedroom property, for a couple with no children. The Irish housing market can be divided into three segments: Dublin, where *TTS* as of 2016q2 is estimated between 2.5 and 4 years depending on area; other urban areas with *TTS* of 1 to 1.5 years; non-Dublin, non-urban areas where *TTS* is estimated below one year. Finally we show that, relative to mid-2014, *TTS* has increased in Dublin by between one and two years, and under one year in other areas.

<sup>1</sup> The views expressed in this paper are the views of the authors alone and not necessarily those of the Central Bank of Ireland or the European System of Central Banks. We thank Reamonn Lydon for providing percentile information from the national income distribution using SILC data. We thank Gordon Barham for his assistance in developing a tax calculation sheet for transforming gross to net incomes. We thank Yvonne McCarthy, Paul Lyons and participants at an internal seminar for helpful comments and suggestions. All remaining errors are our own.

## 1. Introduction

The ability of prospective First Time Buyer (FTB) house purchasers to accumulate down-payments has taken a prominent position in the public discourse in Ireland in recent times. At the heart of this discussion have been two issues: first a reduction in the capacity of some households to save due to a post-crisis recovery in rental values which has been increasing in momentum since 2013. This recovery was first felt in Dublin where year-on-year growth rates rose above five per cent in 2013q1 and peaked at 14 per cent in 2014q2. More recently many regions outside Dublin have experienced 10 per cent annual growth rates in each quarter in 2015 and 2016.<sup>2</sup> Second, the size of down-payments has been rising as house purchase prices grew rapidly in Dublin through 2013 and 2014 (with year-on-year price rises reaching 25.1 per cent in August 2014), and have undergone similar increases outside Dublin more recently (where year-on-year price increases of 8 to 11 per cent have been observed in every month from October 2014 to June 2016).<sup>3</sup> In the case of both the rental and house purchase markets, these price increases have occurred concurrently with historically low levels of supply in both markets, and have significantly outstripped average income growth.<sup>4</sup>

Policy changes brought about by the introduction in February 2015 of the Central Bank's macroprudential mortgage market measures have given rise to an additional factor affecting mortgage down-payments. These rules, hereon referred to as "the Regulations", imply that an FTB purchaser must provide a minimum down-payment of 10 per cent of the first €220,000 and 20 per cent of the purchase amount over €220,000 when purchasing a home with mortgage finance. This rule implies that FTB Loan to Value Ratios (LTV) are maximised between 80 and 90, depending on the price of the property in question.<sup>5</sup>

In this article we combine average rental price and house purchase price data across sixteen regions in Ireland to study the interaction between rental price developments, house price developments, and the ability of households to accumulate a down-payment via savings. We construct an index which we denote the *Time to Save (TTS)*, which measures the number of years it would take to arrive at the down-payment for an average house in each region given the current situation in rental and purchase markets. To calculate *TTS*, we use information on a range of possible household income levels, reasonable non-housing expenditure amounts, and the cost of renting an average two-bedroom property. While we do not deploy a formal econometric model, we are the first to our knowledge to explicitly allow for changes in local rental market prices to affect the ability of households to accumulate down-payment savings. It is important to acknowledge that all data sources only allow for a representation of a hypothetical average FTB purchasing household, and that in reality a wide range of additional circumstances that cannot be modelled here will alter a household's *TTS*.

The economics literature has provided some answers to questions around the interlinkage between house price developments, down-payment savings behaviour and access to homeownership. Research from the USA (Talha-Yalta 2016) points to the possibility of a bifurcation in savings behaviour whereby house price increases lead some households to stop saving completely, while other households "double down" and increase their savings as a percentage of monthly income in order to accumulate the down-payment for increasingly expensive houses. Talha-Yalta also shows that, where households save, they react to higher down-payments via both an increase in their savings rate out of income, and a longer duration of saving. The possibility of both reduced and increased saving as a result of changing down-payment requirements has been suggested empirically by research from

<sup>2</sup> All rental growth figures from authors' calculations using daft.ie rental report data.

<sup>3</sup> All house price growth figures taken from CSO house price index data.

<sup>4</sup> Annual income growth across all NACE economic sectors was 1.5 per cent between 2014/2015 according to the CSO's "Average Annual Earnings and Other Labour Costs" series from the EHECS survey.

<sup>5</sup> There are exceptions to this rule e.g. a proportion of a bank's total lending is allowable at levels above the Loan to Value and Loan to Income limits.

Yoshikawa and Ohtake (1988), Engelhardt (1994) and Chen, Kuan and Lin (2007).

On housing demand, Fuster and Zafar (2014) show that, using a hypothetical survey, the demand for homeownership increases from 44% to 61% to 72% as the down-payment requirement for a given house falls from 20 to 5 to 0 per cent, implying that the demand for housing is highly sensitive to changes in deposit requirement. Allen et al. (2015) show that in Canada, when down-payment requirements were loosened through regulation, borrowers responded by significantly increasing their leverage, purchasing more expensive houses and taking out additional mortgage finance. A large portion of previously restricted borrowers also entered the market once the required down-payment was lowered.

Engelhardt (1996) has also shown that those saving for a down-payment decrease their food consumption while still renters, providing suggestive evidence of a knock-on aggregate effect to economic activity from an increase in the time spent as a down-payment saver. Finally, both Chiuria and Jappelli (2003) and Mayer and Engelhardt (1996) have shown that as down-payment requirements rise (either due to increased house prices or due to higher proportional requirements set by lenders or regulators), households postpone house purchase in order to accumulate the required savings, thus entering the housing market at an older age.

The only economic research we are aware of that explicitly measures *TTS* reported by borrowers is Mayer and Engelhardt (1996) who show that in the USA in the 1990s, the average FTB purchaser saved for between 2 and 3 years to arrive at the down-payment required. Estimates from De Nederlandsche Bank (2015) suggest that a reduction in the LTV from 100 to 90 per cent in the Netherlands would increase the average *TTS* by two years.

While the above literature has dealt extensively with the behaviour of households saving for

down-payments, we believe that our current study is the first to explicitly examine how developments in the rental market are linked to the ability of prospective FTBs to accumulate their down-payment via savings. The aim of the current study is to provide a descriptive analysis of how *TTS* has evolved in recent years in Ireland, taking account of local variation in rental and house purchase prices, combined with changing proportional down-payment (DP) requirements. Given that housing costs represent the most important item of expenditure for renters (26.3 per cent, reported by the Central Statistics Office *Household Budget Survey* 2010), and the rental market is where most aspiring buyers are housed, the interaction between the rental and housing markets represents fertile ground for further research on how down-payment requirements affect access to homeownership.

A number of key findings emerge from our analysis. Firstly, we show that the absolute level of down-payment required to purchase a three-bed property in most areas outside Dublin has increased by less than €5,000 between mid-2014 and mid-2016. In Dublin however, there have been large increases in down-payments for the average three-bedroom house, with the down-payment in South County Dublin moving from €35,000 to €76,000 over the two years (with this change being the result both of increased regulatory down-payment requirements and house price increases). In other areas of the City and County of Dublin, increases of €10,000-€22,000 have been seen for the same property type over the same period. This highlights the different situation facing borrowers inside and outside Dublin.

Our estimates of *Time to Save (TTS)* indicate that for the average FTB purchaser income in 2015/2016 in each region, for a household purchasing an average three-bedroom property while renting an average two-bedroom property, savings times in 2016q2 are in line with those seen previously in academic research in the USA.<sup>6</sup> Our baseline estimates for the six regions within Dublin range from

<sup>6</sup> Mayer and Engelhardt (1996) have shown that the average *TTS* in the USA in the 1990s was between 2 and 3 years.

two and a half to four years, given current rent and purchase prices. In Dublin these figures have increased from estimates of between 1 and 2 years for 2014q2, reflecting increases in rents, purchase prices and proportional down-payment requirements. Outside of Dublin, the situation appears more favourable for a hypothetical household with the average 2015-16 FTB purchase income: in urban areas such as Galway and Cork and the Dublin Commuter Counties, *TTS* for 2016q2 is estimated at roughly 18 months, while in other non-urban areas *TTS* is estimated at less than one year.

We extend the analysis to observe fixed points in the national income distribution (60th and 80th for 2014, corresponding to gross annual household income of €50,853 and €83,678 respectively). If we take a hypothetical household at the 60th percentile of the national household income distribution, such a household has a *TTS* in most non-urban areas outside Dublin of under one year. In most areas in Dublin, however, savings cannot be accumulated at this income level in a period of less than five years. At the national 80th percentile income level, most regions' down-payment can be accumulated in under one year, while in Dublin the *TTS* is between one and a half and three years in most areas. The overarching message from this analysis is that households with the same income level will have different housing market experiences depending on their location.

Finally we construct a bilateral "moving matrix" which calculates a *TTS* for a household renting in each of the sixteen regions, saving to purchase a house in each of the sixteen regions. This analysis uncovers significant variation in savings durations across the country depending on desired location.

The paper proceeds with a discussion of the data sources and calculation methods (Section 2), followed by reporting of the euro value of down-payment requirements across regions and time (Section 3) and finally the *Time to Save* estimates (Section 4). Section 5 provides conclusions.

## 2. Data and Method

We obtain rental and house purchase price data from the website [www.daft.ie](http://www.daft.ie) (hereon "DAFT"). These datasets are reported on a quarterly basis since 2006q1, with the most recent report at the time of writing being 2016q2. Asking prices are reported across fifty-four geographic areas: all Dublin postcodes, all other cities outside Dublin, and all counties. For the purposes of the tractability of our analysis, data are aggregated in all cases to sixteen geographic regions which are regularly used by DAFT for aggregate analysis:

- Six within Dublin (City Centre, South City, North City, North County, South County, West County).
- Four other urban areas (Cork, Galway, Limerick and Waterford Cities).
- Six other non-urban areas (Dublin Commuter Counties, West Leinster, South-East Leinster, Munster, Connacht, Ulster).

In aggregating from the fifty-four DAFT areas to the sixteen regions outlined above, we use weights based on the number of properties in each area as of the 2011 national Census. The classification and weighting of each area is outlined in Appendix Table 1. Table 1 explains the counties and postcodes that fall into each region.

The aim of the analysis in this paper is to provide geographically-varying estimates of down-payment requirements and "*Time to Save*" (*TTS*). We choose two time periods upon which all calculations are based:

- 2014q2 (preceding the introduction of the Regulations on February 9th 2015).
- 2016q2 (the most recent time period at time of writing).

One caveat which must always be attached to the DAFT data is that they represent asking rather than closing prices for each property.

**Table 1: Regions used in analysis and their constituent postcodes and counties**

Region	Constituent areas
Dublin City Centre	Dublin 1, 2, 7, 8
North City	Dublin 3, 5, 9, 11, 13
South City	Dublin 4, 6, 6w, 10, 12, 14, 16, 18, 20, 22, 24
North County Dublin	
South County Dublin	
West County Dublin	
Cork City	
Galway City	
Limerick City	
Waterford City	
Dublin Commuter Counties	Kildare, Meath, Wicklow, Louth
West Leinster	Offaly, Laois, Longford, Westmeath
South-East Leinster	Kilkenny, Carlow, Wexford
Munster	Limerick County, Cork county, Waterford county, Kerry, Clare, Tipperary
Connaught	Galway county, Mayo, Roscommon, Leitrim, Sligo
Ulster	Cavan, Donegal, Monaghan

This means that it is possible that, in periods of market weakness, asking prices may in fact overstate the requirements facing potential FTB purchasers, given that sellers and landlords may have to accept offers below the quoted asking price where demand is sufficiently weak. Similarly, in a high-growth market, transacted prices may outstrip those advertised in cases where high demand leads to bidding among many potential buyers. Despite these potential drawbacks, we proceed to use the DAFT data as it provides a level of disaggregation, in terms of geography, property type and time variation that is unparalleled among Irish data sources.

### Calculation of Mortgage Down-Payments

In calculating down-payment requirements facing FTB purchasers, we impose the macroprudential FTB housing rules when analysing the 2016q2 data. However, for the 2014 data, we must measure market-set maximum LTV ratios given that there were no regulatory limits on borrower leverage at the time. We extend the method of Kelly et al. (2015) in order to calculate market LTV limits. This involves analysis of the distribution of

LTV among loans originated in a given quarter using Central Bank of Ireland Loan Level Data (LLD) for lenders covering over two-thirds of the total mortgage market as of end-2014. The LTV available to FTB borrowers is proxied by the top end of the observed LTV distribution, in this case the 98th percentile. In 2014q2, we calculate that a LTV ratio of 92 was available to potential FTB purchasers.

The down-payment requirement is then given by:

$$\text{Downpayment} = HP * 10\% \\ \text{if } HP \leq 220,000 \text{ \& } \text{year} \geq 2015$$

$$\text{Downpayment} = 22,000 + 20\% * (HP - 220,000) \\ \text{if } HP > 220,000 \text{ \& } \text{year} \geq 2015$$

$$\text{Downpayment} = HP * 8\% \text{ if year } < 2015$$

In calculating *Time to Save*, *TTS*, the following equation is deployed:

$$TTS = \frac{\text{Downpayment}}{(\text{NMI} - \text{Expenses} - \text{Rent})}$$

### Setting Income Levels

NMI is the household's net monthly income. In all calculations, NMI must be set by the researcher. In an ideal setting, information on average income in each of the geographic regions under study would be used. Such information is unfortunately not readily available in Ireland. We focus on three income levels in all analysis:

- (1) The average income in each region among observed FTB mortgage purchases that were "in-scope" of the Regulations. These are aggregated from granular Central Bank data on all mortgages issued since the introduction of the Regulations, as used in Keenan et al. (2016).
- (2) The 60th percentile of national gross annual household income in 2014 (most recent year for which the Survey on Income and Living Conditions micro data is available), equating to €50,853.
- (3) The 80th percentile of national gross annual household income in 2014, equating to €83,678.

The obvious advantage of income (1) is that these are the only income data available that vary at the level of aggregation corresponding to our rental and house price data. The disadvantage of using income (1) is that it by definition is restricted to the income of borrowers who have accessed the mortgage market in 2015 and 2016. However, given that we are calculating *TTS* as a function of *average* rather than *marginal* house purchase prices and rents, the average income among mortgaged borrowers is perhaps a more appropriate choice than an income level representing all households regardless of housing tenure. The advantage of taking income levels (2) and (3) from the national household income distribution is that in each case incomes are fixed across all regions, aiding comparability of *TTS* for a given household type. The disadvantage of looking at one fixed income point in isolation is that there are some regions which will have very few house purchasers around a particular percentile of the national distribution. For

example, an estimate of an extremely high *TTS* for a household at the 60th percentile of the national distribution may not be particularly meaningful if the majority of prospective FTB purchasers in some regions have income levels that are in the top national income quintile. Given that most mortgage originations are to households above the population median income (Lydon and McCann, forthcoming), we believe that the 60th and 80th percentiles of the overall population income distribution are useful representative benchmarks for mortgaged households.

In all cases, gross income levels are reported, given that this is what is referred to in the Regulations and on banks' mortgage applications. However for the purposes of *TTS* calculations, all gross incomes are turned to net incomes using a tax calculation sheet developed by the authors which assumes that the income of the household is evenly split across the two household members.

### Setting an appropriate level of non-housing expenditure

In order to measure the cost of living excluding rental payments for a typical household, we refer to external work carried out by experts at the Insolvency Service of Ireland (ISI). The ISI's "reasonable living expense" varies for couples and as a function of the number of children in the household. It provides a detailed calculation of a reasonable standard of living, which is used when lenders and borrowers are negotiating on the restructuring of distressed mortgage debt. The largest expenditure items included in the ISI calculation are food, social inclusion and participation, and private transport. Other items include clothing, personal care, communications, home heating and savings / contingency. We include this latter item, which is calculated by the ISI to be €60 per month, in the monthly expenditure amount given that it is reasonable to assume that a household will aim to save separately for "rainy day" events and one-off large expenditure items at the same time as accumulating savings for a mortgage down-payment. We choose as the representative prospective FTB purchaser a couple with one



car, no children and no special circumstances, which is attributed a monthly non-housing expenditure of €1,486.62 by the ISI.<sup>7</sup> A detailed breakdown of the expenditure items and amounts is given in Appendix Table 2.

Given that the ISI guidelines are aimed at households involved in debt restructuring arrangements and may be seen as a lower bound on the desirable level of expenditure for many households, we allow for a 20 per cent “top-up” to the ISI recommendation when modelling the behaviour of a household saving to purchase a home. This leaves the hypothetical household with a monthly expenditure of €1,783.94. It is crucially important to acknowledge that the aim of the analysis is to capture an average, hypothetical household in all cases, and that in practice families will have vastly differing sets of circumstances that will move *TTS* away from those estimated in our framework.

### **Caveats to the analysis**

Behind the *TTS* calculation are a number of assumptions that must be outlined before interpreting results:

1. Calculations are based on current rents and house prices, meaning that this is a static analysis. No attempt is made to embed future price growth in either market into the *TTS* estimates.
2. All households, regardless of location, are attributed the same ISI reasonable expenditure. No adjustment parameter is available to account for the fact that the cost of living is higher in Dublin than other locations, for example. Further, no correlation between income levels and expenditure is modelled: regardless of the income level being inputted into a *TTS* calculation, the ISI expenditure level is always constant.

3. All households begin the analysis with zero savings. In practice many households beginning to save for a mortgage down-payment are likely to have a positive savings balance, meaning that *TTS* for such a household will be lower than that estimated in this setting.
4. In our framework, all down-payments are accumulated via savings out of monthly income, i.e. none of the down-payment is acquired via a gift from parents or other third parties. This is likely a restrictive assumption given prior research. In the UK, recent research from Legal and General<sup>8</sup> suggests that 25 per cent of all mortgaged transactions are likely to involve a financial contribution from the parents of home purchasers, with the average contribution being £17,500. In the USA, Engelhardt (1996) has shown that 8.6 per cent of FTB purchasers finance their down-payment mostly or entirely from gifts from relatives. Mayer and Engelhardt (1996) further show that the average share of down-payments coming from gifts in the USA was 13.1 per cent in the early 1990s.

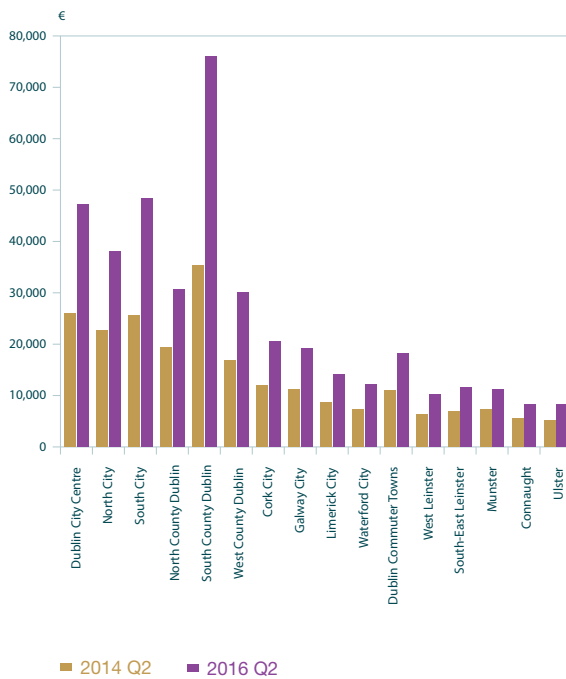
### **3. Down-payment requirements before and after the introduction of macroprudential housing policy**

We begin by reporting the minimum down-payment amount, in euro, required to purchase an average three-bedroom property. In Chart 1 we plot the calculated down-payment for a three-bedroom property in two time periods: 2014q2 and 2016q2. The most striking change across the two periods has been in South County Dublin where the down-payment requirement has increased by over €40,000 in the two years from mid-2014 to mid-2016 (a €35,280 down-payment increasing to €76,000). Increases of €10,000-€22,000 have also been observed in other

<sup>7</sup> Expenditure guidelines, published at July 2016, are contained at [https://www.isi.gov.ie/en/ISI/RLEs\\_Guidelines\\_July\\_2016.pdf/Files/RLEs\\_Guidelines\\_July\\_2016.pdf](https://www.isi.gov.ie/en/ISI/RLEs_Guidelines_July_2016.pdf/Files/RLEs_Guidelines_July_2016.pdf)

<sup>8</sup> “The Bank of Mum and Dad”, Legal and General, 2016. [http://www.legalandgeneralgroup.com/assets/portal/files/pdf\\_216.pdf](http://www.legalandgeneralgroup.com/assets/portal/files/pdf_216.pdf)

**Chart 1: Down-payment requirement, average 3-bed**



Source: daft.ie, authors' calculations.

Dublin areas. However, the picture is markedly different outside Dublin, where down-payment requirements have increased by less than €5,000 in the majority of other areas.

#### 4. "Time to Save": The accumulation of down-payments while renting

The down-payment values reported in Chart 1 form the basis of our calculation of *Time to Save (TTS)*. The calculation is given by the following equation:

$$TTS = \frac{\text{Downpayment}}{(NMI - \text{Expenses} - \text{Rent})}$$

Where all input factors have been described in Section 2.

Table 2 reports *TTS* estimates for each region using average house price and rental data as of 2016q2. In all cases, the ISI reasonable

expenditure amounts are imposed, with a 20 per cent top-up. The household is assumed to be renting a two-bedroomed property in the region while saving to purchase a three-bedroom property in the same region. In all cases, we begin with a household having zero savings balances. All *TTS* greater than 5 years are grouped together in a "5+" category.

Columns (2) to (4) report the geographically-varying input factors in the *TTS* equation: the down-payment in euros for a three-bedroom property, the average rent on a two-bed property and the average income among 2015-16 FTB purchasers. Columns (5) to (7) report the *TTS* estimates for three income levels outlined in Section 2.

Column (5) reports that, for a household with the average FTB purchasing income in each region in 2015 and 2016, *TTS* varies across the six Dublin regions between 2.5 and 4 years. In urban areas outside Dublin, average FTB incomes are associated with one and a half years of saving for a down-payment given current prices and rents. Finally, in non-urban, non-Dublin areas, *TTS* is estimated to be under one year.

The income and house price disparity between Dublin and the rest of the country is apparent in Column (6), where the national 60th percentile income of €50,853 is used in calculating *TTS*. At this income level, an average household will not accumulate savings in Dublin for a 3-bedroom down-payment in under five years. Outside of Dublin however, such a household has a *TTS* between two and three years in Cork and Galway cities and in the Dublin Commuter Counties, while *TTS* is around or under one year in non-Dublin non-urban areas.

At the national 80th percentile household income, all regions outside Dublin have *TTS* estimates of under one year, indicating that down-payment accumulation is not an important barrier to accessing mortgage finance for the average property at these



**Table 2: Time to Save (years) and key inputs across regions, 2016q2, under three income level scenarios**

Region	Input factors			TTS under three income levels		
	Down-Payment (3 bed)	Rent (2 bed)	Average FTB income	Average FTB Income	National 60th	National 80th
Dublin City Centre	47,169	1,435	72,966	3.82	5+	2.70
North City	38,125	1,261	72,151	2.72	5+	1.95
South City	48,314	1,316	80,709	2.76	5+	2.56
North County Dublin	30,600	1,105	58,872	3.31	5+	1.43
South County Dublin	76,000	1,533	109,728	2.64	5+	4.66
West County Dublin	30,000	1,138	58,197	3.53	5+	1.43
Cork City	20,600	898	63,381	1.47	2.68	0.86
Galway City	19,200	773	59,813	1.40	2.09	0.76
Limerick City	14,100	687	57,331	1.04	1.38	0.53
Waterford City	12,100	592	55,460	0.88	1.07	0.44
Dublin Commuter Towns	18,200	904	65,020	1.23	2.39	0.76
West Leinster	10,210	546	53,756	0.76	0.86	0.36
South-East Leinster	11,667	566	56,616	0.80	1.00	0.42
Munster	11,218	549	54,319	0.82	0.94	0.40
Connaught	8,319	476	54,142	0.58	0.65	0.29
Ulster	8,313	463	51,766	0.62	0.64	0.29

**Note:** Income levels for North, South and West County Dublin are submitted to the Central Bank in a combined "County Dublin" category. In order to attribute varying income levels to these three regions, we assign the ratio of each region's house prices to the combined County Dublin average house price to the average income across the three regions.

income levels. In Dublin, the *TTS* ranges between 1.43 years in the North and West county regions, to between 2 and 3 years in the City Centre and South City regions, to 4.66 in South County Dublin.

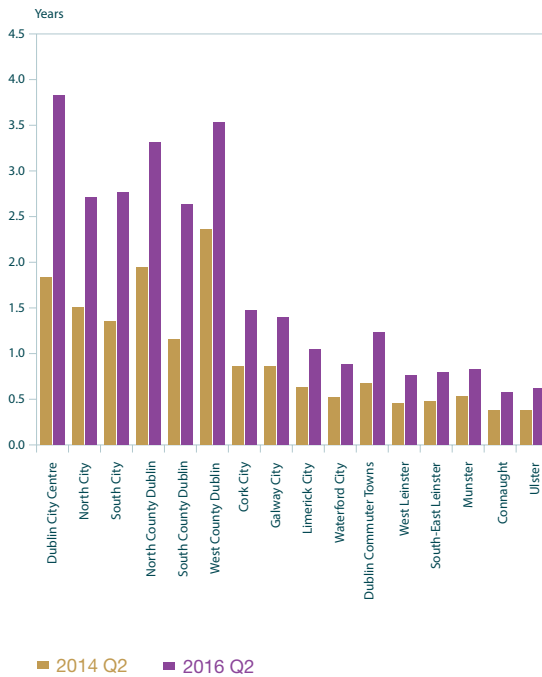
We extend the analysis by observing how *TTS* has changed over time. We calculate *TTS* using rental and purchase price information at two time periods as in Chart 1: 2014q2 and 2016q2. In all cases the same income level and the same ISI expenditure level are used.

Chart 2 reports that in most Dublin areas, the *TTS* levels seen in Table 2 represent increases of over one year relative to the situation in 2014q2. At that point, *TTS* in Dublin ranged between one and two years in all regions. In urban areas outside Dublin, *TTS* has increased by roughly six months in the two year period

under study. Increases have been smaller in non-urban, non-Dublin regions.

In Chart 3, we plot the *TTS* for a household at the national 2014 60th percentile (€50,853). In cases where *TTS* is calculated to be larger than five years, we cap the length of time at five years for expositional purposes. The figure shows that, in all areas of Dublin apart from the North and West County, 2016q2 rents are at a level that this hypothetical household cannot save to accumulate a housing down-payment in under five years. As with all data presented in this paper, the picture is markedly different outside Dublin. In all ten non-Dublin regions modelled, *TTS* has increased over the 2014 to 2016 periods, but in all cases the hypothetical household can accumulate the down-payment for a three bedroom property in under two and a half years, while renting a two-bedroom property in the same area. Increases in *TTS*

**Chart 2:** TTS; renting 2-bed, moving to 3-bed in same region. Average FTB in-scope income applied

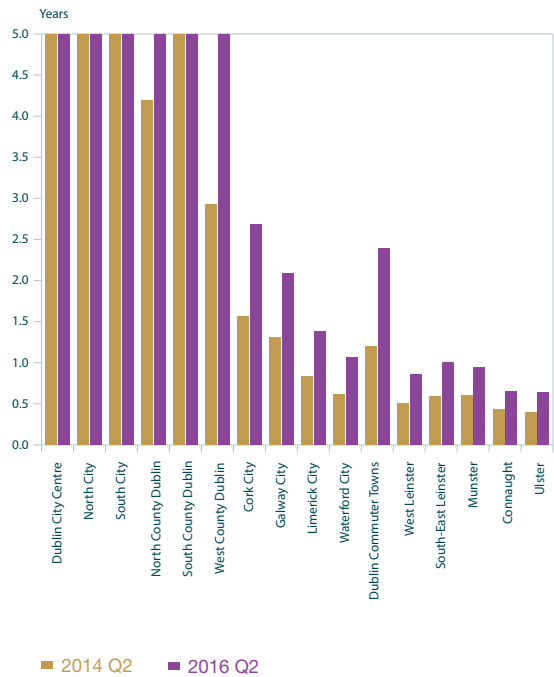


Source: daft.ie, authors' calculations.

over the two-year window of observation are in all cases below 6 months, implying that there has been only a small impact on the ability of such a household to save for a housing down-payment.

We now move to the 80th percentile household, earning €83,678. In Dublin, such a household can accumulate a down-payment for a three-bedroom property while renting a two-bed in the same area in under three years in all areas apart from South County Dublin (Chart 4). These numbers have all increased between 2014 and 2016, with the increase amounting to around one year of additional savings in many areas. Compared to the case of the household earning €50,853, there are substantial improvements in *TTS* estimates when moving twenty points up the household income distribution. Outside of Dublin, such a hypothetical household fares favourably, with *TTS* estimates of around six months in most areas in 2016. It must of course be acknowledged in all analysis in this section that households with income at the 80th percentile

**Chart 3:** TTS; Rent 2-bed, move to 3-bed in same area. National 2014 60th percentile income applied



Source: daft.ie, authors' calculations.

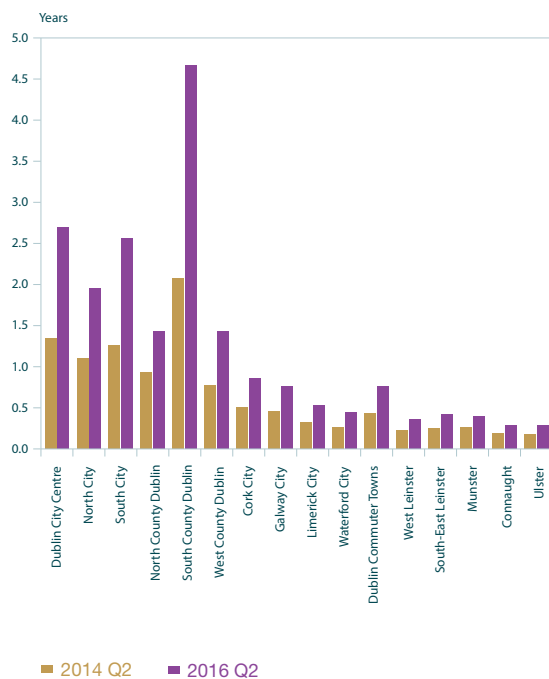
nationally are far more prevalent in Dublin than outside the capital.

#### 4.1 Bilateral Moving Matrices

The DAFT data also lends itself to the calculation of *TTS* for cases where households are living in one region while saving for a down-payment in another region. The full combination of possible moves is reported in a sixteen-by-sixteen transition matrix in Table 3. The vertical axis (Y) in all cases represents the region in which the household is renting a two-bedroom property, while the horizontal axis (X) represents the region in which the household wishes to purchase a three-bedroom property.

We apply the income level of the average 2015-16 FTB purchaser for each region in which the household is assumed to be renting. This means that, when analysing a household leaving Dublin City Centre to move to a 3-bed in North County Dublin, we attribute the income level observed in the data for house

**Chart 4:** TTS; Rent 2-bed, move to 3-bed in same area. National 2014 80th percentile income applied



Source: daft.ie, authors' calculations.

purchases in the City Centre rather than in North County, as the expenditure and rental conditions are faced while the household is based in the City Centre.

The way in which bilateral *TTS* is calculated implies that the highest pairwise *TTS* estimates will be for prospective purchasers who are living in relatively high-rent yet low-income areas, saving to move to areas with the highest absolute purchase prices. Similarly, the lowest *TTS* should be found for those with the highest income to rent ratios, saving to move to the areas with the lowest absolute levels of house prices.

In practice, the highest *TTS* are observed for those living outside South County Dublin saving to move there, as well as to those in West and North County Dublin looking to save to move to the City Centre and South City regions. For most bilateral pairs in non-Dublin, non-urban Ireland, the estimates imply

that households with average FTB purchaser income can save to move to the average three-bed property in under one year. In urban areas outside Dublin, estimates generally range between one and two years. For those with average non-Dublin incomes, living outside Dublin, saving for a property in the capital is generally estimated to involve a *TTS* of three to four years.

## Conclusion

Due to increases in rents, increases in house purchase prices, and changing proportional requirements following from recent Central Bank regulations, the ability of households to save to accumulate mortgage down-payments has featured prominently in public debate in Ireland in recent years. In this article we estimate an indicative *Time to Save (TTS)* for households renting two-bedroom properties while saving to purchase three-bedroom properties across sixteen regions in Ireland.

The estimates are based on average regional incomes among households accessing mortgages in 2015 and 2016, along with reasonable living expenditure amounts from the Insolvency Service of Ireland for a couple with a car and no children (with a twenty per cent top-up). The figures suggest that in Dublin, *TTS* as of 2016q2 was between 2.5 and 4 years depending on the locality for the average property. Such a savings time horizon appears to be in line with international evidence from academic literature in the USA. In other urban areas, *TTS* is estimated to be between 1 and 1.5 years, while in non-Dublin non-urban areas, *TTS* is under one year.

In looking at changes over time, we estimate that in Dublin over the period 2014q2 to 2016q2, *TTS* has increased by between one and two years depending on locality, while in the rest of the country *TTS* increases of between three and six months are more common.

**Table 3:** Time to Save (years) while renting a 2-bed property in area Y and accumulating down-payment for purchase of 3-bed in area X. Income set at the average 2015-16 FTB purchase income in the rental region (Y).

Renting In:	Moving to:															
	Dublin City Centre	North City	South City	North County Dublin	South County Dublin	West County Dublin	Cork City	Galway City	Limerick City	Waterford City	Dublin Commuter Towns	West Leinster	South-East Leinster	Munster	Connaught	Ulster
<b>Dublin City Centre</b>	3.8	3.1	3.9	2.5	5+	2.4	1.7	1.6	1.1	1.0	1.5	0.8	0.9	0.9	0.7	0.7
<b>North City</b>	3.4	2.7	3.4	2.2	5+	2.1	1.5	1.4	1.0	0.9	1.3	0.7	0.8	0.8	0.6	0.6
<b>South City</b>	2.7	2.2	2.8	1.7	4.3	1.7	1.2	1.1	0.8	0.7	1.0	0.6	0.7	0.6	0.5	0.5
<b>North County Dublin</b>	5+	4.1	5+	3.3	5+	3.2	2.2	2.1	1.5	1.3	2.0	1.1	1.3	1.2	0.9	0.9
<b>South County Dublin</b>	1.6	1.3	1.7	1.1	2.6	1.0	0.7	0.7	0.5	0.4	0.6	0.4	0.4	0.4	0.3	0.3
<b>West County Dublin</b>	5+	4.5	5+	3.6	5+	3.5	2.4	2.3	1.7	1.4	2.1	1.2	1.4	1.3	1.0	1.0
<b>Cork City</b>	3.4	2.7	3.5	2.2	5+	2.1	1.5	1.4	1.0	0.9	1.3	0.7	0.8	0.8	0.6	0.6
<b>Galway City</b>	3.4	2.8	3.5	2.2	5+	2.2	1.5	1.4	1.0	0.9	1.3	0.7	0.8	0.8	0.6	0.6
<b>Limerick City</b>	3.5	2.8	3.6	2.3	5+	2.2	1.5	1.4	1.0	0.9	1.3	0.8	0.9	0.8	0.6	0.6
<b>Waterford City</b>	3.4	2.8	3.5	2.2	5+	2.2	1.5	1.4	1.0	0.9	1.3	0.7	0.9	0.8	0.6	0.6
<b>Dublin Commuter Towns</b>	3.2	2.6	3.3	2.1	5+	2.0	1.4	1.3	1.0	0.8	1.2	0.7	0.8	0.8	0.6	0.6
<b>West Leinster</b>	3.5	2.8	3.6	2.3	5+	2.2	1.5	1.4	1.1	0.9	1.4	0.8	0.9	0.8	0.6	0.6
<b>South-East Leinster</b>	3.2	2.6	3.3	2.1	5+	2.1	1.4	1.3	1.0	0.8	1.2	0.7	0.8	0.8	0.6	0.6
<b>Munster</b>	3.5	2.8	3.5	2.2	5+	2.2	1.5	1.4	1.0	0.9	1.3	0.7	0.9	0.8	0.6	0.6
<b>Connaught</b>	3.3	2.6	3.4	2.1	5+	2.1	1.4	1.3	1.0	0.8	1.3	0.7	0.8	0.8	0.6	0.6
<b>Ulster</b>	3.5	2.9	3.6	2.3	5+	2.2	1.5	1.4	1.1	0.9	1.4	0.8	0.9	0.8	0.6	0.6

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## Appendix

**Appendix Table 1:** Aggregation of 54 DAFT areas to 16 regions for analysis

DAFT area	National Weight	Region
Dublin 1	0.0053	Dublin City Centre
Dublin 2	0.0032	Dublin City Centre
Dublin 3	0.0082	Dublin North City
Dublin 4	0.008	Dublin South City
Dublin 5	0.0093	Dublin North City
Dublin 6	0.0059	Dublin South City
Dublin 6W	0.0057	Dublin South City
Dublin 7	0.0118	Dublin City Centre
Dublin 8	0.0117	Dublin City Centre
Dublin 9	0.0106	Dublin North City
Dublin 10	0.0024	Dublin South City
Dublin 11	0.0128	Dublin North City
Dublin 12	0.0107	Dublin South City
Dublin 13	0.0086	Dublin North City
Dublin 14	0.0128	Dublin South City
Dublin 15	0.0298	Dublin North City
Dublin 16	0.0037	Dublin South City
Dublin 17	0.0009	Dublin North City
Dublin 18	0.01	Dublin South City
Dublin 20	0.0027	Dublin South City
Dublin 22	0.0092	Dublin South City
Dublin 24	0.0149	Dublin South City
North County Dublin	0.0397	North County Dublin
South County Dublin	0.02	South County Dublin
West Dublin	0.0195	West Dublin
Cork City	0.0331	Cork City
Galway City	0.0207	Galway City
Limerick City	0.0124	Limerick City
Waterford City	0.0102	Waterford City
Meath	0.0401	Dublin Commuter Belt
Kildare	0.0458	Dublin Commuter Belt
Wicklow	0.0298	Dublin Commuter Belt
Louth	0.0268	Dublin Commuter Belt
Longford	0.0085	Midlands
Offaly	0.0167	Midlands
Westmeath	0.0188	Midlands
Laois	0.0176	Midlands
Carlow	0.0119	South-East
Kilkenny	0.0208	South-East
Wexford	0.0317	South-East
Waterford county	0.0146	Munster
Kerry	0.0317	Munster
Cork county	0.08	Munster
Clare	0.0255	Munster
Limerick county	0.0294	Munster
Tipperary	0.0346	Munster
Galway county	0.0339	Connacht
Mayo	0.0285	Connacht
Roscommon	0.014	Connacht
Sligo	0.0143	Connacht
Leitrim	0.0069	Connacht
Donegal	0.0351	Ulster
Cavan	0.016	Ulster
Monaghan	0.0132	Ulster

**Note:** Weights are derived from the share of total national properties in the 2011 Census.



**Appendix Table 2: Components of ISI reasonable living expense**

<b>Category</b>	<b>Monthly Amount</b>
Food	369.37
Clothing	67.00
Personal Care	73.70
Health	49.39
Household Goods	30.71
Household Services	40.87
Communications	61.70
Social Inclusion & Participation	232.47
Education	38.13
Transport	238.26
Household Electricity	73.30
Home Heating	106.65
Personal Costs	1.93
Home Insurance	12.25
Car Insurance	25.82
Savings and Contingencies	65.07
<b>Total</b>	<b>1,486.62</b>