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An overview of the Irish housing market

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Abstract

Over the past five years, the cost of housing services has risen faster than incomes. It appears that the supply of housing has shifted since the crisis, leading to lower quantities being produced at any given price. There is no single element that is identifiable as the primary driver of this supply shift, however it appears that it may, at least partially, be due to the direct and indirect costs of construction. As a result of the muted supply response and strong growth in demand the gap between total demand and the size of the current housing stock has risen. Rent-to-income and house price-to-income ratios have increased as a result, both in absolute terms and relative to other markets, impacting the ability of individuals to save to purchase a home. More work is needed to determine the underlying causes of the supply shift.

1 Introduction

The past five years have seen strong growth in the Irish economy. Nominal average weekly earnings have increased by 14 per cent, and Ireland was one of the fastest growing economies in the EU over that period. However, housing costs have risen faster than incomes. Between June 2014 and June 2019, nominal house prices and rents on new tenancies both increased by over 40 per cent.[2]

The price growth reflects growth in demand for housing services, which has not been met by growth in supply. Despite the increase in house prices, the supply response has been muted. While supply is beginning to increase, fewer units were produced in 2018 than in 1995, when real house prices were less than 40 per cent of their current level.

This paper will provide a broad overview of the Irish housing market as it currently stands, both relative to history and to other markets. It will examine the size of the gap between the existing stock of housing and demand, and consider how this impacts affordability (in terms of both rents and house prices relative to incomes) in Ireland. It will also examine possible reasons for the muted supply response, with particular focus on the role of various components of housing cost.

Over the past several years, housing demand has increased substantially. Various measures of that demand, outlined in more detail in section 2, suggest that unfilled demand has increased over the past few years. While there is likely to be some level of unfilled demand in any economy, this number has grown since 2011. In addition, in the absence of other economic shifts there could be an increase in demand for housing from persons not currently living in Ireland if housing affordability improves relative to other locations.

Due to the location of job growth, the majority of new housing demand has been in urban areas. This shifting demand profile is not unique to Ireland, and has led to affordability concerns in a number of

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[1]The views presented in this paper are those of the authors alone and do not represent the official views of the Central Bank of Ireland or the European System of Central Banks. Email samantha.myers@centralbank.ie and gkennedy@centralbank.ie. We thank Edward Gaffney, Niamh Hallissey, Robert Kelly, Derek Lambert, Vas Madouros, Fergal McCann, Eoin O'Brien, Martin O'Brien and Kieran Sheehan. Any remaining errors are our own.

[2]Residential Tenancies Board, Rent Index 2019 Quarter 2. Statistics come from National New Rent Index.

other countries. Section 3 compares the current situation in Ireland, to those in other countries, along a range of criteria.

It is unclear why the current price levels and housing demand have not lead to a stronger supply response. There appear to be numerous small factors which all play a role, including changes in the relative value of using land for construction now relative to the future, limited economies of scale, post-crisis changes to the competitive landscape, urbanisation and certain components of construction costs (see Section 4). However, it remains difficult to completely reconcile these small changes with the large, sudden shift in the supply response.

Section 5 concludes with a brief discussion of the ways in which the supply shift interacts with the growth in demand, and the implications for home buyers. More work is needed to determine the underlying causes of the apparent shift in the supply curve in recent years and what underpins the estimated costs of construction in Ireland.

2 The housing stock and the demand for housing services in Ireland

The stock of housing in Ireland, as elsewhere, is relatively fixed in the short term. This is primarily because housing is a durable good that takes time to build, although it can also reflect other market frictions such as barriers to entry in the construction industry. Growth in the demand for housing services can therefore lead to a shortage, especially if new building is suppressed over an extended period. In the case of Ireland, between 2011 and 2019 only one dwelling was produced for every 7-person increase in the population. Consequently, the quantity of available housing per person declined over this period.

Table 1 outlines the total growth in the available housing stock since 2011. With the exception of the rate of obsolescence and the minimal estimated vacancy rate (which have both been estimated from the data), the 2011-2016 data has been derived from the 2011 and 2016 censuses. The 2016-2019 data use the estimates obtained from the 2011-2016 data, as well residential property completions data, to estimate the current size of the housing stock.

At most, there are currently around 1.86 million habitable dwellings in Ireland that can be occupied on a permanent basis (table 1). This estimate assumes that the vacancy rate can be reduced to 6 per cent[3], compared with country-wide levels of 9.4 per cent in 2016. Note that holiday homes, are excluded from this estimate, as in many cases regulation does not permit their being used as permanent residential accommodation.[4] Nevertheless, some of the remaining estimated stock of habitable dwellings may not be useable. For example, vacant dwellings include nursing homes and hospitals, and determination of habitability is based on a limited set of criteria.[5]

Since housing demand is a function of demographics, individual household preferences, current income, job opportunities, cost of and access to credit and expectations for the future, it tends to change more quickly than supply. It is therefore difficult to map out a demand curve for housing, or give clear quantitative estimates of the effects of any price change on overall demand.

However, it is possible to obtain a rough estimate of the level of the unfilled housing demand. These estimates can be obtained by considering the number of households who are 'latent' (prevented from forming) and the number who are seeking to change location to access labour markets at the current level of supply and price. For the purpose of estimating the number of such households, we

[3]6 per cent is considered to be a normal vacancy rate in a functioning market, see Department of Housing, Planning, and Local Government National Vacant Housing Reuse Strategy 2018-2021.
[4]Holiday homes are generally classified and regulated as commercial property, see Department of Housing, Planning, and Local Government, 2019, New Regulation of Short-Term Letting FAQs.
[5]CSO, Census of population 2016 – Profile 1 Housing in Ireland. Dwellings are considered to be habitable if census enumerator determines that roof, doors and windows were intact. No indication was made as to whether dwelling contained plumbing, had access to electricity, or was subject to regular flooding, for example.

identify three sources of additional demand for housing: household formation, urbanisation and future international migration, and attempt to estimate each.

Table 1: Number of available dwellings, 2011-2019

Item		2011-2016		2016-2019
Total housing stock at start of period		1 994 845		2 003 645
Total new dwellings built[1]	+	29 319	+	49 492
		2 024 164		2 053 137
Dwellings obsolete[2]	-	20 519*	-	12 311*
Total housing stock at end of period		2 003 645		2 040 826
Less holiday homes (start of period)	-	59 395	-	62 148
		1 944 250		1 978 678
Estimated natural vacancy rate (6 per cent)[3]	-	116 655*	-	118 721*
Available housing at end of period		**1 827 595**		**1 859 958**
Difference between actual (2016) and estimated natural vacancy	-	60 308	-	61 376*
Stock in use at end of period		**1 767 287**		**1 798 582**

Sources: CSO, Central Bank of Ireland Calculations.
Notes: Figures are April to April. *Item is an estimate. Remaining data have been obtained from the census. [1]Data are calculated from total completions over the period. [2]Rate calculated based on change in total stock less completions for 2011-2016, and applied to 2016-2019 period on a pro rata basis. This is a conservative estimate, as obsolescence is likely to increase with size of housing stock. [3] Normal vacancy rate in a functioning market, see Department of Housing, Planning and Local Government National Vacant Housing Reuse Strategy. Likely to be a conservative estimate, since many vacant dwellings are likely not habitable.

2.1 Rates of household formation

There were 1.7 million households in permanent dwellings in Ireland in 2016. However, the number of existing households does not reflect total demand for housing. People may choose to live in larger than desired households in order to acquire affordable housing. These types of households represent latent demand for additional housing, and we will refer to them as 'latent households'.

There are some indications that the number of latent households has been growing. For example, the number of adults continuing to live with their parents has risen since 2011. In addition, the number of persons aged 25-34 who are registered as heads of household has fallen.[6]

There are a number of ways to estimate the total demand for household formation. For example, we could extrapolate from the average number of people per household in Europe (2.3). This would give an estimate of over 2 million households, 331,000 more than existed in 2016, and more than the estimated maximum housing supply.

However, this metric does not take into account the relatively large number of children (under 18) per household in Ireland, which is higher than the rest of Europe. Longevity, marriage and cohabitation rates, and other factors also vary between countries.

Therefore, in order to estimate the total household formation demand, we have instead taken the average number of people per dwelling who are living in household structures that are unlikely to include latent households. This includes individuals, married and cohabitating couples, and singles or couples with children. Across these types of households we see approximately 2.64 people per dwelling in 2011 and 2016. By comparison, including households of all types (for example

[6]Conefrey and Staunton, 2019. Population Change and Housing Demand in Ireland.

households with unrelated adults and households comprising 2 or more families), people per dwelling rises to 2.75, the second largest in the EU.

Based on this estimated occupancy rate, the estimated total demand for household formation in 2011, including demand from latent households was 54,280 higher than the actual number of formed households. There is likely to be some level of unfilled demand in all points in time in any economy, and it is difficult to determine what the equilibrium number of latent households will be in a functioning housing market. However, it is clear that the number of latent households has grown significantly since 2011. As table 2 outlines, based on changes in population, this estimate has increased to over 100,000 households as of June 2019.[7]

Table 2: Growth in number of desired households, 2011-2019

Item		2011-2016		2016-2019
Natural population growth		195 400		94 400
Net migration	-	30 800	+	87 500
		164 600		181 900
Persons per household[1]	/	2.64	/	2.64
Increase in households		62 348		68 902
Households at start of period	+	1 654 208		1 702 289
Total including estimated latent households		1 716 556		1 771 191
Total households at end of period[2]	-	1 702 289	-	1 739 476[2]
Growth in latent households		**14 267**		**31 715**
Latent households at start of period[3]	**+**	**54 280**	**+**	**68 547**
Latent households at end of period[3]		***68 547***		***100 262***

Source: CSO, Central Bank of Ireland calculations.
Notes: [1]Persons per household based on actual persons per dwelling in 2016 in households comprised of individuals, married and cohabitating couples, and singles or couples with children. [2]The number of households at end of period is estimated based on total households plus all completions less expected obsolescence. [3]Latent households comprise people who choose to live in larger than desired households in order to acquire affordable housing, and are an estimate.

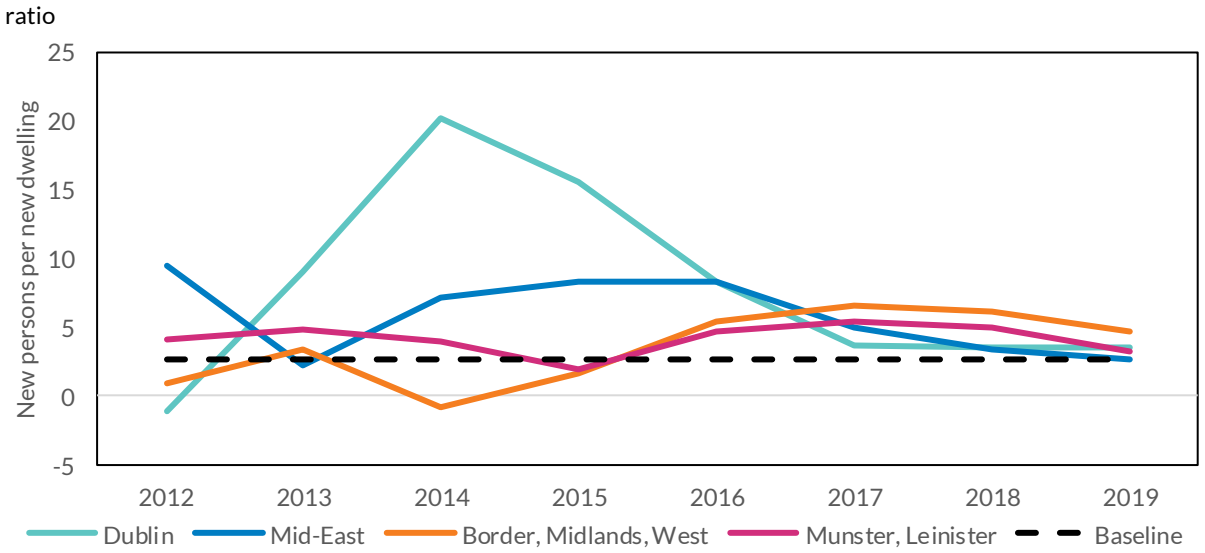
Overall, the number of latent households has increased by around 46,000 since 2011, while the number of available vacant dwellings (see table 1) has remained broadly constant. This suggests a growing imbalance between the stock of housing available and the underlying demand for separate dwellings.

These aggregate figures are likely to mask significant regional variation. Within Ireland, it is possible to map the location of the strongest demand pressures. By comparing the number of new persons to the number of new dwellings, we can see where supply is becoming more or less constrained. If the ratio of new people to new dwellings exceeds the existing occupancy rate, supply is becoming more constrained. If the number falls below the existing occupancy rate, supply constraints in that year are easing.

The growth in demand appears to have exceeded the growth in supply in most years in most parts of Ireland since 2012. The strongest increases in demand pressure appear to have been in the greater Dublin area between 2013 and 2017, but these appear to have eased somewhat. Figure 1 shows that the number of new people in Dublin in 2014 exceeded the number of new dwellings by a factor of nearly 20. More recently new demand relative to new supply has increased outside the greater Dublin area, although not to the same degree. While current production in Dublin and the Mid-East is now close to 1 dwelling per 2.75 people, previous low rates of production have not been compensated for, and any gap between demand and the total stock arising from that period persists.

[7]Conefrey and Staunton (2019) using a different methodology obtain a slightly higher figure of around 132,000 dwellings, but do not take into account possible changes in vacancy rates.

Figure 1 New persons per new dwelling, 2012-2019

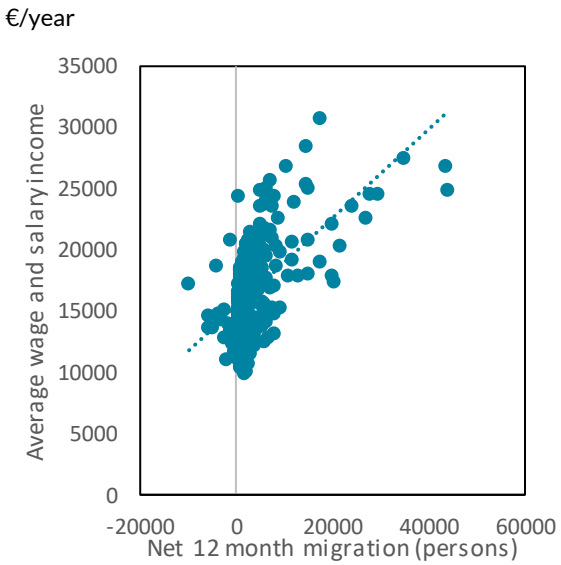


Source: CSO, Central Bank of Ireland Calculations
Note: Baseline refers to the average number of persons per household across Ireland in the 2011 census. Where the ratio of new people to new dwellings exceeds the baseline occupancy rate, supply is becoming more constrained. Where the number falls below the baseline occupancy rate, supply constraints in that year are easing.

2.2 Urbanisation and the demand for relocation

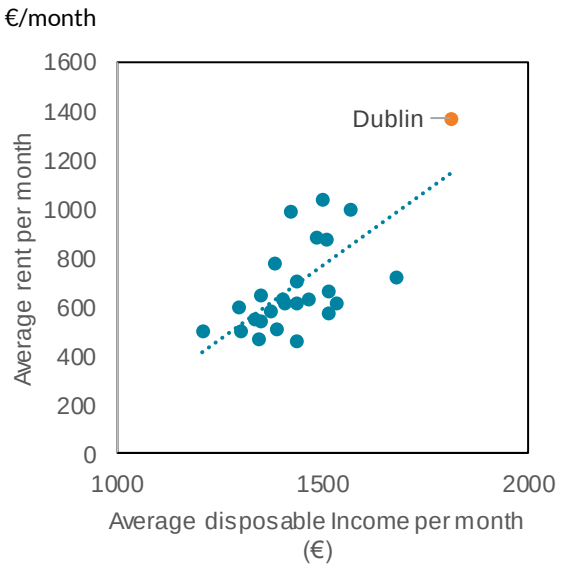
When deciding where to locate, households within Ireland will trade off their desired amenities and cost of housing with access to employment and wages. Consequently, wage growth (either in absolute terms or relative to other locations) can drive migration. Figures 2 and 3 indicate that there is a clear correlation within Ireland between cross-county migration and wages, and between county-level rents and disposable incomes, consistent with this model. In the same way, any decrease in the quality-adjusted cost of housing services (again, either absolutely or in relative terms) given a fixed wage profile and amenities can induce further migration across locations within Ireland.

Figure 2: Income from salaries and wages and total migration



Source: CSO, Central Bank of Ireland calculations.
Notes: Net migration over a 12-month period relative to household income from salaries and wages. Data are county level, from years 2001-2016 and are pooled.

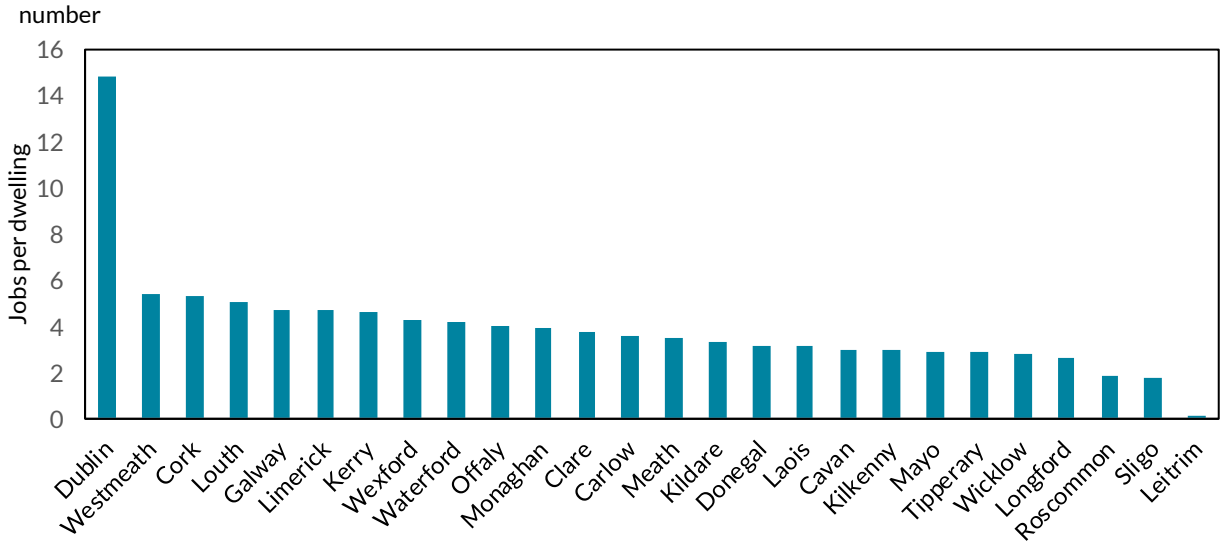
Figure 3: Average disposable income and average rent per household (2016)



Source: CSO, Central Bank of Ireland calculations.
Notes: Disposable income per person per month (excluding rent) relative to average rent for all properties in each county. Data is for 2016

As figure 4 demonstrates, housing supply has not kept pace with job growth in most parts of Ireland. However, the growth is largest in Dublin, where the number of jobs created between 2011 and 2017 exceeded the number of dwelling completions by a factor of 15. The cost of housing services in the greater Dublin area therefore reflect, in part, the expected incomes of households seeking to relocate to Dublin to find new employment, as well as the incomes of those already living there.

Figure 4: Changes in housing supply and job growth in Ireland by county (2011-2017)



Source: Central Statistics Office, Central Bank of Ireland calculations.
Note: Changes calculated from 2011 to 2017.

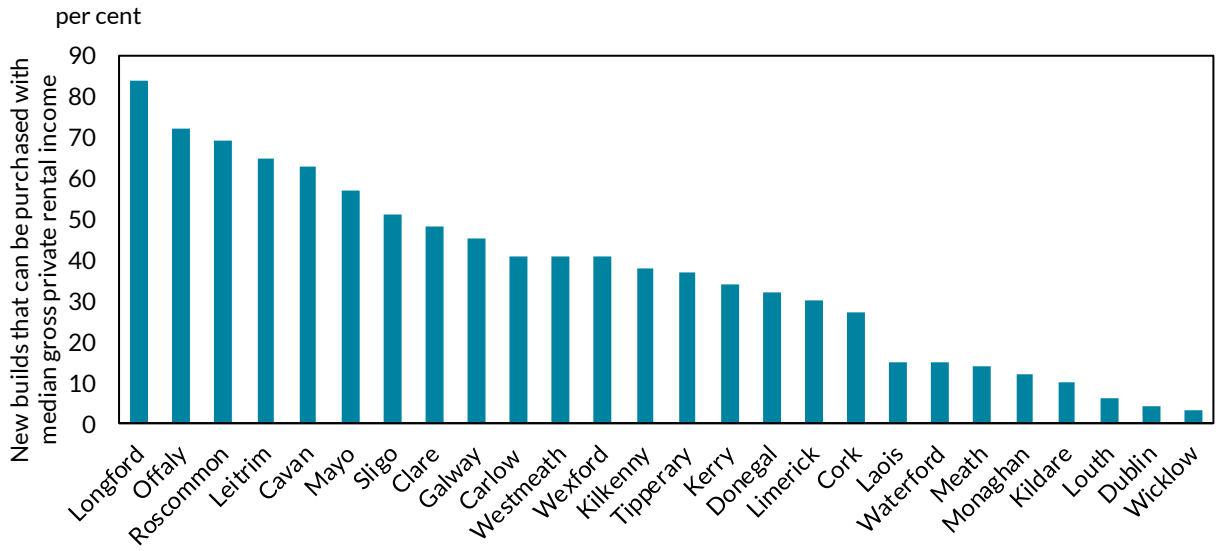
Consequently, the greater Dublin area has, in recent years, experienced the largest degree of price and rent pressures relative to incomes. Figure 5 shows that in 2016, the median household renting privately in Dublin, Louth or Wicklow could afford fewer than 10 per cent of the new dwellings in their county in that year when borrowing within the macroprudential measures.[8,9] In contrast, in Longford, Offaly or Roscommon, the median private market renter could afford over two thirds of new dwellings while borrowing within the limits set by the macroprudential measures.

Job growth over the short-to-medium term is likely to be heavily concentrated in the services sector,[10] which benefits from urbanisation, as co-located services businesses tend to function more efficiently. Consequently, further, job growth is expected to continue to be concentrated in urban areas, and Dublin specifically, for the foreseeable future.

Despite job growth being primarily urban, the Irish population remains relatively rural compared with other developed countries. Across the OECD as a whole, the urbanisation rate is 79 per cent, compared with 63 per cent in Ireland.[11] To accommodate that level of urbanisation at a household size of 2.65 people per dwelling, Ireland would need around 300 000 additional dwellings in urban areas (see table 3). The alternative is longer commute times, as people commute to urban jobs from rural housing.

[8]Analysis assumes that the median renter does not have access to an allowance. Access to an allowance will increase the proportion of dwellings that are affordable. For details on the mortgage measures and allowance, see Cassidy and Hallissey, 2016 The Introduction of Macroprudential Measures for the Irish Mortgage Market.
[9]Calculation is based on median private renter income by county from CSO Census of Population 2016. This value is compared with prices of all new homes sold in 2016 at market prices, taken from the Residential Property Price Register.
[10]Central Bank of Ireland, Quarterly Bulletin No. 4 2019.
[11]United Nations, World Urbanization Prospects.

Figure 5: Proportion of new build properties that can be purchased by median private rental household at 3.5 times gross income with a 10 per cent deposit (2016).



Source: Central Statistics Office, Central Bank of Ireland calculations.

Table 3: Growth in number of desired households if Ireland moved to European average urbanisation rate, 2011-2019

Item		2019
Total population		4 921 500
Total urban population at European rate of 79%		3 887 985
Persons per household[1]	/	2.64
Total desired urban households		1 472 722
Natural vacancy rate of 3.6 per cent	+	88 363
		1 561 085
Urban housing stock 2016 (less holiday homes)	-	1 218 498
		342 587
New completions in urban areas 2016-2019	-	33 862
Obsolescence (2909 dwellings/yr)	+	8 726
Gross increase in urban housing stock required		***317 451***

Source: Central Statistics Office, Central Bank of Ireland calculations.
Note: [1]Persons per household based on actual persons per dwelling in 2016 in 'unconstrained' households. Unconstrained households are defined as individuals, married and cohabitating couples, and singles or couples with children. The number of households at end of period is estimated based on total households plus all completions less expected obsolescence.

2.3 Future migration and demand from overseas

Ireland is heavily integrated into European and broader international labour markets. Just as households choose where to locate within Ireland on the basis of the trade-off between employment, amenities and house prices, so do households from within these broader labour markets. There is strong evidence that many households will relocate to seek employment or wage increases, particularly if house prices are lower.[12] Consequently, economic developments and the cost of housing services in other major cities, especially in Europe, can have flow-on demand effects for Ireland.

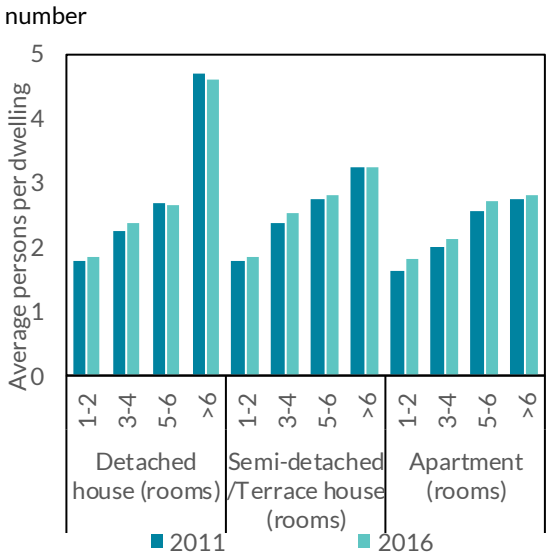
[12]Duffy, et al 2005, Rising house prices in an open labour market; Birgitta, and Taylor, 2012 , Differences in opportunities? Wage, employment and house- price effects on migration.

Over the past 5 years, there has been net inward migration of 110,000 persons, amounting to 4.5 per cent of the labour force.[13] Unfortunately, this is the most difficult group to estimate. Existing migrants are already incorporated into the demand measures outline in sections 2.1 and 2.2. Future migrants are expected to demand around 11,000 new housing units each year until 2040[14] but it is not clear how elastic this measure is with respect to housing prices.

Many of these migrants are short-term and live in non-family households[15], so they may be more likely to seek small, rental accommodation. An increase in this group relative to others may therefore also affect the *types* of dwellings that are demanded. For example increases in crowding have been largest for 1-2 room apartments, where the number of persons per dwelling increased by 11 per cent (from 1.6 people to 1.8 people) between 2011 and 2016 (see figure 6). This is despite the fact that 1-2 bedroom dwellings already contained the largest number of people per bedroom.

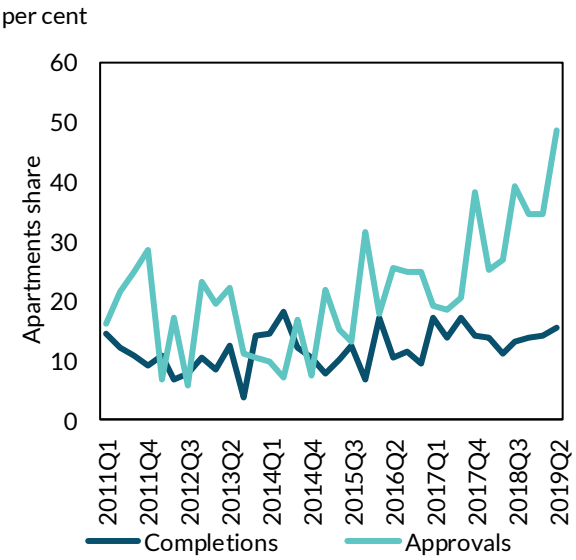
The increase in crowding may also partially reflect the smaller stock of apartments in Ireland. Across the EU, 42 per cent of persons live in apartments, compared with fewer than 10 per cent of people in Ireland. [16] While the proportion of planning permissions for apartments is increasing relative to houses, the proportion of completions has been steady (see figure 7). This is likely to be partly due to the time it takes to construct new dwellings after permissions are granted, although at any given point the transition rate from planning permissions to dwelling completions is uncertain.

Figure 6: Changes in average persons per dwelling by type of dwelling, 2011-2016



Source: CSO, Central Bank of Ireland calculations.

Figure 7: Share of apartments in construction of new dwellings.



Source: CSO, Central Bank of Ireland Calculations.

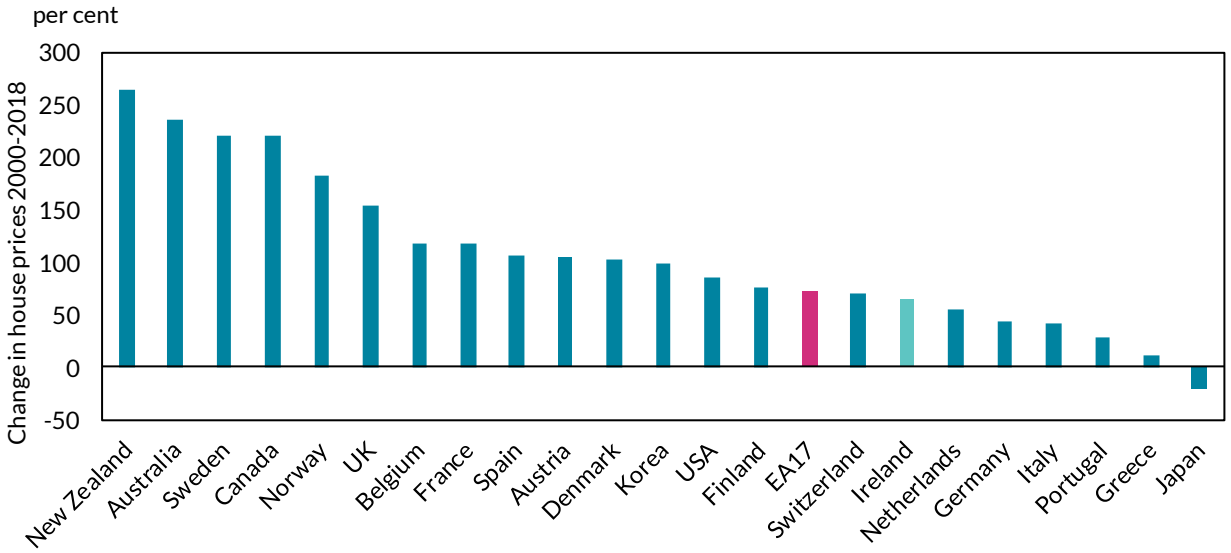
3 Irish housing affordability in a global context

Ireland is not the only country to experience growth in latent demand relative to supply. Housing supply constraints have been raised as an issue by the IMF in London, Paris, Stockholm, Copenhagen, Oslo, Sydney and Vancouver, and others.[17]

[13]CSO population and migration estimates and labour force survey.
[14]Conefrey and Staunton, 2019. Population Change and Housing Demand in Ireland.
[15]Around 46 per cent for migrants arriving between April 2015 and April 2016 were living in non-family households as at April 2016. See CSO Census 2016 – Profile 7 Migration and Diversity.
[16]Eurostat. Distribution of population by degree of urbanisation, dwelling type and income group
[17]IMF (2016). Global House Prices: time to worry again?

As a result, global prices and rents have risen (see figures 8, 9 and 10). Over half of all OECD countries have experienced at least 20 per cent real growth in residential house prices over the past five years.[18] Over the longer term, house prices have increased more in most OECD countries than in Ireland. In fact, percentage growth in nominal Irish house prices and in Irish house prices relative to incomes between 2000 and 2018 was slightly below the EA17 average (see figure 8).[19] This suggests that purchase affordability in Ireland has improved relative to other countries since 2000.

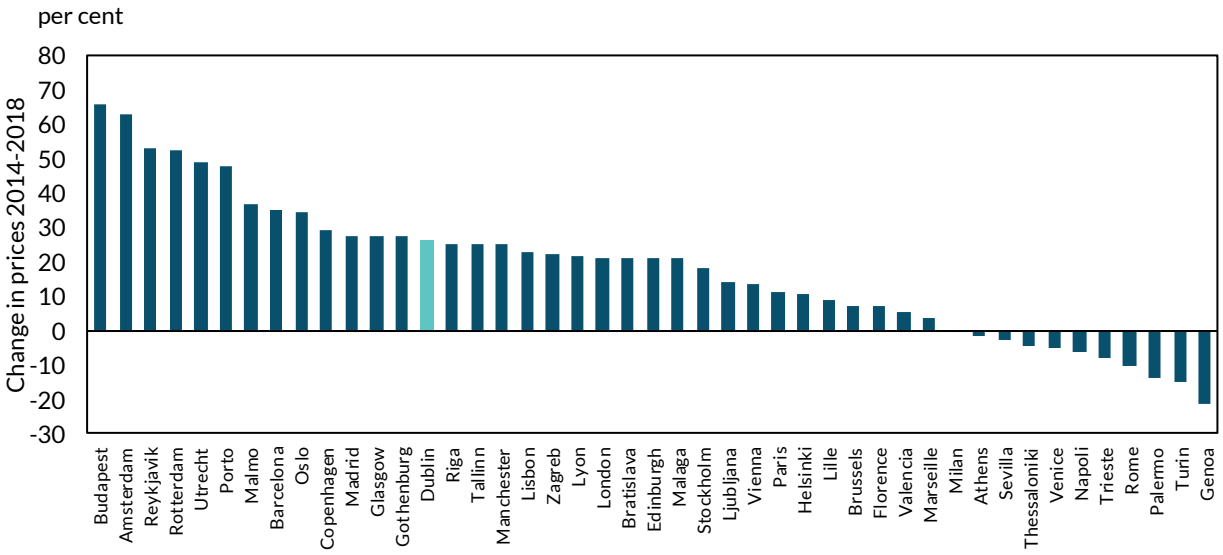
Figure 8: Net change in OECD nominal house prices 2000-2018



Source: OECD, Central Bank of Ireland calculations.
Note: Data are limited to countries for which values were available for the entire period of analysis.

Similarly, on a city level, despite coming from a relatively low level, residential property prices in Dublin grew only a little faster than the median rate of 21 per cent for large cities in Europe between 2014 and 2018 (see figure 9).

Figure 9: Net change in nominal house prices in major European cities

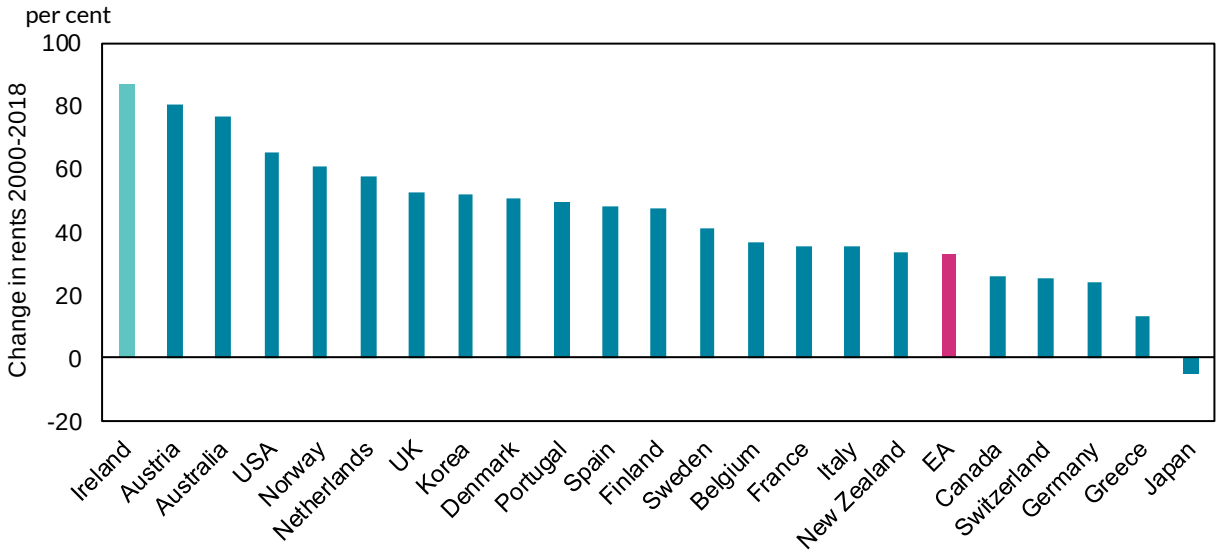


Source: Knight Frank Global Residential Cities Index, Central Bank of Ireland calculations.
Note: Data are limited to countries for which values were available for the entire period of analysis.

[18]Percentage difference between Q2 2019 and Q2 2014 real house price indices from OECD stat
[19]This is in contrast to the late 1990s, when Irish house prices grew relatively quickly while rents grew relatively slowly.

However, relative to other countries, the growth in Irish rents, both in nominal percentage terms and relative to gross adjusted household income, has been comparatively high since 2000 (see figure 10). Irish rents have therefore become less affordable over that period relative to other countries. Rents have grown more quickly for apartments than for other types of dwelling, and are currently 7.5 per cent higher than a house of the same size.[20]

Figure 10: Net change in OECD rents 2000-2018



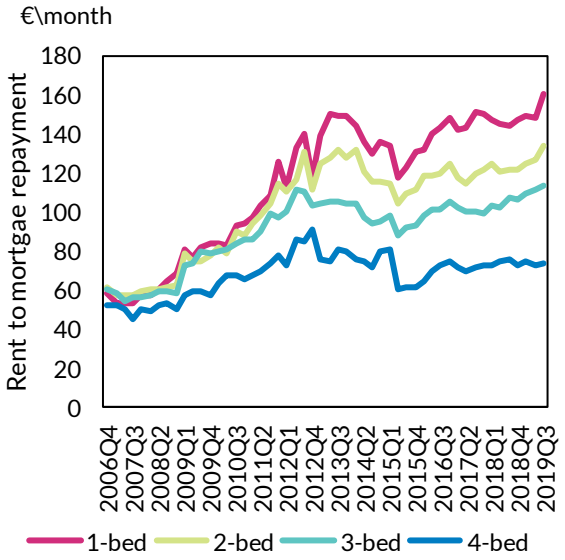
Source: OECD, Central Bank of Ireland calculations. Note: Data are limited to countries for which values were available for the entire period of analysis.

In addition to the growth in rents, interest rate declines have affected the long-run trade-off between renting and owning a dwelling, both in Ireland and across Europe. The median monthly cost of renting a one bedroom dwelling has risen from around 60 per cent of estimated mortgage repayments on the same property in 2006, to around 160 per cent in 2019 (see figure 11). However, these values likely understate the increase in the cost of rental housing relative to the user cost of owner-occupied housing,[21] as mortgage repayments include a principal component and mortgage rates have fallen considerably over the past few years.

Despite the relative financial benefits of home ownership, the owner-occupation rate fell from 75 per cent in 2006 to 68 per cent in 2016.[22] While this may reflect a shift in preferences for home ownership, it could also reflect difficulties in making the transition from rental into owner-occupied housing, in the face of housing supply constraints. The transmission can be particularly difficult when rents are high relative to incomes, as households may have difficulty saving for a deposit. There are some indications that this barrier is particularly high in some parts of Dublin, where (even assuming a minimal level of consumption) the time it takes to save for a home as a renter exceeds 4 years in the majority of postcodes (see figure 12).

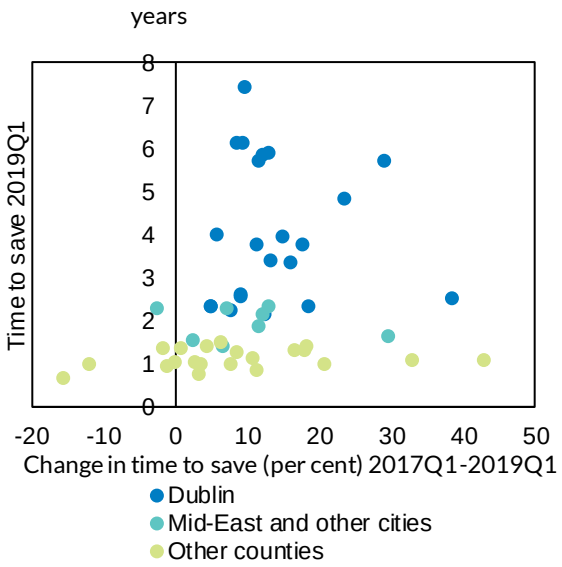
[20]Residential Tenancies Board, Rent Index 2019 Quarter 2.
[21]The user cost of owner occupied housing includes mortgage interest payments, capital gains expectations, property taxes, the opportunity cost of the deposit and maintenance costs. It does not include principal repayments.
[22]CSO, Census of population 2016 – Profile 1 Housing in Ireland.

Figure 11: Rent to mortgage repayment for dwellings in Dublin



Source: Daft.ie, Central Bank of Ireland calculations.
Note: Interest rates are taken to be the average interest rates on new loans in each year. The strong assumption has been made that the interest rate will be constant for the duration of the mortgage, in part to reflect the anticipated 'low for long' interest rate environment. Down payment is assumed to be 10 per cent of total. Comparison is based on list prices and rents, obtained from Daft.ie, which may not reflect actual prices and rents paid.

Figure 12: Approximate time to save a deposit for owners vs renters in Irish housing markets.



Source: Daft.ie, Central Bank of Ireland calculations.
Note: Years to save is calculated using current rents, current prices, median FTB income, and an estimate of non-housing expenses. Non-housing expenses total €1812 per month (equal to ISI reasonable living expenses for a couple without children plus a 20 per cent add-on). Income is median first time buyer median income in the relevant quarter, and is the same across locations within a county. Rent is the average asking rent calculated for a 2-bed property. Amount of deposit is taken as 10 per cent of the average asking price for a 3-bed dwelling in each location in the relevant quarter. No adjustment is made to reflect loan-to-income limits. Deposit (and therefore time to save) may be lower than stated where households benefit from the Help to Buy scheme. Dublin 2, 4 and 6 are not included on the chart, and as of 2019 had time-to-save estimates of 14, 23 and 12 years respectively.

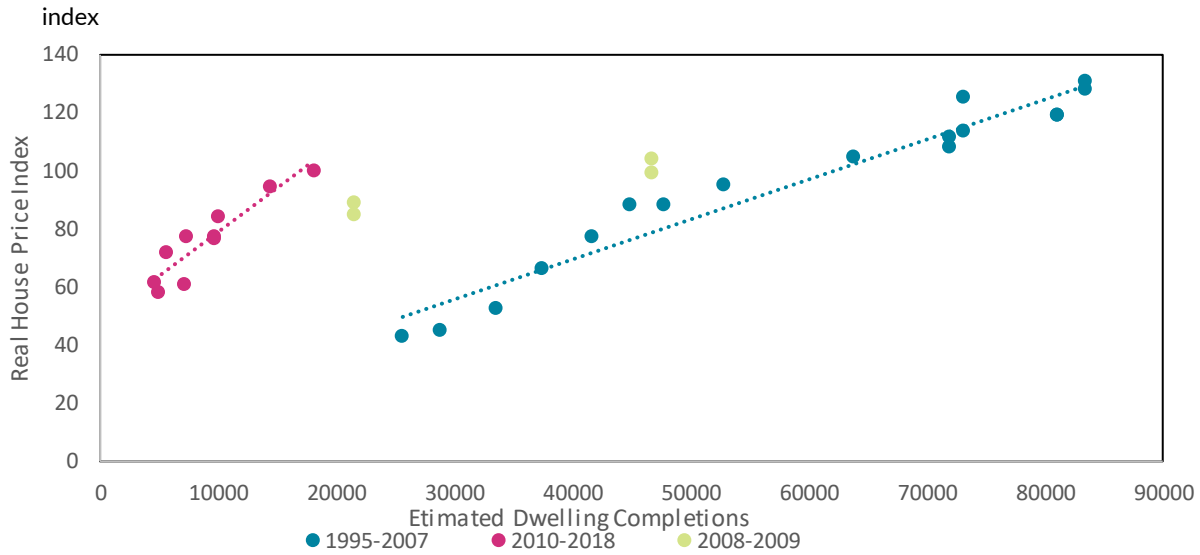
4 Housing supply and costs of construction

The lack of housing supply relative to demand is perhaps the key issue facing the Irish housing market at present. As noted in the previous sections, for much of the past decade the number of new dwellings has been well short of the level required to meet housing demand.

Since the crisis, there have been some indications that the supply curve of housing has shifted inward (see figure 13). While real prices in 2018 are close to 2003 levels, estimated new housing supply fell from over 60,000 units in 2003 to around 18,000 in 2018. If supply remains on this path, completions will remain at less than 40 per cent of 2006 levels, even if real prices return to their peak values.

There are a number of possible reasons for these developments. Changes to the cost base associated with the delivery of housing units in recent years, the availability and price of development land, structural issues within the building industry such as difficulties achieving economies of scale and the time taken for the sector to recover from the property crash of a decade ago, are possible explanations. This section provides a detailed exploration of these topics.

Figure 13: Estimated dwelling completions and real house prices 1995-2019



Source: CSO, PTSB/ESRI, Central Bank of Ireland calculations.
Notes: CSO and PTSB/ESRI house prices indices have been re-indexed to same basis. Original indices are nominal, and have been deflated by the consumer price index. Real 2018 house prices are indexed at 100. Where there is overlap in house price series, both estimates are included. Estimates of completions have been obtained by taking total estimates of electricity connections and removing average number of connections in each year that are unrelated to dwelling completions. Findings are robust to use of raw electricity connections data, or to using proportional estimates of completions.

4.1 Residential construction costs

The cost of building a residential dwelling is of vital importance in determining the number of housing completions, as it affects both the viability of construction from the point of view of a developer and the affordability of the dwelling to the end purchaser. The analysis presented in this section draws from a number of recent reports and publically available sources of information examining the delivery costs of residential dwelling units in Ireland.[23] Broadly speaking, residential development costs can be split into two distinct categories; (i) direct inputs to construction and (ii) indirect costs.[24] A further distinction is made throughout, between the estimates of the cost of construction for private sector developers, who currently deliver the vast bulk of new residential properties in Ireland, and on the units delivered by the public sector or approved housing bodies (AHBs).

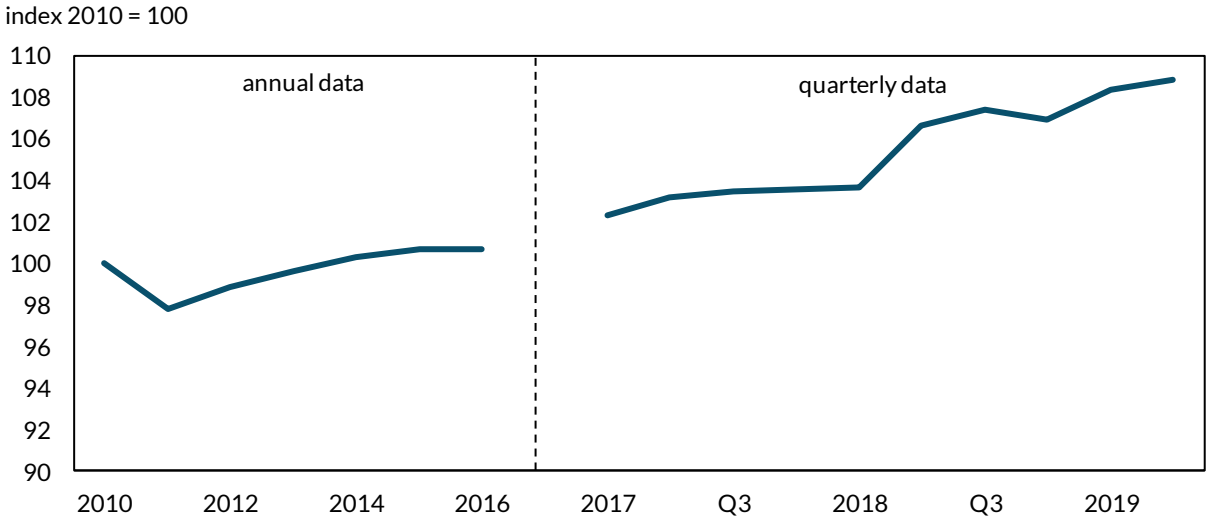
4.1.1 Direct construction costs

Labour and materials are the principal components of the direct costs associated with residential construction.[25] Irish data from Eurostat (see figure 14) show that after a period of relative stability (2011-2016) these costs have been moving upwards in more recent years (2017 – date). According to estimates from studies by the SCSI (2016 and 2017) and EY (2019), direct construction costs

[23]These include "The real cost of new house delivery", SCSI, (2016), "The real costs of new apartment delivery", SCSI, (2017), "International construction market survey 2019", Turner and Townsend, (2019), Statement on affordable housing at the Joint Oireachtas Committee on Housing, Planning, Community & Local Government, Ó Cualann, (January 2019), "Viability and affordability of apartment building in Cork city", EY, (July 2019) and Hegarty., O, Opening Statement on "Pre-legislative scrutiny – land development agency bill" at the Joint Oireachtas Committee on Housing, Planning, Community & Local Government, (October 2019).
[24]The Department of Housing, Planning, and Local Government refer to the importance of this distinction in their recent "Review of delivery costs and viability for affordable residential developments" (April 2018). One of the points made in this Report is that, while the breakdown between direct and indirect costs will vary from project to project, it is important that all elements which contribute to the final cost of delivering residential dwellings are considered.
[25]Unlike the Irish oriented studies, Turner and Townsend's definition of direct residential development costs includes the developer's risk/profit margin, as well the cost of labour and materials.

account for 40 to 60 per cent of the total cost of private sector residential development in Ireland (see figure 15). In contrast, while the overall cost of the housing delivered by the public sector via local authorities, or AHBs such as Ó Cualann, tends to be less than the private sector (due to considerably lower indirect costs), the portion made up of direct costs is much higher (around 80 per cent) (see figure 15).

Figure 14: Construction cost of new residential buildings index: Ireland



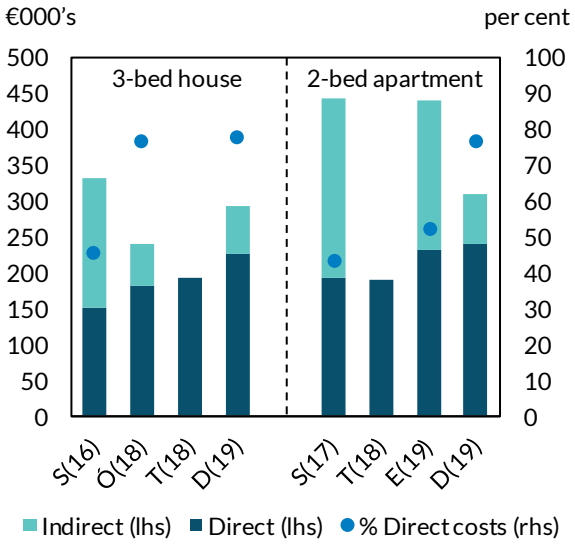
Source: Eurostat.
Note: Eurostat construction cost index (2010 = 100) measures the development of costs incurred by the contractor/producer to carry out the construction process, in others words the cost of labour, materials and plant and overheads.

The components of direct construction costs have been further subdivided in figure 16. The largest category relates to the production of a building's structure, including its foundations, brick and blockwork, external finish, tiled roof, windows, doors and skirting, paint finished internal walls, bath/shower room tiling, sanitary fittings, heating and electrical systems. These structural costs account for around one third of total private sector building costs according to the SCSI and EY, and well over half of total development costs for buildings produced under the Ó Cualann housing model. Additional direct construction costs include the groundwork undertaken to clear and service a building site during the development process. These can also be quite substantial, contributing anywhere from 10 to 20 per cent of overall project costs (see figure 16).

One can use data on residential development collected from Turner and Townsend in order to compare direct residential construction costs in Ireland against those in international markets over the past few years.[26] From an extensive list of locations for which data are available, markets in Asia, Europe, North America, Australia and New Zealand were selected as benchmarks against which to compare Ireland. It should be noted, however, that there are likely to be some differences which affect the relative costs even between otherwise similar markets. [27]

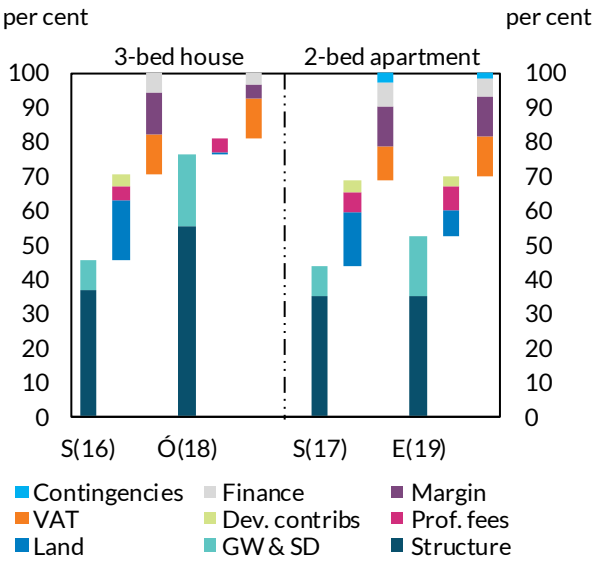
[26]Direct construction costs for Ireland are based on observations from Dublin. The data are collated from Turner and Townsend offices around the globe. They are self-reported and based on expert knowledge of construction costs for various building types across each country covered. It is assumed that building costs are based on typical building standards and building methods used in each market.
[27]For instance, a recent Housing Agency Report, notes a variety of local industry practices and approaches to residential development which add to the challenge of comparing construction costs across countries. These include differences in: procurement methods, legal systems/contracts, availability of materials and labour, taxation, technical definitions, ownership and control of land, the level of state intervention in terms of development and the provision of infrastructure, degree of involvement of the voluntary / not for profit housing sector. Similarly, while the cost of materials and trade union labour rates tend to be similar within countries, according to the Housing Agency construction tender prices for

Figure 15: Cost of residential development: direct vs. indirect



Source: SCSI, Ó Cualann, Turner & Townsend, Department of housing, planning & local government, EY and Central Bank of Ireland calculations. (See footnote 22 for more details).
Note: S = SCSI, Ó = Ó Cualann, T = Turner & Townsend, D = Department of housing, planning & local government and E = EY. Department of housing, planning & local government figures based on the average construction costs across the 4 Dublin local authorities.

Figure 16: Breakdown of individual construction costs related to residential development



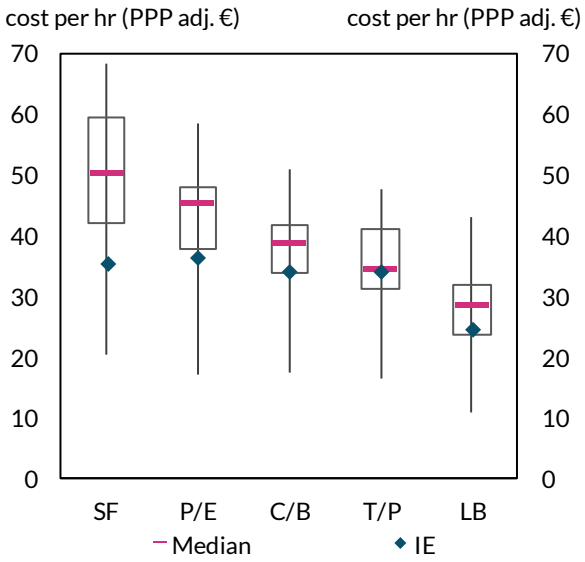
Source: SCSI, Ó Cualann, EY and Central Bank of Ireland calculations. (See footnote 22 for more details).
Note: S = SCSI, Ó = Ó Cualann, and E = EY. First stack represents direct costs (structure and ground works/site development (GW & SD)). Second stack are flat, indirect expenses (land, professional fees (including sales, marketing & admin) and developer contributions. Third stack covers percentage-based indirect costs (VAT, developers profit/risk margin, cost of finance and contingencies).

Ireland does not appear to be a major outlier in terms of individual, direct construction costs. Labour costs for Irish construction workers [trades €34 to €36 (ppp adjusted) per hour and general labourers €25 (ppp adjusted) per hour] are below the international median and are unlikely to be the driver of elevated residential construction costs (see figure 17). Nevertheless, in their latest report Turner and Townsend caution that labour costs may rise in the future as there are signs that skills shortages are beginning to emerge in Ireland.

In addition to labour costs, Turner and Townsend have compiled cross-country data on the price of selected individual input materials (see figure 18). Ireland's geographic location and limited international transport options complicate the delivery of cost effective construction in Ireland (Department of housing, planning, and local government (DoHPLG) 2018). Unlike labour costs, where the Irish figures tended to be in the bottom half of the distribution, the cost of building materials was around the international median – and above it for some individual components, such as copper cable, copper pipe, crane hire, plasterboard, paint and timber.

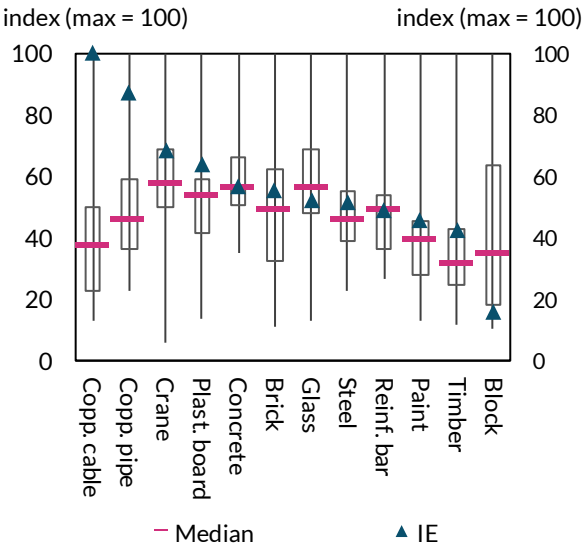
similar designs and specifications can vary significantly depending on the regional location, for example in Germany, it can be approximately 50 per cent more expensive to construct residential developments in Munich than in Dusseldorf. For more, see "Comparison of residential construction costs in Ireland to other European countries", Housing Agency, (March 2018).

Figure 17: Distribution of construction sector labour costs per hour



Source: Turner & Townsend and Central Bank of Ireland calculations.
Note: Chart shows min, max, median, 25th percentile, 75th percentile and Irish, PPP adjusted labour costs per hour for site foreman (SF), plumbers & electricians (P/E), carpenters & bricklayers (C/B), carpet layers, tilers and plasterers (T/P) and general labourers (LB). Figures reflect hourly cost to the employer and as such include (where appropriate) travel expenses, pension contributions, health insurance and other benefits.

Figure 18: Index of selected building material costs



Source: Turner & Townsend and Central Bank of Ireland calculations.
Note: Chart shows min, max, median, 25th percentile, 75th percentile and Irish, PPP adjusted (indexed) cost of; metre of copper cable (Copp. cable), metre of 15mm copper pipe (Copp. pipe), per day hire of 50t mobile crane (Crane), 13mm plasterboard (Plast. board), concrete 30 Mpa (Concrete), standard brick per 1,000 (Brick), 10mm tempered glass pane (Glass), structural steel beam per tonne (Steel), 16mm reinforcement bar per tonne (Reinf. bar), emulsion paint per litre (Paint), softwood timber for framing (Timber) and concrete blocks per 1,000 (Block).

While Ireland does not look to be an outlier across the majority of the labour and building material metrics considered, in measures of overall direct construction costs, it appears to be a relatively expensive location according to the Turner and Townsend database.[28] From a sample of 40 locations in over 20 countries, Ireland had the 5th highest PPP-adjusted cost of apartment building per square metre in 2018. This ranking has reflected a steady increase in costs, from €1,500 per square metre in 2014 to €2,100 per square metre at the end of 2018 (see figure 19). Like a number of other countries, the direct (per square metre) construction costs of a typical apartment are greater than those encountered in the building of the average house (see figure 20).[29]

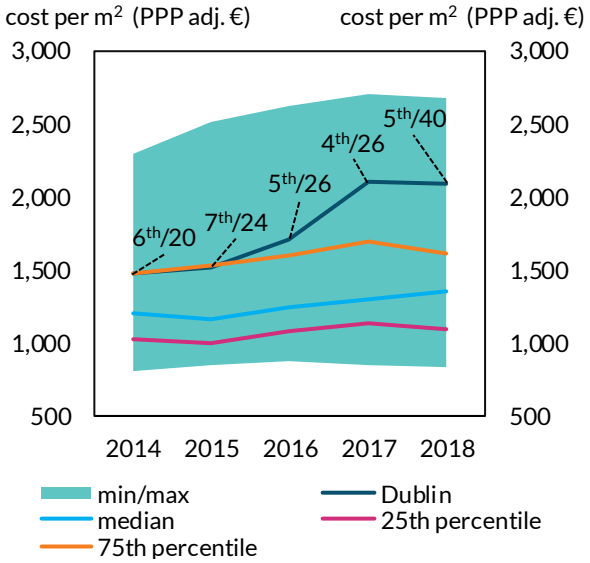
Given the levels of labour and materials costs, the high level of total construction costs represents a puzzle. Part of the explanation could be that overall costs are determined by differences in the quantity of units required per square metre (i.e. the number hours labour or hire, litres, metres, tonnes of materials). Variances between countries will depend on the complexity of design, the building standards and regulations in place, the type of site, its location and prevailing climatic conditions, local construction practices and the availability of building technologies, the scale of production and so forth.

Another feature of the Turner & Townsend dataset is that as well as labour and material, they include a developer profit/risk margin as part of their estimate of overall direct construction costs – something typically captured as an indirect construction cost (see Section 4.1.2). Unfortunately, the report does not provide estimates of these margins from country-to-country due to

[28]In their cross-country comparison of residential construction costs, the Housing Agency (2018) found that Irish construction costs are comparable with those in Germany, France, and the UK, but above those of the Netherlands.
[29]This is consistent with the findings of the domestic studies on residential construction costs, examined.

measurement difficulties. According to the DoHPLG (2018), developers attempt to cover the degree of risk in a project in this figure, so it will not always reflect their actual end-return. The profit/risk margin will vary by the level of perceived risk, which Turner and Townsend characterise as high in Ireland. The riskiness of a project is influenced by the potential for delays, disruption to supply chains, site accessibility, skilled labour shortages, financing costs[30], as well as the risks embodied in fixed price contracts – such as construction cost inflation and a change in market conditions.

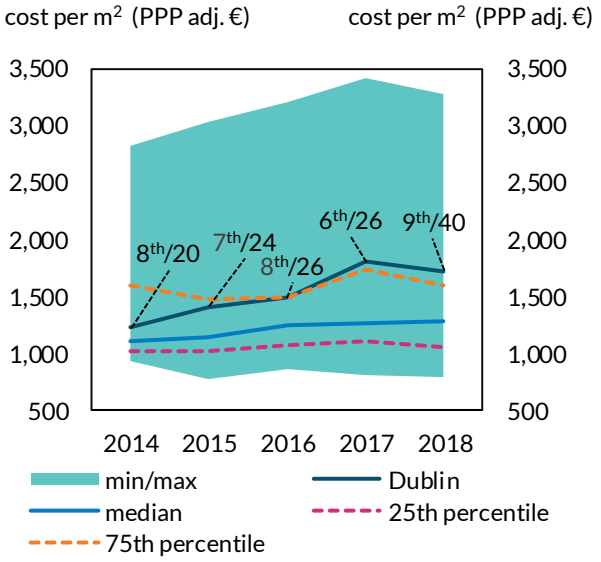
Figure 19: International building costs: apartment



Source: Turner & Townsend and Central Bank of Ireland calculations

Note: Figures refer to a low rise, medium standard apartment. Based on a changing sample of locations in Turner and Townsend database (number of observations vary from 20 in 2014 to 40 in 2019). Data are PPP adjusted and refer to costs per m^2 of internal area.

Figure 20: International building costs: Houses



Source: Turner & Townsend and Central Bank of Ireland calculations

Note: Figures refer to a "medium standard" detached or terrace style house. Based on a changing sample of locations in Turner and Townsend database (number of observations vary from 20 in 2014 to 40 in 2019). Data are PPP adjusted and refer to costs per m^2 of internal area.

The profit/risk margin on apartment building is generally higher than on housing developments, as more capital tends to be tied-up in the former for a longer period. Unlike housing schemes, where units can be sold once complete and the subsequent cash flows used to finance another phase, apartments cannot be sold until the entire block is fully complete.

Estimates for the developer's margin amount to approximately 10-15 per cent of total costs for private sector projects (SCSI), and around 4 per cent for not-for-profit projects, such as those undertaken by Ó Cualann. While it is not possible to benchmark this against other countries directly, projects may have minimum underwriting requirements in terms of margins imposed by the funds provider.

4.1.2 Indirect construction costs

There are also a number of indirect costs involved in the delivery of housing units, which broadly speaking, fall into two groups. One group consists of the flat fees that apply on land, professional expenses (including design, administration, sales and marketing) and development contributions (see figure 16). The second group is made up of percentage-based costs such as VAT, financing, and

[30]Some financiers may not be prepared to fund projects if they deem the developer margin is not sufficient to account for the risk undertaken.

risk-based developer returns (categorised as an indirect cost by SCSI and EY, but included in direct costs by Turner and Townsend - see section 4.1.1), which will vary in line with other costs.

Differences in indirect costs account for much of the gap in the cost of delivery between private and public/AHB housing in the schemes for which data are available (see figures 15 and 16). They can range from over 50 per cent of total development costs (according to the SCSI and EY) to approximately 20 per cent (DOHPLG and Ó Cualann).[31]

Lower profit/risk margins, reductions/exemptions from development contributions and substantially lower land costs are the main reasons why the overall costs of housing supplied by Authorised Housing Bodies or local authorities tend to be lower than private sector development projects. Estimated land costs for private sector projects range from around 7 per cent in Cork (EY) up to 17 per cent for some of the projects considered by the SCSI in Dublin (see figure 16).

Developer contributions on the private schemes amount to approximately 5 per cent of total costs (see figure 16). These contributions/fees are often upfront payments for services which will be provided over the life of the dwelling. These include statutory charges applied by local authorities and are made in respect to the provision of public infrastructure and facilities (Section 48 contribution). Additional payments (Section 49) are due if a scheme is located in an area that benefits from special public infrastructure/facilities such as the Luas, a rail link or road upgrade. Irish Water levies, contributions for other utility connections (gas and electricity), miscellaneous charges and a Part V contribution for public housing are also included in these fees.

Since these payments are for services provided over the life of the dwelling, some countries have previously opted to charge for them through higher property taxes. However, in recent decades trends have been toward charging for these costs upfront. One reason these fees are often charged upfront is that higher development fees will then be partially offset by a reduction in land values.[32] In this way, the developer and the purchaser of the dwelling split the costs of the service provision. The extent to which the costs will be split between the original land owner, the developer and the end purchaser will depend upon the relative responsiveness of supply and demand to changes in price. If land values do not fall in response to frontloading of the cost of providing essential services, the size of the mortgage needed to buy the property will likely increase relative to the case where fees for these services are charged on an on-going basis.

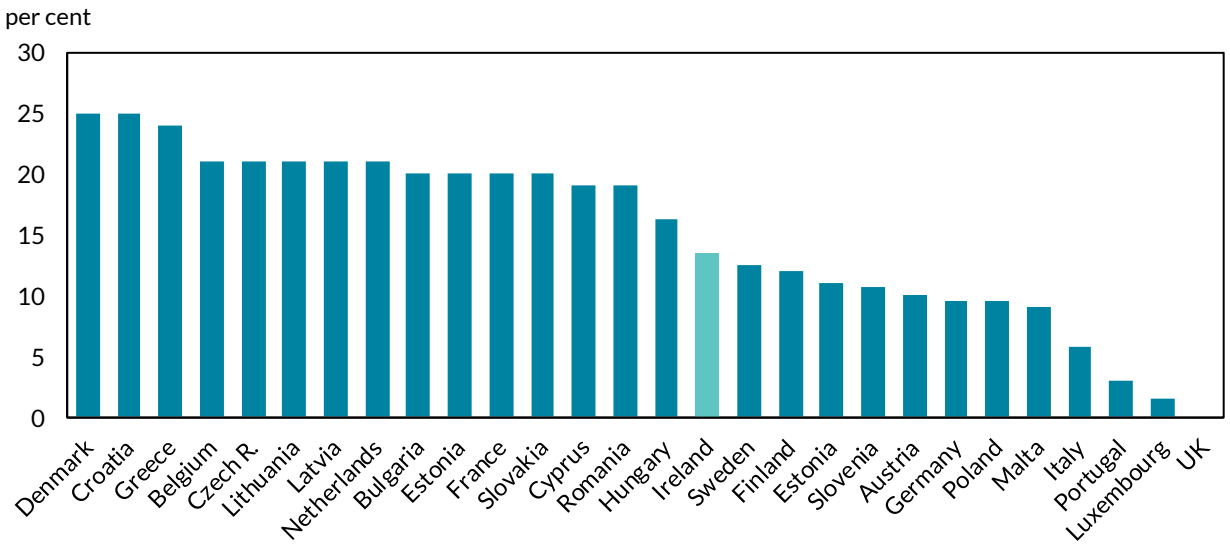
In addition to developer contributions, VAT is also required on the first sale of new housing. While the VAT rate on new housing in Ireland is low relative to most European countries, many others apply exemptions, which allow for the rate to be reduced in practice. Taking these into consideration, Ireland's VAT rate of 13.5 per cent is just below the median approximate VAT remittance rate across Europe (see figure 21).

Developers are required to pay professionals for expertise required to ensure a building adheres to quality standards and complies with statutory obligations. These professionals' fees can be higher for an apartment building due to the requirement for additional technical specialists. Sales, marketing and legal budgets are also included under this heading. Typically this category accounts for 4 to 7 per cent of total development costs, but depending on the degree of complexity involved in a scheme, can rise to 15 per cent of project costs, according to EY (2019).

[31]The much lower indirect costs associated with the housing delivered via local authorities or approved housing bodies is mainly due to vastly lower land costs, smaller profit margins and in some instances a reduction or exemption in developer contributions.

[32]McAllister, Pat, Edward Shepherd, and Peter Wyatt. "Policy shifts, developer contributions and land value capture in London 2005–2017." *Land use policy* 78 (2018): 316-326.

Figure 21: Approximate effective VAT rate on new dwellings



Source: European Commission, Central Bank of Ireland calculations
Note: Where exemptions exist, these have been applied. Where the rate on construction and/or building land exceeds the rate on final transfer, the effective rate has been taken to be approximately 50 per cent of the construction rate, plus 10 per cent of the building land rate, to reflect their approximate proportionate inputs into final construction cost.

The other categories of development costs tend to vary depending on the level of risk associated with the project, and how that risk is allocated. For example, in recent years, there has been a shift away from the traditional debt-based, largely bank financed funding model, to a more diverse structure, which often involves some combination of senior debt, mezzanine debt and private equity. While this change lowers the concentration of lending and enhances risk sharing, the providers of these funds will also look for a return on their investments – though we have no data to suggest that this shift will have led to an increase in overall financing costs. Financing costs on private projects now equate to between 6 and 8 per cent of total delivery costs, although there are indications that the financing costs for public sector projects are lower in some cases.

4.2 Construction sector market structure

The extent of the gap between the supply and demand for well-situated, serviced sites, is cited by the DoHPLG (2018) as a contributing factor to the volatility of the land sales market, which adds to delivery costs. While current returns on development may be commensurate with the past, developers may be of the view that profits will be larger if they delay construction until some point in the future. Inputs to production, particularly land, have option value, in that they can only be used once. Occasionally, therefore, developers may be incentivised to delay development of a site, especially if demand is rising.

To discourage land hoarding of this nature, local authorities have been required to produce a vacant site register since January 2017, detailing lands in their area that are suitable for housing but where no reasonable plans have been put forward for development. Since the January 2019, sites included on these registers are liable for a vacant site levy. The amount due in 2019 (in respect of 2018, as the levy is paid in arrears each year) is calculated as 3 per cent of the site's 2018 value. This rate will rise to 7 per cent of the land value for payments due from 2020 onwards. Figures provided by the Department of Housing, Planning, and Local Government[33] estimate that approximately 360 sites are listed on registers around the country, with 120 liable to a pay a levy this year. Nationally, it is believed that this will raise around €7.6 million this year, rising to over €25 million next year, when the higher levy applies to sites listed on local authority registers in 2019.

[33]See written answer to "Parliamentary Question 94", Dáil Eireann debate on vacant sites, 11 June 2019

Structural issues within the domestic residential building industry may also have a role in the sluggish supply response. The capacity of the construction sector in the years following the property crash and financial crisis is likely to have been reduced. O'Brien and Stuart (2014) note the significant rise in real estate and construction firm liquidations from 2007 to 2013. Central Bank data also show that finance for developers that did survive the crisis was also quite muted. For instance, the new lending figure for the residential property element of real estate, land and development activities in 2012 was approximately €300 million, rising to €1.25 billion in 2018.

Market size and the relatively smaller scope of Irish housing schemes (in terms of the average number of units built) is another factor to consider. Larger countries can benefit from economies of scale due to large domestic construction sectors, compared to smaller markets such as Ireland – though this is unlikely to have contributed to the shift in the supply curve. In addition, residential densities in Irish cities tend to be lower than other cities of a similar commercial magnitude according to DoHPLG (2018).

5 Conclusion

Based on the analysis in section 2, the number of latent households in Ireland has grown by around 46,000 since 2011, as demand for housing has increased relative to the housing stock. This has led to significant growth in both house prices and rents relative to incomes, particularly in urban areas. Price pressures may become more acute if the trend towards urbanisation continues.

It appears that the supply of housing has shifted since the crisis, leading to lower quantities being produced at any given price. While supply has increased in the last 3 years, it remains significantly below the level that would have been constructed given current real prices in the 1996-2007 period.

The reasons for the muted supply response are unclear. There is no single element that is identifiable as the primary driver of the supply shift, however it appears that it may at least partially be due to the direct and indirect costs of construction. The estimated cost of construction varies significantly between sources. External estimates of the cost of building a 2 bedroom apartment in an urban area suggest a range of between €310,000 and €443,000, depending upon the nature of the development (public or private), location, and other factors. Houses appear to be significantly cheaper to build, with a 3-bedroom semi-detached in an urban area estimated by the same external groups to cost between €238,000 and €330,000.

These estimates point to wide range of construction costs – with implications for home buyers. At the lower end, the estimates would imply that a first time buyer would be able to obtain a mortgage to purchase a new urban 3 bedroom semi-detached home with an income of just over €61,200, almost equal to the median private renter income estimated for Dublin in 2019.[34] At the top end of the estimates, an urban 2-bedroom apartment would require a 6.5 loan–to-income ratio for the median private market renter, well exceeding 98 per cent of LTIs in most quarters, even prior to the crisis.[35] At the same time, the affordability of rental housing has declined both in absolute terms and relative to other markets, impacting the ability of households to save to purchase a home.

More work is needed to determine the underlying causes of the apparent shift in the supply curve in recent years and what underpins the estimated costs of construction in Ireland.

[34]Median household income for private renters in Dublin estimated at €60,118 in 2019. This estimate is calculated from the median income of private renter households in Dublin in 2016 from the census (amalgamated across Dublin local councils), multiplied by national wage inflation from 2016-2019. Median income may be higher if (a) fewer households transition from rental housing into home ownership or (b) if wage inflation in Dublin is higher than the national average.
[35]Kelly et al, 2015. Credit conditions, macroprudential policy and house prices.

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