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Population Change and Housing Demand in Ireland

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Changes in population and household formation have important implications for the demand for housing, but their precise future paths are uncertain. Using the most up-to-date population projections from the CSO, this *Economic Letter* estimates scenarios for long-run housing demand in Ireland. We find that – assuming no change in household formation rates (headship) from current levels – an average of around 34,000 new dwellings would be required each year out to 2030 to keep pace with the projected growth in the population. Recent observed levels of residential completions are well below both current and future estimated demand, implying a need for further expansion in the supply of new dwellings.

1. Introduction

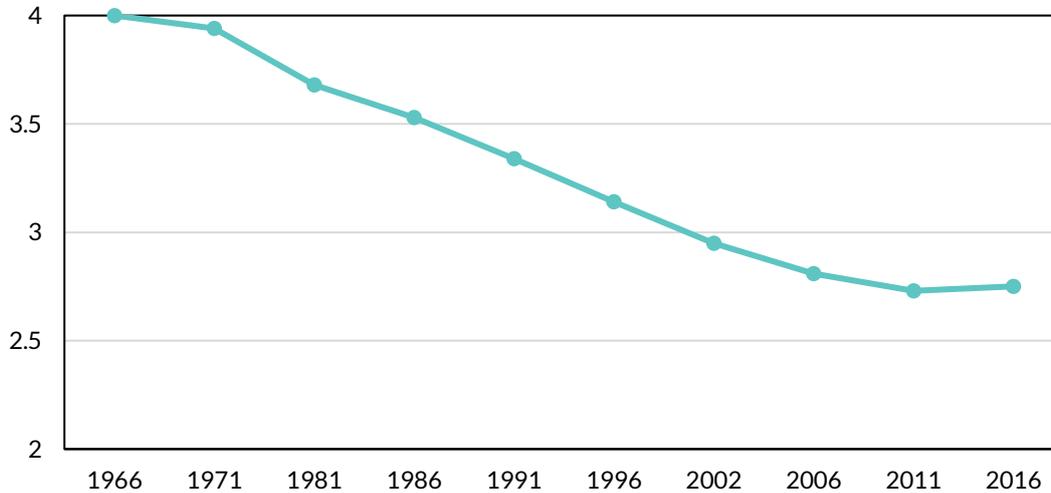
Over the last 25 years, the Irish construction sector experienced an unsustainable expansion followed by a severe contraction. From 1998 to 2008, around 660,000 homes were built – more than double what was completed in the preceding decade. During this period housing completions averaged 60,200 per annum. The collapse of the property market bubble in 2008 and the onset of the economic and financial crisis was accompanied by a sharp fall in housebuilding. From 2009 to 2018, around 106,000 homes were completed, an average of just over 10,500 per year. The collapse in housebuilding took place despite continued growth in the population. Between Census 2011 and Census 2016, the overall population increased by 173,000. This continued growth in the population combined with the fall in residential completions contributed to the reversal of a 50-year trend in Census 2016. In that Census, the average household

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size – which had declined continuously in every Census since 1966 – recorded a marginal increase (Figure 1).

Figure 1: Continuous 50-year decline in persons per household stalls in 2016



Source: CSO, Census of Population, various years.

Since Census 2016, the available data point to further growth in the population and a resumption of net inward migration. The most recent *Population and Migration Estimates* from the CSO indicate cumulative net inward migration of 104,000 since 2016 with the overall population estimated to have increased by 182,000 or 3.8 per cent between 2016 and 2019. At the same time, the economy has continued to grow at a fast pace with annual average growth in underlying domestic demand of 4.6 per cent from 2016-2019. While these developments point to a need for a significant expansion in housebuilding from the very low levels recorded during the 2008-2013 period, the actual recovery in residential construction has been slow. The number of new housing units increased from a trough of around 4,600 in 2013 to 18,000 in 2018. The number of new units is expected to rise to around 21,000 in 2019. Although this represents an acceleration in activity compared to earlier years, there is general acceptance that the level of new supply is too low and is contributing to ongoing imbalances in Ireland’s residential property market (Kennedy and Myers, 2019; IMF, 2019; European Commission, 2019; Department of Housing, 2016).²

In considering possible future developments in the housing market, a key question concerns the long-run level of demand for housing. This in turn will be influenced by population growth and changes in household formation. Since the precise future change in the population is unknown, in this *Economic Letter* we estimate scenarios for Irish housing demand under different assumptions for population growth and headship. The

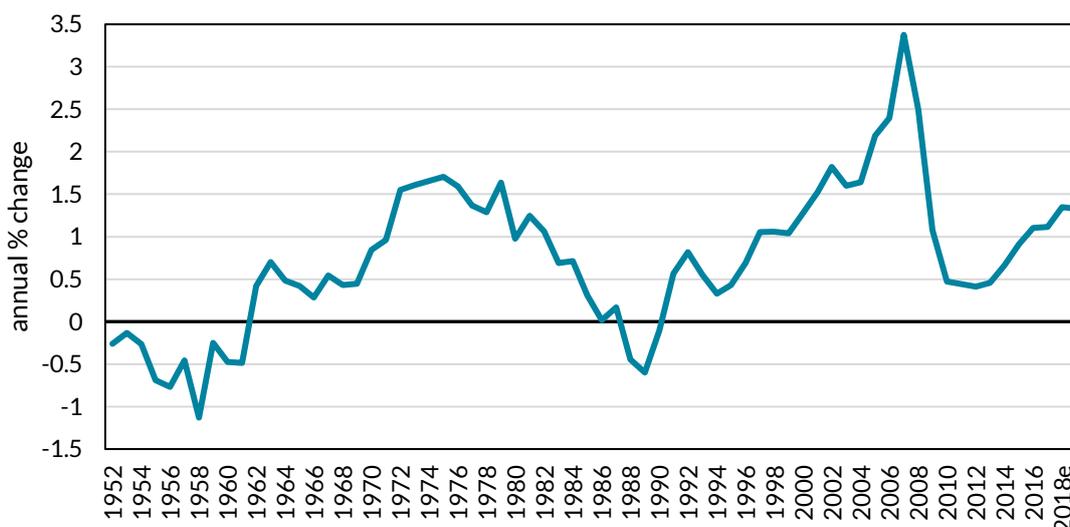
² See speech by Deputy Governor Donnery “Perspectives on the Irish Housing Market – the Past Five Years.” Available at: <https://www.centralbank.ie/news/article/press-release-protectin-financial-stability-sharon-donnery-13-november-2019>

headship rate is the proportion of individuals in an age cohort that list themselves as “head of household”. In particular, we project housing demand under the assumption that current levels of headship remain the same over the projection horizon. In a second scenario, we analyse the implications for housing demand assuming Irish headship rates gradually converge to UK levels. Our analysis also shows the implications of migration for housing demand. The *Economic Letter* is organised as follows. Section 2 describes key trends in population growth and household formation in Ireland over recent years. Section 3 outlines the assumptions and methodology used to derive estimates of housing demand. Section 4 presents the main results and Section 5 concludes.

2. Recent Trends in Population and Household Formation

Figure 2 shows the annual percentage change in the population from 1952 to 2018. In the decade from 2000-2010, the annual rate of population growth measured just over 1.8 per cent. The rate of population growth slowed substantially from 2007 to 2012 from almost 3.5 per cent to below 0.5 per cent. Since 2012, population growth has accelerated again to an estimated rate of 1.3 percent in 2018, similar to the rate of growth in the early 2000s.

Figure 2: Annual percentage change in the population, 1952-2018

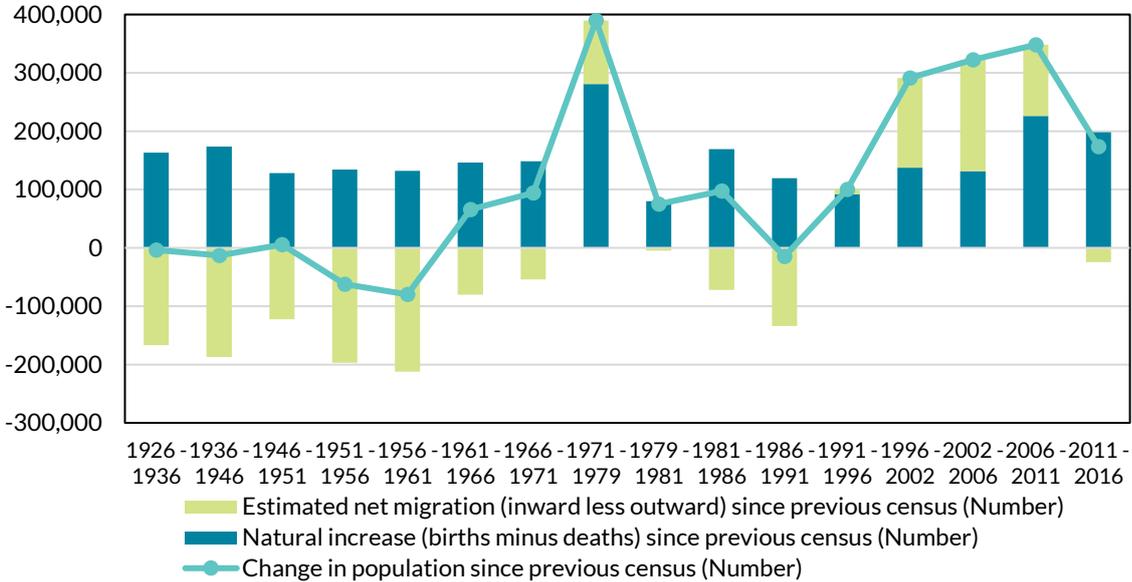


Source: CSO Annual Population Estimates. The figures for 2017 and 2018 are CSO estimates.

Figure 3 shows the annual change in the population broken down into the contribution from the natural increase (births minus deaths) and net migration (immigration minus emigration). The chart shows that the slowdown in population growth from 2011 was largely due to the reversal in migration flows. Between Census 2006 and Census 2011, the overall population increased by 348,500 with net inward migration accounting for 122,000, or just over one third of the increase. In contrast, net migration was negative between 2011 and 2016, reducing the overall population by 25,000 over this period. Despite this negative contribution from migration, the overall population continued to grow with the excess of births over deaths (natural increase) adding just under 175,000 to the size of the population between 2011 and 2016. CSO population estimates since

2016 point to a resumption of positive net inward migration. Net inward migration was estimated at 33,700 in the year to April 2019.

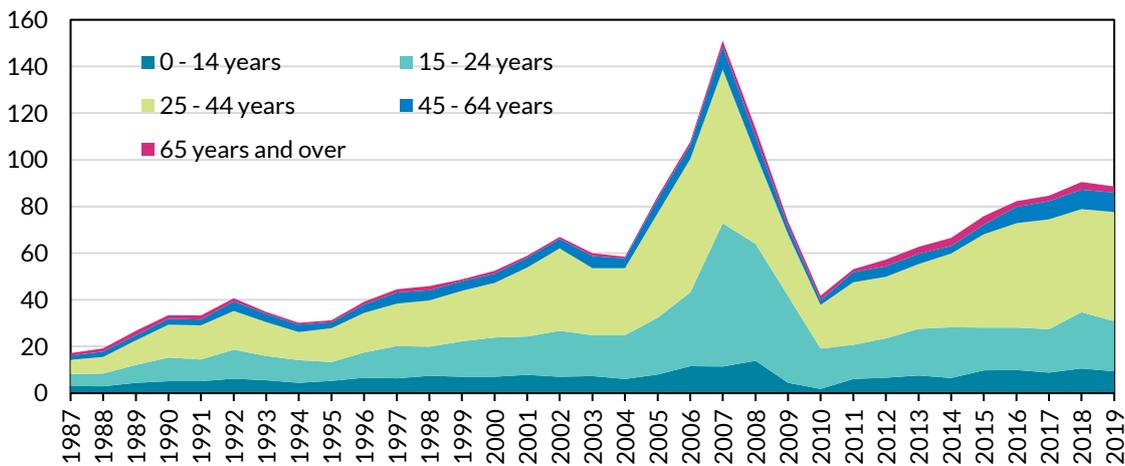
Figure 3: Change in the population due to natural increase and net migration



Source: Census of Population, various years.

Given the contribution of migration to the change in the population over time, migration also has an important influence on housing demand. Figure 4 shows immigration by age group. The chart shows that over the period since 1987, just under half of all immigrants have been in the 25-44 with a further 30 per cent aged 15-24. Since these are the key age cohorts in which new household formation typically takes place, this points to the importance of migration as a source of housing demand.

Figure 4: Immigration is concentrated in the key 25-44 age group

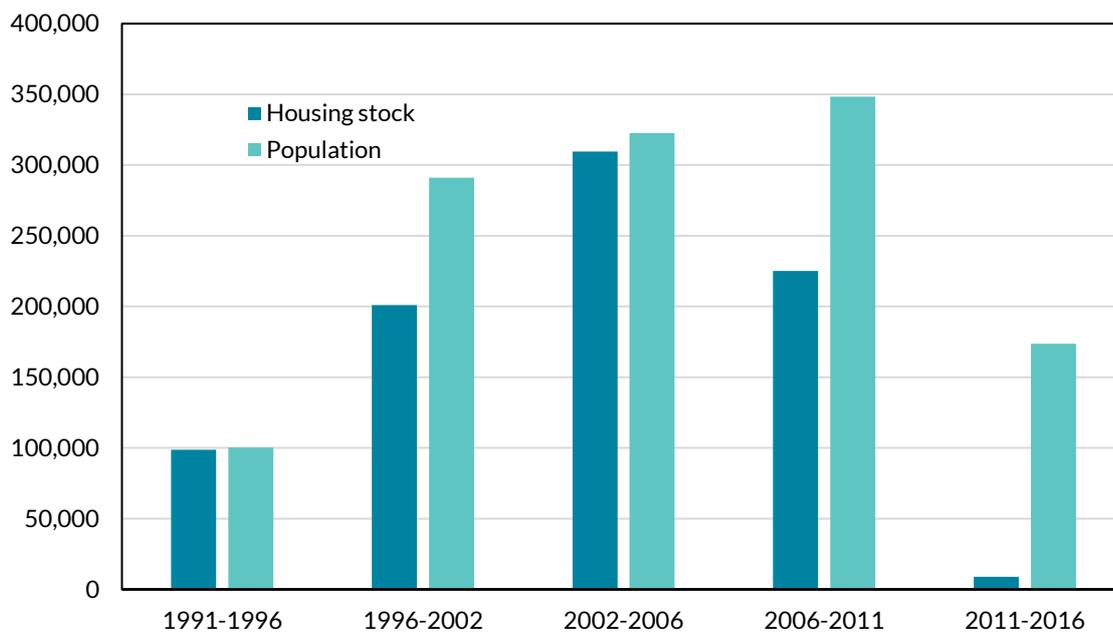


Source: CSO Population and Migration Estimates.

Figure 5 shows the change in the overall population and the change in the housing stock over different census periods from 1991 to 2016. The chart shows that the growth in the

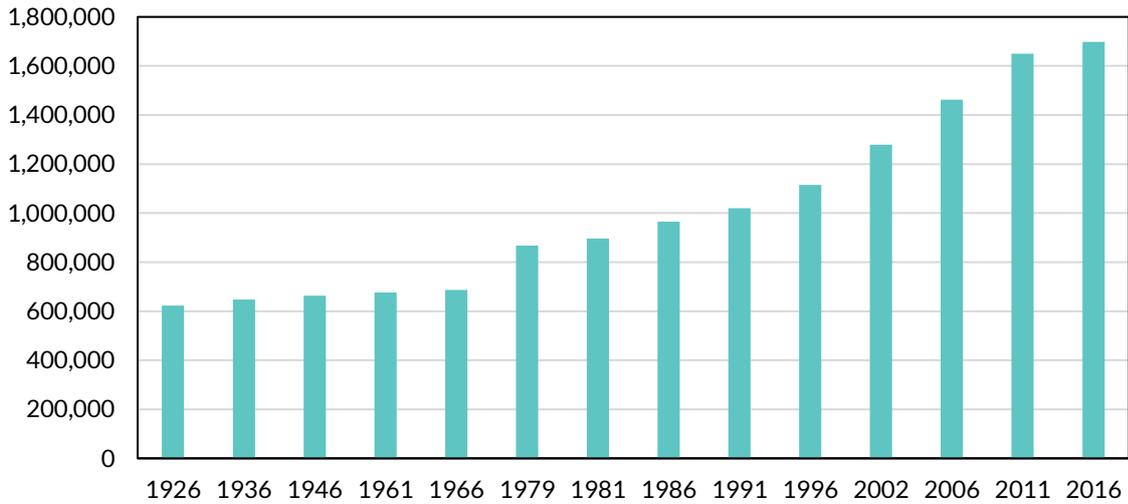
population has exceeded the increase in the housing stock since 2006 and especially since 2011. Between 2011 and 2016, the increase in the housing stock of just 8,800 (0.4 per cent) contrasts sharply with the growth in the population of almost 174,000 (or just under 4 per cent). The small increase in the housing stock compared to the rise in the population over the 2011 to 2016 period is an important factor behind the rise in the number of persons per household shown in Figure 1.

Figure 5: Growth in population exceeds increase in housing stock since 2006



The change in the number of households is an important driver of housing demand. As shown in Figure 6, the number of private households in Ireland at the time of *Census 2006* was just over 1.46 million. This increased to 1.65 million in 2011, a rise of almost 13 per cent. With net migration contributing negatively to population growth during the years 2011 to 2016, the rate of increase in household formation slowed during this period. Despite this, the number of households still increased in the period between 2011 and 2016 by just under 50,000 or 2.9 per cent.

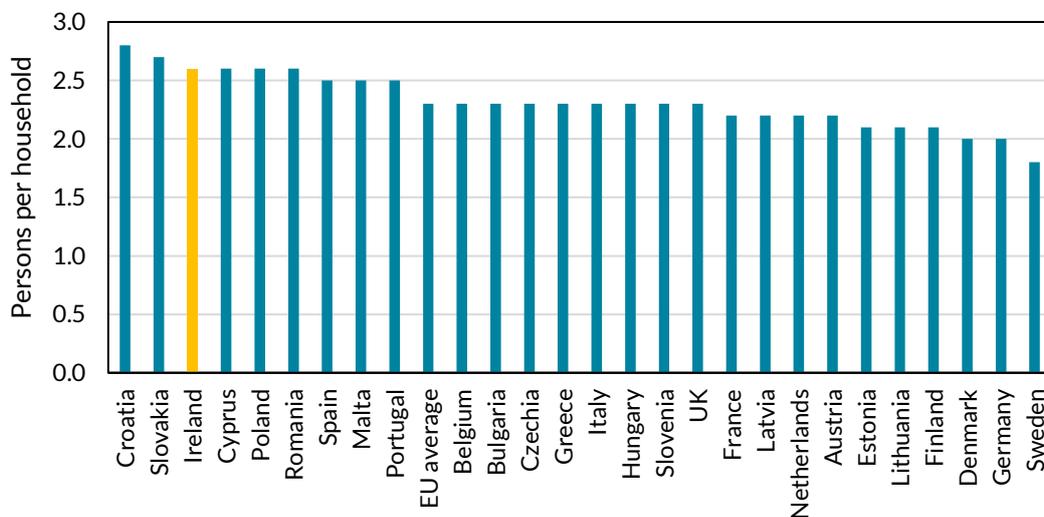
Figure 6: Number of private households, 1926-2016



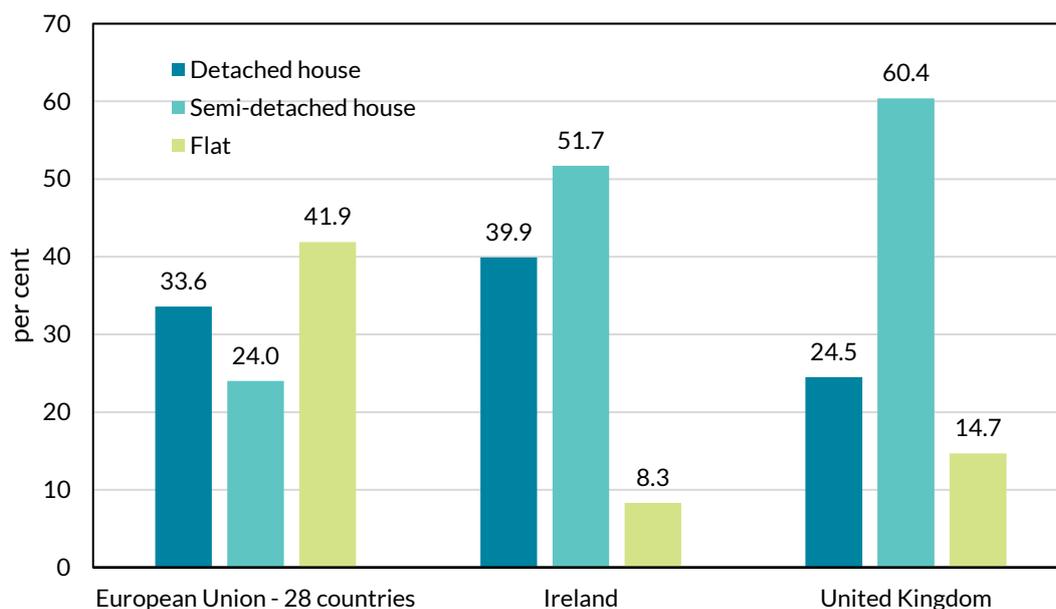
Source: Census of Population, various years.

The number of persons per household is particularly relevant to the analysis in this *Letter*. Data from Eurostat show that Ireland has the third highest number of persons per household in the EU-28 along with Cyprus, Poland and Romania (Figure 7). Ireland is an outlier in this regard, since countries with similar income per capita generally have a relatively lower household size. This feature is partly explained by Ireland’s housing mix, which is shown in Figure 8. The chart shows the percentage of the population who live in houses (detached and semi-detached) and apartments for Ireland, EU 28 and the UK. The chart shows that the share of the population in Ireland living in apartments at 8.3 per cent is lower than in the EU as a whole (41.9 per cent) and in the UK (14.7 per cent). The corollary of this is that a higher proportion of Ireland’s population live in larger housing units – either detached or semi-detached houses.

Figure 7: Average household size in the EU, 2018



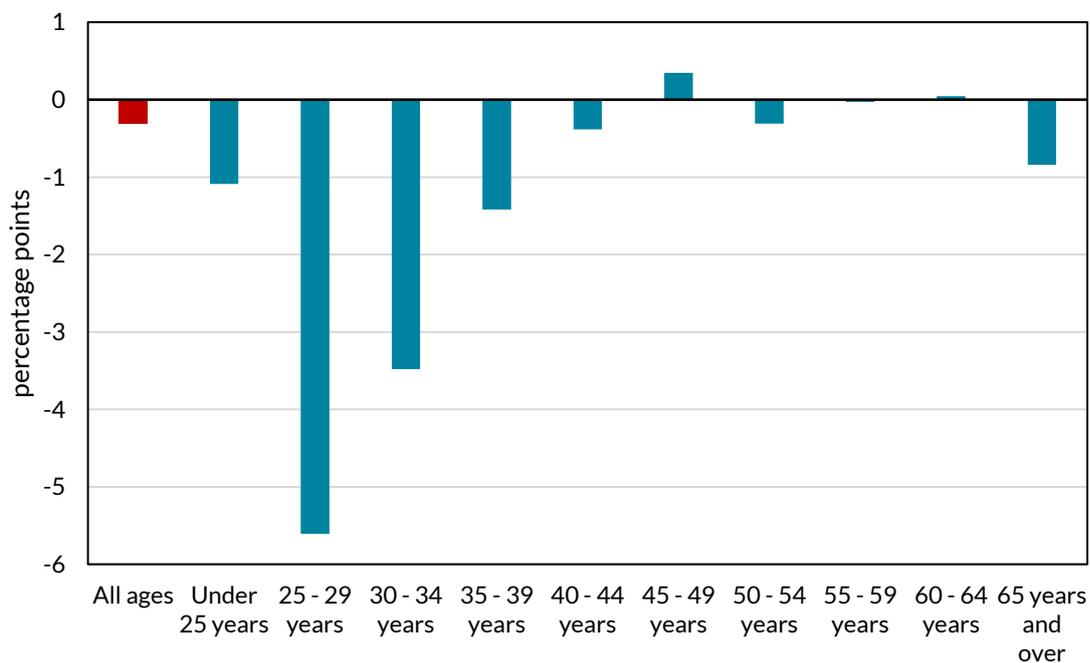
Source: Eurostat.

Figure 8: Proportion of population living in apartments unusually low in Ireland

Source: Eurostat.

The headship rate provides another measure of the rate of household formation. The headship rate is the proportion of individuals in an age cohort that list themselves as “head of household” in the Census. Since each household provides one reference person, thus an increase in the headship rate reveals an increase in the number of households. Between Census 1991 and Census 2011, the data point to increasing headship rates, particularly in the younger age groups (Duffy *et al.*, 2014). Census 2016 saw a reversal of this trend with the headship rate declining. This mirrors the increase in persons per household shown in Figure 1. Figure 9 decomposes the fall in overall headship between 2011 and 2016 by age cohort. The chart shows that the younger 25-29 and 30-34 age cohorts recorded the largest declines in headship, reversing the upward trend in headship rates for these groups evident up to Census 2011 (see Byrne *et al.*, 2014). The fall in headship in the 2016 Census is consistent with individuals in these younger age cohorts delaying the formation of independent households by remaining in the family home or continuing to live in multi-person households for longer than at the time of Census 2011.

Figure 9: Decline in headship rate for younger age cohorts between 2011 and 2016, percentage points



Source: CSO, Census of Population, various years.

3. Assumptions and Methodology

Assumptions: Population Change 2019-2051

To estimate future housing demand, a key input is the projected change in the population. Periodically, the CSO produces long-run projections for the Irish population and labour force. The projections are based on assumptions surrounding the natural increase (births minus deaths) and net migration (immigration minus emigration). The 'demographic component method' is used, where projections are made based on a range of assumptions agreed upon by an expert panel.³

In formulating the projections, the expert panel considers factors such as:

- Current population, fertility rates, and life expectancy;
- Relative economic conditions in Ireland and the rest of the Europe;
- The availability of high-skill jobs in specific sectors of the Irish labour market.

The CSO use a demographic component method that projects forward the population at the last census (2016) based on a range of assumptions relating to fertility, mortality and

³ The panel is comprised of representatives from the CSO, HSE, Government departments, and academia. The most recent CSO estimate (April 2019) showed that the number of people usually resident in Ireland is 4.92 million.

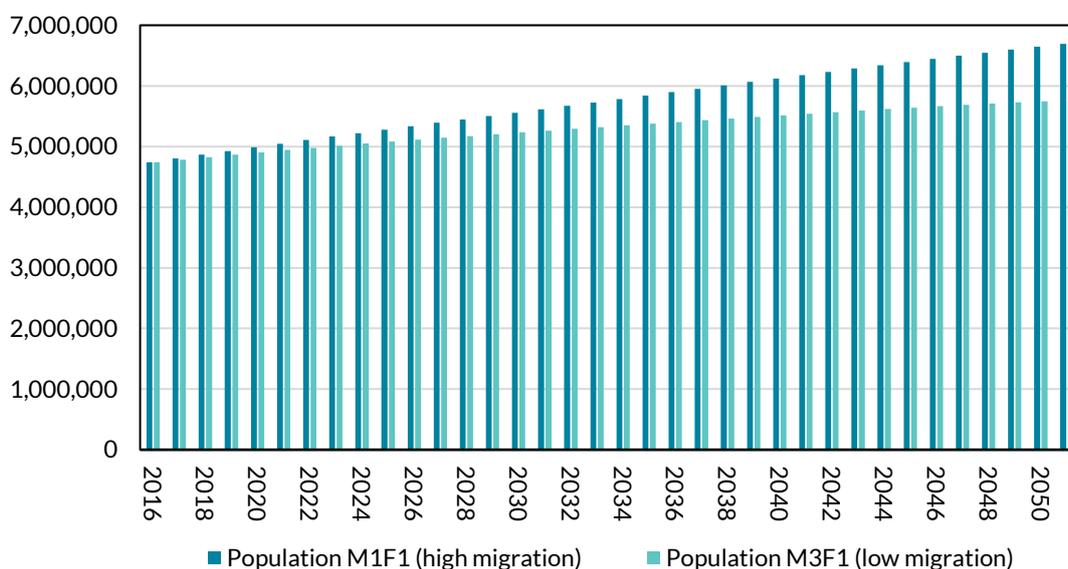
migration. The panel is informed by the results of Census 2016, migration estimates up to 2017, births data up to Q2 2016, and the results of the Q2 2016 Labour Force Survey. After considering these data, the panel arrives at a range of assumptions for the natural increase, mortality, and net migration. The key assumptions underpinning the different CSO population projections are summarised in Table 1 below.

Table 1 | Demographic assumptions

Natural Increase	
F1 (Fertility)	Fertility rate remains at 2016 level (1.8) until 2051
F2 (Fertility)	Fertility rate remains at 2016 level (1.8) until 2031, then falls to 1.6
Mortality	Mortality rates for males and females are assumed to improve at 2.5% and 2.0% per annum, decreasing linearly to 1.5% by 2040.
Net Migration	
M1	Net migration of 30,000 per annum to 2051
M2	Net migration of 20,000 per annum to 2051
M3	Net migration of 10,000 per annum to 2051

Source: CSO Population Projections.

Figure 10: CSO Population projections used for housing demand estimates



Source: CSO Population Projections.

The analysis in this *Letter* uses two CSO population projections out to 2051, M1F1 and M3F1. The same fertility (F1) and mortality assumptions are used in both scenarios with the difference between the two population projections due to migration. The M1F1 projection assumes net migration of 30,000 per annum until 2051. The M3F1 projection assumes a lower level of migration of 10,000 per annum. The two population projections

are shown in Figure 10. In the M1F1 forecast, the population is projected to grow by over 1.9 million from its 2016 level to just under 6.7 million in 2051. This equates to an average annual rate of population increase of almost 0.8 per cent. Under the low migration M3F1 variant, the population is projected to increase by just over 1 million to 5.7 million in 2051.

Methodology

To forecast the necessary level of housing completions, our analysis closely follows the methodology described in Pirounakis (2013). Similar work has previously been carried out on the Irish housing market - most recently by Duffy *et al.* (2014). Taking the population projections from the CSO described in the previous section, the total housing need can be forecast by growing the housing stock in line with the growth in the population in each age group, taking into account the probability of headship at different ages.

Since the future evolution of the headship rate is uncertain, we estimate scenarios for housing demand under two alternative headship assumptions. In the first scenario, we estimate housing demand assuming unchanged 2016 headship.⁴ Given the unusual decline in headship in Census 2016 described in the previous section, it could be argued that Ireland is in a period of suppressed headship. To illustrate the potential impact of an increase in headship, we also estimate housing demand under the assumption that headship increases to UK levels linearly over the projection horizon.

4. Results

4.1 High migration with unchanged headship scenario

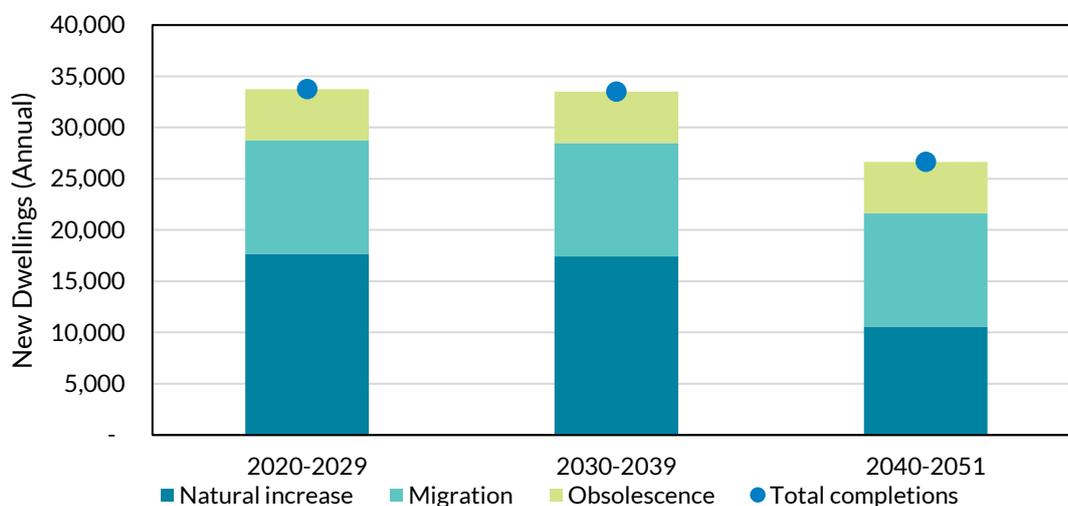
This scenario uses the CSO's M1F1 demographic projection, and assumes no change in headship. As show in Figure 10, using these assumptions new housing demand is estimated at around 33,000 units per year from 2020-2039, falling to 26,000 per year from 2040-2051. The lower demand post 2040 is due to the projected age profile in that decade – the number of individuals in the key household forming demographic of 25 to 35 year olds goes into decline.

Figure 11 breaks down the estimated overall increase in overall housing demand into the contribution from the natural increase in the population, migration and obsolescence. The natural increase in the population is expected to be the main driver of housing demand over the projection horizon. Over the period 2020-2030, the estimates indicate that around 18,000 new dwellings would be required each year due to the natural increase. Migration is the second key driver of housing demand out to 2051 with the increase in population from this source accounting for over one third of the estimated new housing demand out to 2051. Our scenario assumes that 5,000 new dwellings are

⁴ As in Pirounakis (2013), headship is held constant within each age category, but not at the aggregate level.

required each year to replace existing housing stock lost due to obsolescence based on Duffy *et al.* (2014).

Figure 11: High migration scenario: annual housing demand estimate by source



Source: Own calculations.

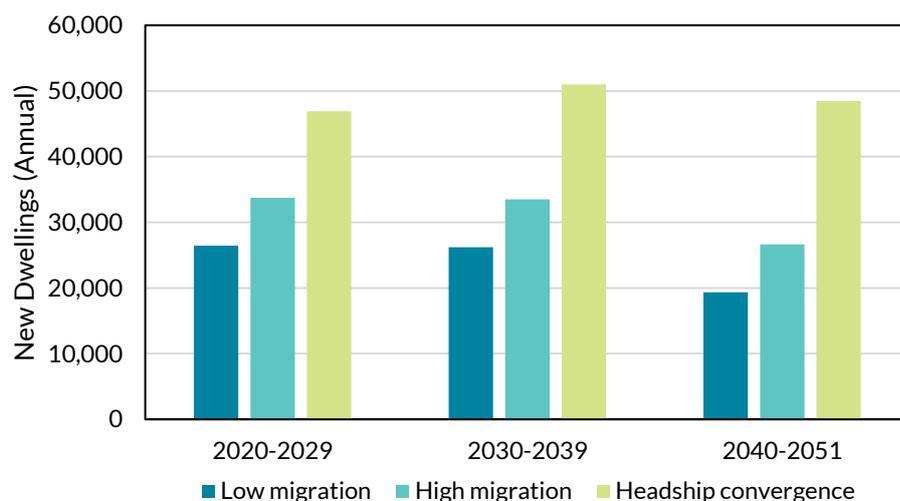
Ireland's National Planning Framework (NPF) contains projections for the population and related housing demand out to 2040.⁵ The NPF estimates an annual requirement for 30,000-35,000 dwellings per annum over the period 2018-2027, similar to the estimates in this scenario. Beyond 2027, the projected level of housing demand in the NPF is lower than the estimate in our high migration scenario. This is mainly explained by the lower net migration assumption in the NPF estimates.⁶ The NPF population projections assume net inward migration of 12,500 per annum compared to 30,000 per annum in the high migration scenario.

4.2 Low migration scenario

The previous section estimated housing demand under the CSO's M1F1 high migration (30,000 per annum) scenario. While the level of net inward migration in 2017 and 2018 has been close to the 30,000 assumed in the CSO projections, future long term future migration trends are extremely uncertain. As a result, Figure 12 shows estimated housing demand using the CSO's low migration population projection (M3F1 in Table 1 above). Under this scenario, which assumes annual net inward migration of 10,000 per annum, annual average housing demand is estimated at around 23,000 units over the projection horizon.

⁵ See Project Ireland 2040, National Planning Framework. Available at: <https://www.candidatemanager.net/cm/p/pJobDetails.aspx?mid=YUYF&sid=BDCXD&jid=GTWBGTF&a=1bqO7eBaJhQ%253d>

⁶ See Morgenroth (2019): <https://www.esri.ie/system/files?file=media/file-uploads/2018-01/RS70.pdf>

Figure 12: Annual housing demand estimates under different assumptions

Source: Own calculations.

4.3 Convergence to UK Headship Scenario

As outlined in Section 2, the average number of persons per household in Ireland is higher than that of similar western European countries. Household size in Ireland had been on a consistent downward path for over fifty years but this trend stalled in 2016. The higher average number of persons per household in Ireland relative to other EU countries is related to a number of factors, including the low rate of urbanisation, the composition of the housing stock with a low proportion of apartments and the fall in overall housing supply since the financial crisis. Following the decline recorded in Census 2016, it is uncertain whether Irish headship rates will increase again in future years. A range of socio-economic and structural factors will play a role in determining future headship rates.⁷

Although both the extent and pace of any future changes in headship are currently unclear, it is useful to illustrate the impact on housing demand if headship in Ireland was to converge towards higher rates more typical in the EU. Between 1966 and 2016, the gap between average household size in Ireland and UK narrowed with Ireland slowly converging towards the UK average. To estimate this scenario, we modify the high migration analysis (Section 4.1) by assuming that headship gradually increases by between 2 and 12 percentage points within each age bracket, so that headship rates in Ireland are broadly in line with current UK headship by 2051.⁸

⁷ See Byrne, Duffy and FitzGerald (2018).

⁸ Since headship data comes from the census, and no UK wide census exists, our scenario is based on the England and Wales census, as well as the censuses for Scotland and Northern Ireland. The housing data in the three regional censuses are not perfectly comparable, but a reasonable approximation of UK headship by age can be made for the purpose of this exercise. The largest increases in headship are seen in the under 25 and 25 – 29 categories, increasing by 10 and 12 percentage points respectively.

Assuming a gradual increase in headship rates towards UK levels over the projection horizon results in a significant increase in the estimate of housing demand compared to the high migration with unchanged headship scenario (Figure 12). Under the assumption that headship increases towards UK levels by 2051, estimated new housing demand rises to almost 47,000 units per year from 2020-2029, compared to 34,000 in the scenario with unchanged headship. For the decade 2030-2039, estimated housing demand rises to just over 51,000 per annum with convergence to UK headship, compared to 33,000 with unchanged headship.^{9,10} These estimates illustrate the potential effect on housing demand of a linear increase in Irish headship towards UK levels. It is important to note that the future path of headship in Ireland is unlikely to mirror precisely the level assumed in this scenario. In particular, the pace of any future increases in headship may be faster or slower than assumed here and the level to which headship converges may not be in line with the UK benchmark used for this scenario.

4.4 Historic Estimates of Housing Demand 2011-2019

As noted in Section 2, the level of housing completions fell sharply following the 2008 economic and financial crisis with the average annual number of new dwellings constructed dropping to around 5,500 from 2011-2014. Given the continued, albeit slower, growth in the population over this period it is useful to compare actual housing completions over recent years to estimated demand (Kennedy and Myers, 2019).

Applying the same methodology used for the projection exercise to the historic data, it is possible to estimate the level of housing demand from 2011 to the present, consistent with the actual change in the population over this period. Our estimates indicate that on average, to keep pace with the growth in the population and changes in household formation, around 27,000 dwellings would have been required per annum from 2011 to 2019. Actual housing completions over this period amounted to around 10,500 per annum. The gap between actual housing completions and the estimate of demand based on population growth implies a significant degree of unmet housing need over this period.

5. Conclusion

In this *Economic Letter*, we examine recent and future trends in population and household formation and consider the implications for housing demand. While the rate of population growth slowed during the economic and financial crisis, it remained positive. Since 2016, population growth has accelerated again, driven by a resumption of net inward migration. Our analysis shows that in the period since 2011, the growth in the population has

⁹ Assuming an increase in headship in Ireland towards EU levels, Lyons (2019a) estimates long-run housing demand of around 50,000 units. See <https://www.housing.eolasmagazine.ie/the-housing-market/>

¹⁰ Increases in supply to meet projected demand can come about as a result of new building, conversions, change of use and other changes to the dwelling stock. Data show that conversions have played a role in adding to the supply of new dwellings in the UK. See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/756430/Housing_Supply_England_2017-18.pdf

significantly exceeded the increase in the housing stock and the average household size has risen, reversing a previous long-running trend of falling household size.

Given the uncertainty around the precise rate of future population change and household formation patterns, we examine a number of scenarios for long-term housing demand. We find that assuming unchanged headship, around 34,000 homes would be required per year until the end of the next decade. Given the currently suppressed level of headship in Ireland, we also estimate housing demand under the assumption that headship increases linearly to UK levels over the forecast period. In all scenarios we examine, estimated housing demand is higher than the number of new residential units completed over recent years, implying a need for continued expansion in housing supply over the medium-term. With the economy currently at an advanced stage of the business cycle, further increases in housing investment would have macroeconomic and labour market implications (see Byrne and McIndoe-Calder (2019), Conefrey, O'Reilly and Walsh (2019) and Staunton and Smyth (2019)).

The housing demand estimates are sensitive to the projected change in the population. In particular, there is uncertainty over the scale of future net migration flows and in recent years net inward migration has been higher than in the CSO projections. A continuation of this trend would result in additional demand for housing in excess of the estimates presented in this *Letter*. Our analysis provides estimates of future overall housing demand but does not address the composition of the housing stock. Analysis by Lyons (2017, 2019b) points to a need for a significant increase in the number of apartments and a more diverse mix of dwelling types in Ireland.

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