



# ESRI Research Note

## *Projected Population Change and Housing Demand: A County Level Analysis*

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Edgar Morgenroth



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## 1. Introduction

While the recent debates on the housing market have focused particularly on Dublin, much of the public focus and most of the analysis of housing in Ireland<sup>2</sup> has been in the context of a national housing market. However, many variables, such as prices, new construction (completions), planning permissions, and vacancy rates vary considerably across the country, which implies that there is no homogenous national housing market but rather that there are many local housing markets.<sup>3</sup> For example, house prices have been three to four times higher in the county with the highest price compared to the county with the lowest price<sup>4</sup>.

Not surprisingly, there are also significant differences across counties with respect to underlying fundamentals that affect the housing market such as income, unemployment, and population growth and these determine the price locally and the price differences across the country. Given these differences in fundamentals and also their likely different future paths, one can expect the local housing markets to develop quite differently. Thus, while the housing market in some areas will recover quickly, other areas may take very long or indeed may not recover at all, which has important policy implications. The spatial heterogeneity of the housing market also implies that analysis at the national level is likely to be biased, as has been found by Goodman (1998). It is, therefore, important to understand local housing markets and consider the drivers of change at the local level.

The lack of sub-national analysis of the housing market in Ireland is at least in part explained by the lack of consistent data over a sufficiently long time period,

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<sup>2</sup> For example Kenny (1999), Roche (1999), Duffy (2010) Duffy and FitzGerald (2012).

<sup>3</sup> An exception is the paper by Lyons (2014) which considers rents and house prices as a function of property characteristics and location for 1,100 zones for the period 2007 to 2012 in a hedonic pricing model. He did not consider the effect of fundamentals which is the focus of this paper.

<sup>4</sup> Based on data from the ESRI/PTSB House Price index (<https://www.permanenttsb.ie/about-us/house-price-index/archive/>) and asking prices published by Daft.ie (<http://www.daft.ie/report/>).

\*edgar.morgenroth@esri.ie

but may also be due to the relatively small size of Ireland which leads some to argue that analysis at the sub-national level is not important.

This Note summarises some recent research into the impact of likely demographic trends on the housing market at county level.<sup>5</sup> Specifically, it constructs a projection of the number of households in each county for 2021 and analyses the consequences of the projected change on the required supply of housing.<sup>6</sup> The county level is chosen as data for smaller areas is not readily available. However, it should be noted that there are significant differences with respect to housing within many counties and local housing markets are also likely to straddle across county boundaries.

## **2. Projecting Demographic Change at the County Level**

Demographic change impacts significantly on housing demand. An increase in the population resulting in an increase in households raises the demand for housing, other things being equal. Likewise, holding the population constant, an increase in household formation raises the demand for housing. Thus, understanding the trends in household numbers which are fundamentally driven by the population trends yields important insights into the likely developments of the housing market. With significant heterogeneity with respect to demographic change across the country it is useful to consider the impact of demographic change at the sub-national scale. Here the focus is on the county level.

County level population projections are not constructed by the Central Statistics Office (CSO), which publishes national and regional population projections. It is, therefore, necessary to construct a new set of population projections. To this end the ESRI county population projection model (IC-POP) is utilised.

This model projects the county level population for single year of age cohorts by gender using the cohort component method. This method is based on the so called balancing equation of population where the population at a point in time is equal to the population at some previous point in time plus births, plus net immigration minus deaths over the period between the two points in time. This relationship can be used for forecasting purposes if the starting population is known (see Morgenroth, 2002, 2008).

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<sup>5</sup> Morgenroth, E. (2014). A working paper, that apart from considering the impact of the likely county demographic trends, also models price changes, housing stock changes and changes in the vacancy rate across counties as a function of key fundamentals.

<sup>6</sup> Here only the demographic impact is considered, and other factors are assumed unchanged.

In order to operationalise this methodology it is necessary to apply assumptions regarding mortality rates, fertility and migration. Given that the model is a county level model, migration encompasses both international and internal migration. Here mortality rates are those used by the CSO in its population projections, fertility is assumed to be unchanged from its 2011 level, and international migration is assumed to follow that projected in the ESRI *Medium-Term Review* (FitzGerald and Kearney, 2013). The spatial patterns of international and internal migration are assumed to follow the traditional (pre Celtic Tiger) pattern with net-migration towards the large metropolitan areas and particularly Dublin. Household size is assumed to decline over time and to follow the trend of the ESRI *Medium-Term Review* which is applied to county level household size.<sup>7</sup> Taking the detailed tables from the CSO *Census of Population 2011* as a starting point and applying the assumptions the IC-POP model generates projections of the population and households at county level.

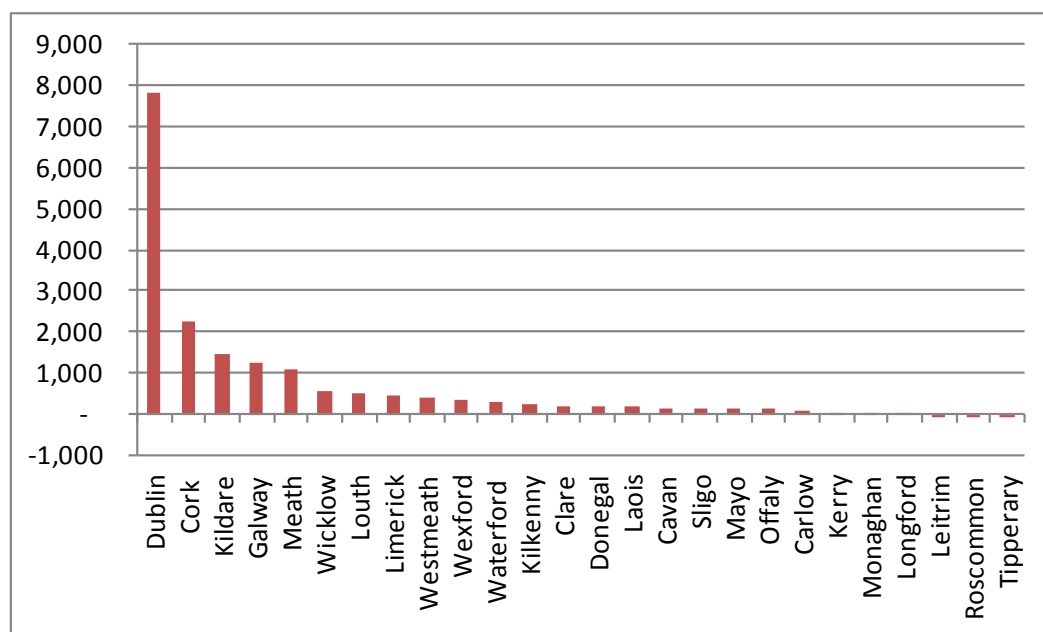
Figure 1 shows that the increase in the number of households is projected to be particularly large in Dublin, and to a lesser extent in the other large cities and the surrounding counties around Dublin. For Dublin the annual average increase is projected to be almost 8,000 households, which has significant implications for the required housing units, particularly if one considers that during 2013 only 1,360 units were completed in Dublin.<sup>8</sup> For the State as a whole on average just under 18,000 additional households are projected to be created each year between 2011 and 2021, which is smaller than the 20,000 predicted in Duffy *et al.* (2014) due to the simpler approach used in generating household numbers. Duffy *et al.* (2014) calculate the number of households on the basis of age specific household headship rates while the approach taken here is to apply the county specific household size for each county which are assumed to follow the same trend. Thus, the approach used here does not consider age specific factors in household formation.

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<sup>7</sup> This implies that there is no convergence in household size across counties. The more detailed approach of Duffy *et al.* (2014), to generate household numbers by analysing headship rates was beyond the scope of this analysis.

<sup>8</sup> The numbers are from the Department of Environment, Community and Local Government, Housing Statistics: <http://www.environ.ie/en/Publications/StatisticsandRegularPublications/HousingStatistics/>

**FIGURE 1** Estimated Annual Average Increase in the Number of Households 2011 to 2021



Source: Own Calculations.

Using the projected household numbers it is possible to analyse the future housing requirement going forward. If all housing units were fully occupied in 2011, then the required additional units would simply equal the number of additional households, i.e., 18,000 housing units would need to be added annually during the period 2011 and 2021.

However, the *Census of Population 2011* identified significant numbers of vacant housing units, which need to be taken into account when assessing the required additions to the housing stock.<sup>9</sup> Another factor that needs to be taken into account is the fact there have been house completions since 2011.<sup>10</sup> Finally, some properties are taken out of the stock of inhabitable properties, for example, due to a fire or structural defects. Here all factors are accounted for.

Excluding holiday homes, some 230,000 housing units were vacant in 2011, while the demographic projections indicate that over the 10-year period to 2021 some 180,000 households will need to be added. This would imply that no new properties would need to be built in that time period if all vacant properties were in locations that matched the projected population growth. Of course, this is not the case which is why sub-national analysis is required. While *Census 2011* showed significant levels of vacancies, it is normal to observe some level of vacancies, for example, because some newly completed properties are available for sale. Here it is assumed that the vacancy rate that was observed in 1996 is

<sup>9</sup> Holiday homes are not considered in the calculations.

<sup>10</sup> In 2012 and 2013 there were 8,488 and 8,301 house completions respectively.

what is typically observed in a normally functioning market. In total over the years 2011 to 2013 just over 24,000 housing units have been completed. FitzGerald (2005) estimated that the annual depreciation rate of housing in Ireland for the period 1991 to 1996 was 0.41 per cent. This figure is used in the calculations below.

The vacant stock in 2021 is calculated by subtracting (adding) the projected number of additional (fewer) households, adding the properties completed during the period 2011 to 2013, subtracting obsolete properties and allowing for a 'normal' level of vacancies.<sup>11</sup> The results of this calculation are shown in Figure 2 which also shows the level of vacancies in 2011.

Figure 2 shows the number of properties that would be required assuming no units are completed in the period after 2013. Negative numbers indicate the number of housing units that would need to be constructed to meet the projected demographic demand while a positive number indicates excess supply by 2021. Thus, accounting for the initial number of vacant units, depreciation and some level of normal rate of housing vacancy almost 60,000 housing units would need to be built in Dublin to meet the projected demographic demand. Other counties which will need to expand their housing stock include Kildare, Meath, Wicklow, Cork, Galway, Louth and Westmeath. However, for many counties the level of vacant stock and the projected demographic change is such that no additions to the housing stock are necessary to meet demand for the period up to 2021.<sup>12</sup>

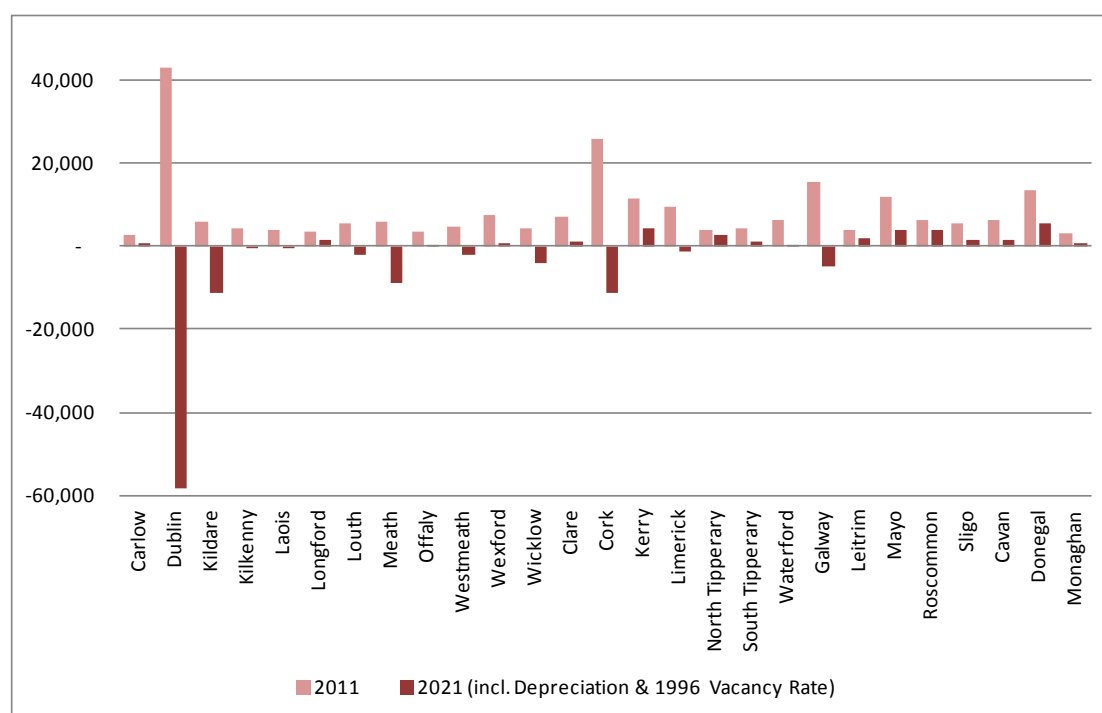
In total for those counties, which would without additional construction experience a housing shortage, just under 90,000 housing (or approximately 12,500 per year) units will need to be completed to meet demand, which is considerably smaller than the 180,000 implied by the increase in the number of households, reflecting the impact of the significant oversupply, and the fact that some construction has taken place. Over 60 per cent of these (90,000) are required in Dublin and another 26 per cent are accounted for by counties Louth, Meath, Kildare and Wicklow – in effect the commuter belt around Dublin. However, just 33 per cent of the completions during the 2011 to 2013 period were recorded in these counties. Thus, the analysis here shows that housing supply issues are almost exclusively concentrated in the Greater Dublin region.

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<sup>11</sup> This approach differs to that taken in analysis for the Housing Agency, in that it takes account of the significant oversupply in housing in 2011 (see Housing Agency, 2014).

<sup>12</sup> This assumes that all the vacant stock is in places where there is demand for housing and that the vacant stock is of the appropriate type of housing required. In practice, this is unlikely to hold and indeed all counties have recorded house completions over recent years.

**FIGURE 2** Vacant Housing Stock for 2011 and 2021



Source: Own Calculations. *Note:* Negative numbers indicate the number of housing units that would need to be constructed to meet the projected demographic demand while a positive number indicates excess supply.

### 3. Summary and Conclusions

Analysis of the Irish housing market at the sub-national level has been largely ignored in the literature. This Note has considered the implications of projected demographic change on housing demand at county level.

The analysis of the impact of demographic change highlights the significance of the heterogeneity across the country. The analysis showed that while demographic change implies that between 2011 and 2021, 180,000 additional housing units would be required, the number of vacant dwellings implies that for many counties no additional housing units will be needed. Accounting for current oversupply only half of the 180,000 will be needed of which over 60 per cent of these are required in Dublin and another 26 per cent are accounted for by counties Louth, Meath, Kildare and Wicklow. Thus, the additional demand is highly concentrated in the Greater Dublin area. Given that 33 per cent of the completions during the 2011 to 2013 period were recorded in the Greater Dublin Area and given that the total number of completions is below what is needed to meet demand, this will result in significant housing shortages if the rate of housing completions is not increased rapidly.



## REFERENCES

- Duffy, D. (2010). "Negative Equity in the Irish Housing Market", *The Economic and Social Review*, Vol. 41, No. 1, Spring, 2010, pp. 109-132.
- Duffy, D. and FitzGerald, J. (2012). "The Irish Housing Market", *Special Article in Quarterly Economic Commentary*, Summer 2012. Dublin: The Economic and Social Research Institute.
- Duffy, D., Byrne, D. and FitzGerald, J. (2014). "Alternative Scenarios for New Household Formation in Ireland", *Special Article in Quarterly Economic Commentary*, Spring 2014. Dublin: The Economic and Social Research Institute.
- Fitz Gerald, J. (2005) "The Irish Housing Stock: Growth in Number of Vacant Dwellings". Special Article in McCoy, D., David, D., Bergin, A., Garrett, S., and Y. McCarthy. *ESRI Quarterly Economic Commentary, Spring*. Dublin: Economic and Social Research Institute
- Fitz Gerald, J. and Kearney, I. (eds.) (2013). *The Medium-Term Review*. Dublin: The Economic and Social Research Institute.
- Goodman, J., (1998) "Aggregation of Local Housing Markets", *Journal of Real Estate Finance and Economics*, Vol. 16(1), pp. 43-53.
- Housing Agency (2014). *Housing Supply Requirements in Ireland's Urban Settlements, 2014 to 2018*. Dublin: Housing Agency.
- Kenny, G. (1999). "Modelling the Demand and Supply Sides of the Housing Market: Evidence from Ireland", *Economic Modelling*, Vol. 16, pp. 389-409.
- Lyons, R. (2014). "East, West, Boom and Bust: The Spread of House Prices and Rents in Ireland, 2007 - 2012", *Journal of Property Research*, forthcoming.
- Morgenroth, E. (2002). "Evaluating Methods for Short to Medium Term County Population Forecasting". *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol. 31, pp.111-143;
- Morgenroth, E. (2008). "The Impact of Demographic Change on Demand for and Delivery of Health Services in Ireland 2006-2021. Report 2: Demographic Projections for the period until 2021", published online by the Economic and Social Research Institute and Health Research Board.
- Morgenroth, E. (2014). "Modelling the Impact of Fundamentals on County Housing Markets in Ireland" *MPRA Working Paper No. 57665*.
- Roche, M., (1999) "Irish House Prices: Will the Roof Cave In?" *The Economic and Social Review*, Vol. 30, No. 4, pp. 343-362.