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Economic Letter: Housing supply after the crisis

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Housing supply after the crisis

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Abstract

The scarcity of housing units is one of the main issues facing the Irish residential property market at present. Much attention has focussed on the shortage of new home completions, which declined dramatically in the wake of the financial crisis. This Letter draws together information on housing supply in Ireland from a number of sources to place current developments in the context of economic theory and international comparison. In doing so, both the impact of the financial crisis on housing supply, and the more recent introduction of macroprudential measures by the Central Bank are considered.

1 Introduction

An average of 32,000 residential housing units per year has been added to the stock of Irish housing since the early 1970s. However, construction activity has varied significantly over this period. For much of the 1970s and 1980s, the annual average was 25,000 units. Around 50,000 houses per annum were delivered during the late 1990s/early 2000s. A further increase in building activity during the housing boom (2004-2008) saw an average of 75,000 houses built annually. The supply of new homes fell sharply thereafter. Between 2011 and 2014, fewer than 10,000 units were built annually on average, and, while there has been a slight rise in construction activity since, the current rate is low by historical Irish standards and a little over half the number required to meet estimated annual demand.

The result has been that, as the economy has picked up in recent years, an acute shortage of supply has occurred in many areas throughout the country, prompting much public debate, the establishment of a special Oireachtas Committee[2] and the release of an action plan from the Government.[3] This Letter considers the current supply of housing, in the aftermath of the property bust and financial crisis, as well as the subsequent introduction of the macroprudential measures for mortgage lending, drawing together information from a variety of sources.

In doing so, we seek to answer questions such as: how does housing supply in Ireland compare to that in other countries in the post-crisis period?

[2] The role of this Committee was to review the implications of the problems of housing and homelessness. In June 2016, it published recommendations on how to deal with the housing and homelessness crisis. See: "Report of the Committee on Housing and Homelessness".

[3] See:"Action Plan for Housing and Homelessess" and rebuildingireland.ie.

How does it compare to other countries that experienced large housing busts? What does the literature and empirical evidence suggest should happen to housing supply in an upswing? What role can we consider the macroprudential measures would have, in theory and in practice, on housing supply? What measures can be taken to increase housing supply without raising prices?

This Letter proceeds as follows: In the next section, we compare housing completions in Ireland with those internationally. We first compare Irish housing investment and house completions with those in other European countries over recent years. We then compare housing completions since the crisis with the experience of other countries which had housing busts in the 1990s. In Section 3, we turn to the macroprudential measures, discussing their possible impact on housing supply using a simple analytical framework of a market without financial frictions. In this section we note that the macroprudential measures affect demand, rather than supply. Indeed in Section 4 we note that supply side measures can work with the macroprudential measures to alleviate house price pressures, and we outline some policies that have been proposed in this regard. Section 5 concludes.

2 Irish data in international context

2.1 Current level of housing supply in Ireland and Europe

House completions in Ireland declined significantly in the period since the start of the crisis in 2008 and have been slow to recover since. But how does the situation in Ireland compare internationally? Chart 1 sets out how investment in housing as a share of GDP has developed for Ireland and a selection of European peers over the past 20 years. [4] For the majority of countries in the sample, the rate of residential investment remained relatively stable throughout the entire period. Nonetheless, a group of countries diverge substantially from the others from 2002 to 2007. In Ireland, housing investment increased from 6.4 per cent of GDP in 1997 to over 14 per cent of GDP in 2005, the highest rate in Europe. Only Greece (at 13.9 per

cent) and Spain (at 12.2 per cent) showed similar high levels of investment at the time, while all three were well above the 75th percentile of the sample, (c.6.4 per cent).

According to Duffy et al. (2016a), the relatively high rates of residential investment in these countries was a function of their convergence towards average European living standards, improving economic circumstances, favourable demographic patterns and accommodative international financing conditions. It was not to last however, and from 2008 housing investment declined markedly in all three countries. In Ireland's case it declined sharply and remained at 2 per cent of GDP in 2016Q1, with only Greece lower. In comparison, at the 25th percentile of the sample investment was 3 per cent of GDP, and at the 75th percentile it was 4.9 per cent. One should note that the scale of residential investment can vary widely across countries, due to demographic and/or structural market features, such as household formation, construction costs, taxes, subsidies and rent controls.

Another common cross-country comparator of housing supply is the number of house completions per thousand inhabitants, as illustrated in Chart 2. Again, the rate of residential construction was much higher in Ireland compared to elsewhere prior to the financial crisis. In 2006, the figure for Ireland reached 22.2, which was twice the ratio of Spain (in second place) and more than 6 times the ratio of the countries in the lowest quartile, such as Germany, the UK and Sweden. The bursting of the house price bubble saw a sharp reversal of this ratio in Ireland. It declined to under 2 completions per thousand inhabitants in 2012/13, placing Ireland in the lowest quartile alongside Spain, Portugal, Italy and Greece. The nascent recovery in construction activity since then has seen Ireland move to the median of the group (c.2.7 completions per thousand inhabitants), but it is still some way behind those in the upper quartile such as France, Austria and Finland, where there were at least 5 completions for every 1,000 people.

2.2 Completions in the wake of housing crises

It is interesting to compare housing completions in Ireland following the recent financial crisis with

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[4] Normalising investment data using GDP is common in the literature. See, for instance, European Commission (2015) and ECB (2016).

completions in other countries that experienced, and subsequentley emerged, from a housing crisis in the 1980s and 1990s, namely Sweden, Finland and the UK. Chart 3 shows the evolution of housing completions per 1,000 of population in each of these countries, and Ireland, from their pre-crisis peak through the following 10 years.[5]

The peak output per 1,000 of population is highest in Ireland, and declines most dramatically, indicating that Ireland had both the largest and the deepest crisis. The experience in Ireland is most similar to that in Sweden, which experienced a lower level of housing output during its crisis, albeit the decline was from a much lower peak. Furthermore, we can see that the duration of the slowdown is different across countries: in the UK, the trough in house completions occurs 4 years after the peak in completions, compared to 6 years in Finland, and 7 years in both Ireland and Sweden.

It is also clear from Chart 3 that the decline in housing completions is generally much sharper than the subsequent recovery. This is in line with a strand of literature which stresses asymmetries in adjustment costs in the housing sector. Topel and Rosen (1988) proposed a theoretical model in which, during a housing market expansion, skilled labour, serviced land and materials may act as constraints on firms. As a result, firms have to divert resources from the production of housing towards planning and search activities. These constraints do not exist when firms are reducing output, and thus it is easier to lower output than to increase it. In this context, a particularly interesting paper is that by Kenny (1999), which considers these costs in the Irish case. That paper extends the theoretical framework of Topel and Rosen (1988), and tests for the existence of asymmetric adjustment costs associated with the expansion of housing output. Kenny finds evidence in favour of asymmetric adjustment costs in Irish data over the period 1975Q4-1998Q3.

To focus more on the post-crisis recovery, Chart 4 indexes house completions per 1,000 of population to 100 at the trough and looks at the evolution of the series thereafter. For Ireland, this sample period is relatively short, since the trough occurred in 2013, however, the chart shows the evolution for the remaining countries over a 10-year period. While the evolution in house comple-

tions is related to demographics and other factors over the longer term, the immediate post-trough period is likely to be driven by "catch-up" due to low output in the crisis years. Here we can see that the recovery in house completions is sharpest in Ireland compared to the other countries. The pattern in the post-trough pick-up most closely resembles that in Finland, while the current level of house completions in Ireland three years after the trough is close to, but marginally above, those in both Sweden and Finland.

3 Supply and macroprudential measures

The introduction of macroprudential measures on residential mortgages in 2015 has been associated in public debate with the housing shortage. While the analysis above suggests that the level of housing investment may be low by European comparison, completions are currently in line with a number of European peers and are ahead of those for countries which experienced a similar, or less severe, housing bust in the 1990s.[6] Next, the likely impact of the macroprudential measures are considered in greater detail.

In particular, the public discussion raises the question of how, in theory, the macroprudential measures might affect housing supply. Consider a simple model of supply and demand for new houses as in Chart 5. For simplicity, this model abstracts from financial frictions. In the medium term, the supply curve is upward sloping from left to right (S1 in Chart 5), and the demand curve is downward sloping from left to right (D1). In such a scenario, the market is in equilibium where supply equals demand, or point A.

What happens when macroprudential measures are introduced? The macroprudential measures, if binding, shift the demand curve left (from D1 to D2 in Chart 5), since they would reduce buyers' ability to purchase a house. As a result, the market reaches an equilibrium similar to point B in Chart 5: both prices and the quantity of new houses is lower (P2* and Q2*).

This is not simply a theoretical result: it is very similar to the findings of a recent paper by Duffy et al., (2016b). The authors analyse the impact

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[5]The peak year is 2006 in Ireland, 1988 in the UK and 1990 in Sweden. For Finland, data are only available since 1990, however, this appears to be a reasonable approximation of the pre-crisis peak given the narrative history of the Nordic crises.

[6]Of the 14 countries for which completion rate data has been gathered, 11 are currently below their (2003-2015) average.

of the macroprudential measures on the housing market with a counterfactual scenario in which no measures were implemented. Among other variables, their results suggest that the macroprudential measures will reduce housing completions relative to the counterfactual scenario. In addition, prices and mortgage lending will also decline relative to the counterfactual.[7]

However, two factors are important in determining the impact of the measures. The first is the degree to which the measures actually bind. For instance, if they did not bind at all, they should not have any impact on the demand curve.

The second is the impact on new purchasers to the market. Since some of the effect of the measures may be to slow new entrants to the market by requiring buyers to save for longer, part of the shift in demand is temporary. To understand this, consider a situation in which all people enter the workforce, save for a number of years, and then buy a property at the age of, say, 25. After implementation of the measures, all borrowers need some extra years, x, to save their deposit and can therefore buy at the age of 25 plus x.[8] This reduces demand by the number of people in the age cohort 25 to (25 plus x). However, once x years have passed, many of these people enter the market, increasing demand again.[9]

Over time therefore, it is likely that demand will shift back rightwards to some extent. In Chart 5 this is equivalent to demand shifting back from D2 towards D1, and the new market equilibrium will be somewhere on the red line segment between points A and B. As such, the equilibrium level of supply would increase again, as would prices.

The implication of this simple analysis is that the equilibrium quantity of new houses produced is lower with the measures because fewer houses are demanded, not because builders are in some way prevented from supplying them. Given the supply curve (S1 in Chart 5), without the macroprudential measures, no additional houses would be supplied at current price levels (P2*), even though more (Q3) would be demanded. Instead, the equilibrium would be where supply equals demand (where S1 equals D1, point A). The equilibrium quantity of new houses would be higher, but only because all buyers pay more for their houses and are more indebted.

4   Supply-side policies

Given the issue of asymmetric adjustment costs, which make it more costly for building firms to increase output than to reduce it, it is interesting to consider the effect of policies which shift the supply, rather than demand, curve. Policies which shift the supply curve to the right would increase the number of houses built at every price, and move the market equilibrium to some point along D2 to the right of point B in Chart 5. As a result, more houses would be built, prices would be lower, and buyers would be less indebted.

Indeed, the literature indicates that supply-side policies and demand-side measures (such as the macroprudential measures) can work together to dampen housing cycles. For instance, Craig and Hua (2011) show that in Hong Kong, land supply is the second most important factor driving house prices after real GDP per capita, while Glaeser et al. (2008) show that regions with elastic housing supply have shorter bubbles and smaller price increases.

A number of recent studies have highlighted supply-side issues in the housing market and suggested policies to alleviate them.[10] Indeed, the Government's action plan aims to address a number of these issues. Here, we briefly overview some of the issues that have been highlighted in that Report and elsewhere.

- The adequate supply of zoned and serviced land for development is a major element if the supply of residential homes is to be in-

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[7]This result has also been found in other countries that have introduced similar macroprudential measures. For instance, Ahuja and Nabar (2011) conduct a case study of Hong Kong SAR and find that tightening LTV limits reduced both transaction volumes and price growth, albeit with a lag.

[8]Recent research by Kelly and McCann (2016) indicates that this increased time to save is less than 2 years for renters of 2-bed properties moving to 3-bed properties in the same area.

[9]See Miles (2014) for a discussion. Of course some borrowers may continue to be constrained by the LTI limits.

[10]See for instance, Lyons (2015), SCSI (2016) and Kennedy and Stuart (2015)). Of course, supply-side issues are not unique to the Irish market. For instance, recent papers by Emanuelsson (2015) and Hsieh et al. (2012) discuss issues around housing supply in Sweden and Australia, respectively. While these papers highlight common issues, such as planning permission delays and building regulation, the discussion naturally relates to the specific conditions in these individual countries, and is difficult to apply across countries.

creased. Proposals to increase the use of Strategic Development Zones, and to provide enabling infrastructure and support services are outlined in the Government's Action Plan for Housing and Homelessness. The SCSI (2016) argue that the earlier provision of infrastructure and services to areas where housing shortages are greatest, would help increase supply and enhance land usage.

- In this regard, efforts are being made to identify and register vacant or derelict sites in urban areas. According to the Housing Agency (2016), each Local Authority will introduce a vacant site register from January 2017, while a Vacant Site Levy, which charges the owners of of unused development sites, will become effective in 2018. Commentators such as the SCSI (2016) have argued that the introduction of the Vacant Site Levy should be brought forward. However, Local Authorities have been identifed as one of the major holders of derelict/vacant sites, and efforts could also be made to incentivise the more productive use of these sites.

- Cost-benefit assessment of building regulations could reduce overly burdensome building costs which are passed through to buyers. Moran (2014), among others, argues that building regulations often impose large costs on developers, while providing only small benefits for renters and homeowners, and may have a substantial impact on the viability of projects.

- Lyons (2014) and others advise that the treatment of land and planning regulations could be streamlined: the current system involves stamp duties, development levies, commercial and industrial rates and amenity contributions, as well as the Local Property Tax. A single unified Site Value Tax would make the development process simpler and more transparent. The introduction of development timetables when planning permission is granted could ensure that projects are delivered on time.[11]

- Finally, effective policy decisions are based on good information, and improvements in

data quality would be beneficial. While there have been some initiatives in recent years, the quality of Irish housing/construction/mortgage market data has generally been poor. Gaps and quality shortcomings in the data, including information on the types of houses required and the locations in which they are needed, and how these might be rectified should be a particular focus.

5   Conclusion

The current state of housing supply has been much debated in recent months. This Letter draws together information from a number of sources to discuss issues relating to housing supply in light of both the recent financial crisis and housing bust, and the macroprudential measures implemented by the Central Bank.

In particular, asymmetric adjustment costs are likely to make it difficult for building firms to increase output as quickly as they reduced it during the crisis. Indeed, comparative statistics suggest that investment in housing in Ireland in recent years has been low by European comparison. However, the level of house completion appears to be similar to that in other European countries. Furthermore, considering the experience of other countries which experienced a housing bust in the 1990s, it appears that the magnitude of the peak-to-trough decline was greater, and the subsequent recovery comparably stronger in Ireland than elsewhere.

A simple theoretical framework, which abstracted from financial frictions, was used to discuss the impact of the macroprudential measures on new house supply. Since the macroprudential measures shift the demand for housing, both the equilibrium price and quantity is likely to decline. This is in line with recent empirical evidence. However, the analysis also indicates that, although quantity would be higher in the absence of the macroprudential measures, this would be associated with higher priced properties.

In contrast, shifting the supply curve can increase the quantity of new houses while not putting upward pressure on prices. Furthermore, the literature suggests that supply-side policies can work

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[11]The SCSI (2016) also argues in favour of a reduction in development levies, while noting that some Local Authorities have already taken steps in this regard.

together with macroprudential policies to dampen the housing cycle. The final section of the Letter outlines a number of supply-side issues highlighted in recent debates.

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Chart 1: Gross fixed capital formation on dwellings as a share of GDP: Ireland *vs.* selected European countries

per cent of GDP   per cent of GDP
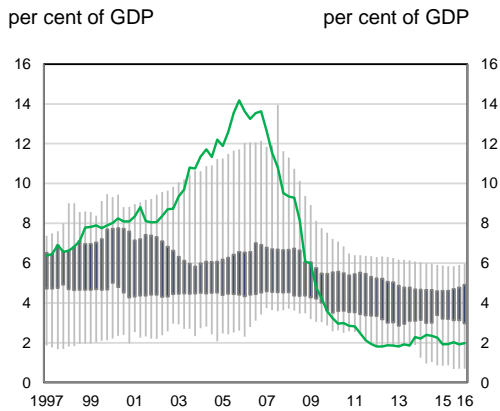
Source: SDW and Central Bank of Ireland calculations
Note: Chart also includes annual max (*top of light grey bar*), min (*bottom of light grey bar*), 25th (*bottom of dark grey bar*) and 75th (*top of dark grey bar*) percentiles based on data from Austria, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the UK.

Chart 2: Housing units per 1,000 population: Ireland *vs.* selected European countries

units per 1,000 pop.   units per 1,000 pop.
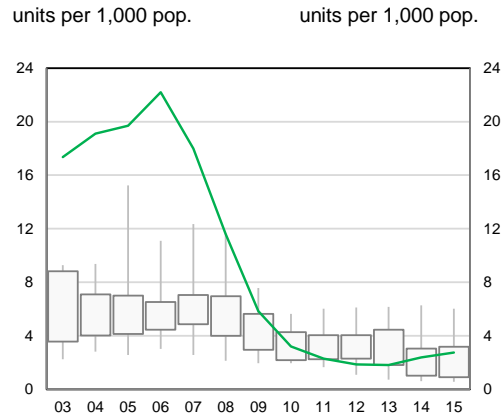
Source: EMF Hypostat and Central Bank of Ireland calculations
Note: Chart also includes annual max (*top of light grey bar)*, min (*bottom of light grey bar)*, 25th (*bottom of light grey box)* and 75th (*top of light grey box)* percentiles based on data from Austria, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the UK.

Chart 3: House completions in the wake of bursting housing bubbles, units per 1,000 population

units per 1,000 pop.   units per 1,000 pop.
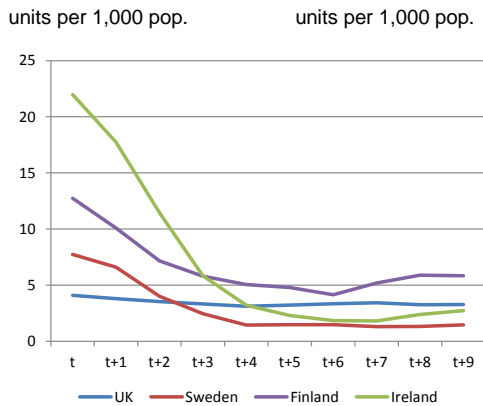
Source: National Authorities and Central Bank of Ireland calculations

Chart 4: House completions in post-crisis recoveries, index=100 at trough

index   index
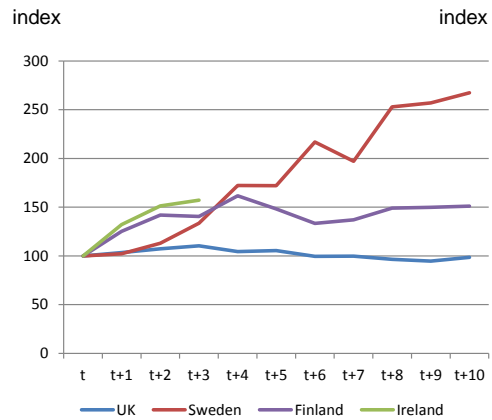
Source: National Authorities and Central Bank of Ireland calculations

Chart 5: Supply and demand for housing