Property prices and Covid-19 related administrative closures: What are the implications?

Matthew Allen-Coghlan and Kieran McQuinn*

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Abstract

In this paper we examine the implications for the Irish housing market of the economic slowdown due to the Covid-19 virus. While necessary from a public health perspective, the administrative closure implemented by the Irish authorities in March 2020 has had several significant repercussions for the domestic residential market. As hundreds of thousands of workers lose their jobs over a short period of time, income levels in general are set to fall across the economy, with knock-on implications for affordability and housing demand. Additionally, the nature of the administrative closedown will also impact the residential market though the collapse in housing related activity for the period in question. In this paper we augment an inverted demand function for housing to include a residential market activity variable and estimate the impact on house prices of the decline in economic activity due to the virus-related measures. We also examine the likely future path of house prices based on two different recovery scenarios with a series of house price forecasts to the end of 2021.

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1.   *Introduction*

The rapid spread of Covid-19 in Q1 2020 has prompted Governments across the western world to adopt several extraordinary measures, unprecedented in peacetime. The implications of the virus itself along with the response of authorities has led to widely held view that the current pandemic impacts economies as a combined supply and demand shock (see e.g. Eichenbaum et al. (2020), Gopinath (2020), Fornaro and Wolf (2020), Wren-Lewis (2020a) and many others). The main measure adopted to constrain the spread of the virus has been the decision by national authorities to enforce "administrative closures" where all retail and commercial enterprises, apart from those providing essential services such as pharmacies and those selling basic groceries, are instructed to desist from trading over a specific period of time.[1] These closures also apply to educational institutions from pre-school up to and including third level. These closures mean that a demand shock will occur through a significant fall in aggregate consumption. As well as this, given the small open nature of the Irish economy, the significant contraction in demand from the rest of the world and the disruptions to international trade will also have sizeable impact on the domestic economy. At the same time, a substantial supply shock arises because households reduce their labour supply due to the administrative closures and workers' infections. Labour income losses amplify the demand channel since households reduce spending (see Guerrieri et al. (2020)).

The last 25 years has seen significant volatility across residential property markets; the great moderation in macroeconomic variables such as income levels and interest rates from the early 1990s onwards led to many housing markets registering significant increases in house prices. Miles and Munro (2019), Wren Lewis (2020b), Mulheirn (2019) and Johnson (2020), for example, contend that the high level of UK house prices since the early 1990s is mainly due to the low interest rate environment observed over this period. Low interest rates coupled with consistent growth in income levels results in a significant increase in affordability amongst perspective homebuyers, putting upward pressure on house prices. The emergence of a credit bubble in several mortgage markets post 2000 also resulted in additional house price inflation. Therefore, across countries, housing markets generally have become more sensitive to

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[1] On March 13th in the Republic of Ireland all schools, colleges, and childcare facilities closed, and on March 28th guidance was issued from the Irish government for the public to stay at home in all but a specified set of circumstances and all but essential services were closed. These measures were further extended until May 5th, 2020 on the 10th of April.

macroeconomic conditions. This implies that housing markets are set to be substantially impacted by the economic downturn due to Covid-19.

Typically, a swift downturn in macroeconomic conditions impacts the demand-side of housing markets through the affordability channel; as income levels fall and unemployment increases, the borrowing capacity of households is reduced with a resulting contractionary impact on demand. In this case, the impact of the Covid-19 related downturn on interest rates is set to be marginal with official policy rates very near the zero lower bound even before the crisis. As a result, even if authorities wished to stimulate the housing market through lowering the cost of finance, their capacity to do so is limited due to the historically low rates prevailing across countries.

Given the unique set of administrative closures introduced by authorities, however, the housing market is also likely to be impacted by the dramatic fall-off in activity levels i.e. the administrative closures have restricted sales, mortgage applications and activity generally in the housing market. Estate agent activities, for example, are not deemed to be essential by the Irish authorities in terms of what activities can officially be conducted during the period of the administrative closures. Therefore, quite apart from the reduction in affordability through the income channel, the collapse in housing related activity is itself likely to have a contractionary impact on the market.

As a result, house price models which are typically used to assess the sustainability of house price levels must be augmented to include activity type variables.

In this paper we augment an inverted demand for housing with a mortgage credit activity variable and use the model to simulate the likely scale of the Covid-19 shock on the Irish housing market along with the implications for the subsequent recovery path of prices. As such the approach builds on several studies which have examined both house price movements in general and the relationship between house prices and mortgage credit availability. The paper also draws on the latest analysis of the implications for the Irish economy of Covid-19 and the related administrative closure methods introduced by the public authorities.

While many housing markets across the OECD have witnessed significant fluctuations in value over the past 25 years, as noted in McQuinn (2017), the Irish case is particularly notable in terms of house price movements. In nominal terms, Irish house prices increased by over 470 per cent between 1995 and 2007 before declining by 53 per cent between 2007 and 2012. Post

2012, a sustained increase in house prices has correlated with the significant recovery observed more generally in the Irish economy. The highly integrated nature of the residential construction sector, the financial sector and the overall economy was cited as one of the main reasons why the Irish economy was particularly impacted by the 2007/08 financial crisis (Honohan et al. (2010)).

The rest of the paper is organised as follows; in the next section we outline the likely impact of Covid-19 on the Irish economy, we then introduce the augmented inverted demand function before discussing the empirical results. Based on the results, a subsequent section conducts some scenario analysis in terms of the implications for the Irish housing market while a final section offers some concluding comments.

2.   *Economic implications of Covid-19*

While necessary from a health perspective, the restrictions imposed by Irish authorities to slow the spread of Covid-19 will have a significant impact on the domestic economy. In effect these restrictions have shut down a substantial portion of the economy and will lead to an unprecedented shock to consumption, investment, and trade. A scenario analysis by McQuinn et al. 2020 assessed the impact of the lockdown on the Irish economy in the current year. This analysis is based on a 12-week lockdown period followed by the lifting of restrictions and an economic recovery.

Based on a framework in Keogh-Brown et al. (2010), McQuinn et al. (2020) conduct a granular analysis of the impact of the virus on consumption levels. They examine the impacts of pandemic period where the administrative closedown introduced by the Irish Government in March 2020 are kept in place for a 12-week. The majority of the economic impacts of the virus are assumed to occur in Q2 of 2020. By Q3 and into Q4, economic activity both domestically and internationally is assumed to return to normal. McQuinn et al. (2020) undertake a static exercise using the Household Budget Survey (HBS) data from 2015, to examine how much Irish consumption would fall if (on average) households were to adjust their spending in line with a '12-week shutdown scenario'. Under this scenario consumption is forecast to decline by 3.8 per cent with GDP, overall, declining by 7 per cent.

Given the particular nature of the administrative closures, the impact on the domestic labour market has been particularly severe. Unemployment, which in late February 2020 had stood at 4.7 per cent, in May had risen to 28 per cent with many businesses in the employment intensive

services and construction sectors being forced to cease trading altogether. The Irish Government, following other European countries has already introduced specific income support payments to support those who have become unemployed due to Covid-19 along with a separate wage subsidy scheme to help employers maintain their employees. As noted by Beirne et al. (2020), the measures announced by the Government, notably the flat-rate Pandemic Unemployment Payment of €350 per week, reduce the number of households exposed to significant income losses by about a third. Consequently, while economic activity such as GDP is likely to fall significantly by 8 per cent, the decline in household disposable income will be somewhat less.

Given the central role played by the housing market in the financial crisis in 2007/08, a natural question arises as to the impact of the current crisis on the Irish housing market. The rapid increase in house prices in the years leading up to the financial crisis and the expansion of private credit associated with it was the primary reason why both the Irish financial sector and general economy were so adversely affected by the international crisis.[2] This time around the housing market is unlikely to play such a central role in the domestic recession. Growth in house prices in the period leading up to the spread of Covid-19 has been relatively subdued. This is in large part due to the macro-prudential rules introduced by the Central Bank in 2015 which limit borrowing for house purchase based on Loan-to-Value and Loan-to-Income criteria. Work by Allen-Coghlan et al. (2019) suggests that Irish residential property did not display bubble dynamics and that house prices are in line with that level suggested by economic fundamentals. Nevertheless, the significant implications of Covid-19 for the Irish economy will have knock on effects for the Irish housing market.

3.   *Mortgage market activity and house prices*

To investigate the specific relationship between mortgage activity levels and house prices, we start with a standard house price model, popular in the international literature. This approach involves inverting the demand function for housing and rearranging such that the dependent variable is now the price of housing as opposed to the quantity. Similar applications can be observed in Peek and Wilcox (1991), Muellbauer and Murphy (1994, 1997), Meen (1996, 2000), Cameron, Muellbauer, and Murphy (2006) and Kelly and McQuinn (2014).

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[2] See Honohan et al. (2010) for more.

We then augment this model to include an indicator of credit market activity – the number of mortgage loans approved in a quarter. This variable captures the degree of activity in the Irish credit and residential property market. An increase in loans approved will, ceteris paribus, reflect an increase in mortgage market activity and demand for housing, with upward pressure being exerted on house prices. The international Financial Crisis has seen a significant increase in the number of studies examining the impact of changes in credit provision on house prices (see Brunnermeier (2009), Duca et al., (2010), (2011) for example). Given the heightened relevance of mortgage credit in the domestic mortgage market in the period preceding 2007/08, a number of studies have also examined it in an Irish context. These include but are not confined to Fitzpatrick and McQuinn (2007), Kelly and McQuinn (2014) and Kelly, McCann and O'Toole (2018).

The model, which assumes that the demand for housing services is proportional to the housing stock, can be derived, in log-linear fashion, as follows:

$$Ln\left(\frac{H_t}{POP_t}\right) = \alpha_1 Ln\left(\frac{Y_t}{POP_t}\right) - \alpha_2 Ln\, RENT_t + \alpha_3 Ln\, POP_t + \alpha_4 Ln\, C_t \quad (1)$$

H_t is the housing stock, pop is the population level, Y_t is disposable income, $RENT_t$ is the real rental rate of housing in the economy, and C_t is any other demand shifter for housing services—in our case, the number of mortgage loans issued. The model is similar to that specified in Fitzpatrick and McQuinn (2007). The Fitzpatrick and McQuinn (2007) model builds on earlier work by McQuinn (2004) by adding a credit channel to a house price model and, examines, in particular, the possibility of a mutually reinforcing relationship between house prices and mortgage credit. The establishment and quantification of such a relationship was particularly telling given the subsequent difficulties, which emerged in the Irish property and banking sectors with the emergence of a credit-fuelled bubble post 2003. The credit variable used in Fitzpatrick and McQuinn (2007) is the average mortgage loan size, however, in our case as we are interested in activity levels in the mortgage market, we use the actual number of mortgage loans approved rather the average loan amount. A similar specification examining the implications for house prices of the number of mortgage loans available can be observed in Committee on the Global Financial System (2020).

The coefficients α_1 and α_2 are the income and price elasticities of demand for housing. In equilibrium, the real rental rate of housing can be assumed to be equal to the real user cost. This can be outlined as follows:

$$P_t(r_t - P_t^e/P_t) \equiv P_t \times UC_t \quad (2)$$

where r is the mortgage interest rate, p is house prices, e denotes expectations, and UC is the user cost of housing. While expressions for the user cost can be augmented to include taxation considerations and expenditure rates of maintenance and repair, very often the main determinants of the expression are the mortgage rate and expected house price inflation. Thus, substituting (2) into (1) provides the following inverted demand curve for housing:

$$Ln\, P_t = \frac{\alpha_1}{\alpha_2} Ln \left(\frac{Y_t}{POP_t}\right) - \frac{1}{\alpha_2} Ln \left(\frac{H_t}{POP_t}\right) - Ln\, uc_t + \frac{\alpha_3}{\alpha_2} Ln\, POP_t + \frac{\alpha_4}{\alpha_2} Ln\, C_t \quad (3)$$

House prices are positively related to real income per capita, population levels and the amount of mortgage lending and are negatively related to the per capita housing stock and the user cost of capital.

As with the original Fitzpatrick and McQuinn (2007) application, several different estimators are used to deal with the endogeneity issue associated with the mortgage credit and house price variables. In particular the Stock and Watson (1993) dynamic ordinary least squares or DOLS approach, which explicitly allows for potential correlation between the explanatory variables and the error process and the Philips-Hansen (1990) fully modified ordinary least squares FM-OLS, which allows for statistical inference within multivariate regressions where the regressors have I(1) processes. The results of these two estimators are then compared with what Hyashi (2000) refers to as static ordinary least squares (SOLS). We also use an instrumental variable estimator as a robustness check to control for endogeneity issues.

4. Results

In terms of the data used in the analysis; house prices are taken from both the Central Statistics Office (CSO) and the Irish Department of Housing, Planning and Local Government[3], while the number of mortgage loans approved is also taken from this latter source[4].Disposable income, the consumer price index and demographic data are taken from the CSO, with mortgage interest rates coming from the Central Bank of Ireland.[5] The housing stock variable

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[3] We take the official price index from the Central Statistics Office (www.cso.ie) and we back-cast this with a house price level series from the Department of Housing, Planning and Local Government (see https://www.housing.gov.ie/statistics for details) for data prior to 2005.
[4] This series is only available up to 2016. Data from the Banking Payments of Ireland of Ireland mortgage approvals report is used to update the earlier series. This is available at https://www.bpfi.ie/about-bpfi/.

[5] See https://www.centralbank.ie/statistics/data-and-analysis/credit-and-banking-statistics for details.

is compiled with a perpetual inventory method, where the initial value is taken from Census data from the CSO. This is then updated with housing completions data from the CSO.[6]

[Insert Figure 1 and Table 1 here]

Figure 1 plots the main data used in the analysis, while Table 1 presents a summary of the main data. The data is plotted from 1995 to 2019 with the loan data, the per capita income and the house prices expressed as an index with 1995 quarter 1 = 100 in all three cases. The mortgage interest rate, which is expressed in percentage terms can be read of the right-hand side of the graph. From both the loans approval and house price data the remarkable increase in the period 1995 – 2007 is clearly apparent with the subsequent decline between 2008 and 2013 equally obvious. While house prices have grown persistently in the period since 2013, the number of loans approval has only grown marginally. By 2019, for example, the number of loans approved has only increased back up to the level it was at in 1995.

What is also evident from the data is, notwithstanding the period after the 2007/08 crisis, the remarkable improvement in macroeconomic variables over the 1995 – 2019 period. The consistent lowering of mortgage interest rates coupled with the strong growth in income has ultimately fuelled the sustained increase in housing demand over the period.

Long-run model

Table 2 below compares the results of the three estimators for equation (1) over the 1981 – 2019 time period.

In terms of the credit variable, the results are very consistent across the three estimators; the coefficient, which can be interpreted as an elasticity given the log-log specification, is very similar with a range between 0.143 and 0.179. In the case of both the DOLS and FM-OLS estimators, the t-stats would suggest the variable is significant. Indeed, the coefficient size and the resulting impact of the number of loans approved on house prices are very much in line with previous estimates in the Irish literature; Kelly, McCann and O'Toole (2018) estimate a coefficient of 0.18 for a similar type credit availability variable in a house price regression estimated with granular bank loan level data.

The results for disposable income are also consistent across the three estimators with the estimates suggesting that house prices are very elastic with respect to income levels. The

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[6] The rate of depreciation is also taken from the Central Statistics Office (CSO).

income level variable is highly significant in both the DOLS and FM-OLS estimators. The results for interest rates and the housing stock per capita do vary across the different estimators; in the case of the DOLS estimator, the housing stock variable is correctly signed in line with economic theory and significant at the 6 per cent level, the interest rate variable has the correctly hypothesised sign and is significant at the 9 per cent level in the case of FM-OLS.

Our final control for the potential endogeneity of the mortgage credit variable is the use of an instrumental variable regression. Firstly, we construct a credit conditions indicator which we subsequently use as an instrument in the long-run regression (3). Following Kelly and McQuinn (2014), we employ the approach in Duca, Muellbauer, and Murphy (2011), who address the issue in the U.S. housing market. Namely, we first construct an adjusted loan-to-value (LTV_t) series for the Irish housing market over the period 1982 to 2019. This is achieved in the same way as in Duca, Muellbauer, and Murphy (2011) by estimating the following regression:

$$Ln \ LTV_t = \omega_0 + \omega_1 Ln \ LTV_{t-1} + \omega_2 Ln \ TLTV_t + \omega_3 Ln \left(\frac{Y_t}{POP_t}\right) + \epsilon_t \ (4)$$

where $TLTV_t$ is the Hodrick-Prescott filter trend of the loan-to-value ratio. The results are in table 5. In terms of the final specification we apply the general-to-specific approach as outlined in Campos, Ericsson and Hendry (2005). The adjusted series LTV_t^A is then the actual series minus all the variables on the right-hand side of (4), with the exception of the lagged dependent variable.

This adjusted series is then assumed to capture movements in the LTV_t, which are not associated with demand-side factors and changing trends but, rather, with changes in credit conditions. Therefore, we believe the variable is a suitable instrument for the mortgage credit variable as it will be correlated with changes in mortgage lending activity but not with the error term in (3). The result of the instrumental variable regression is presented in table 4. The results for the mortgage lending variable differ only marginally from those presented in table 3. Also, the results of the F-test would suggest the regression is not subject to a weak instrument issue.

Overall, the consistency and significance of the coefficient estimates for the loans approved variable across the different estimators allied to its compatibility with previous, similar type estimates in the literature provide us with a good degree of confidence in undertaking scenario type analysis based on the model.

Short-run model and scenario results

Using the results for the long-run model presented and estimated in the previous section, we now specify a corresponding short-run model:

$$\Delta ln\, P_t = \rho \left(ln\, p_{t-1} - (\alpha_0 + \frac{\alpha_1}{\alpha_2} ln\, \frac{Y}{POP_{t-1}} + \frac{\alpha_4}{\alpha_2} ln\, C_{t-1} - r_{t-1} - \frac{1}{\alpha_2} ln\, \frac{H}{POP_{t-1}}) \right) +$$

$$\Sigma_{k=1}^{4} \beta_k\, \Delta ln\, P_{t-k} + \sum_{j=0}^{4} \mu_j\, \Delta ln\, \frac{Y}{POP_{t-j}} + \sum_{j=0}^{4} \gamma_j \Delta ln\, C_{t-j} +$$

$$+ \sum_{j=0}^{4} \delta_j \Delta r_{t-j} + \sum_{j=0}^{4} \psi_j \Delta ln\, \frac{H}{POP_{t-j}} + \epsilon_t \qquad (1)$$

The results for the short-run model are presented in table 5. We again use the general to specific approach in selecting the final specification.

The estimated coefficients indicate that the growth rate in house prices error correct by approximately 9 per cent per quarter to any deviation between actual and the long-run house price. The contemporaneous value for the change in per capita income and the change in the mortgage activity variable are both found to increase the growth rate in house prices. The change in the mortgage activity variable is also found to be significant when lagged for one quarter.

Scenario Analysis

Based on the short-run models we now conduct a series of policy scenarios aimed at estimating the impact of Covid-19 related developments on the Irish housing market and how long these factors may impact the market depending on the speed of recovery of the domestic economy. In particular, we estimate the path of house prices under three different scenarios, a baseline, a 'V shaped' recovery and a 'sluggish' recovery. A number of international commentators have adopted these types of scenarios in examining the recovery of economies post Covid-19. See, for example, Battistini and Stoevsky (2020) in the case of the Euro area economy.

Figures 2,3 and 4 presents the shocks to income, new mortgages, and housing supply under the three different scenarios.

[Insert Figures 2,3 and 4 here]

Baseline Scenario

Our baseline scenario is a counterfactual scenario if there was no Covid-19. On the back of robust economic growth in the preceding years, the Irish economy was forecast to grow strongly in 2020 and 2021. In fact, the economy was performing so well that it gave rise to some concern about the possibility of overheating.[7] In our baseline scenario the underlying economy is assumed to grow by just under 4 per cent in 2020 and 2021. In line with this economic growth, disposable income continues to increase in our baseline scenario at a rate of 4.5 and 3.5 per cent in 2020 and 2021, respectively. In this scenario there is also a significant increase in the number of new mortgage loans issued. A number of studies such as Duffy, Byrne and Fitzgerald (2014), Duffy, Foley, McQuinn and McInerney (2016) and Conefrey and Staunton (2019) have forecast that the level of Irish housing demand is set to increase over the medium-term in line with expected movements in economic and demographic data. Additionally, there is also likely to be significant pent up demand in the Irish housing system resulting from years of insufficient supply. The three studies cited above estimate that the level of structural demand for housing in the Irish market is between 30,000 and 35,000 units per annum, whereas actual supply over the past 5 years has average less than 20,000 units per annum.

New mortgage loans in the baseline scenario are forecast to increase by 10 per cent over the next two years. The supply of new houses which had been increasing over the past number of years is forecast to continue to increase in the baseline scenario with 24,500 new homes built in 2020 and 29,000 built in 2021. It should be noted that new supply has a relatively small impact on house prices in this model as prices are primarily determined by the total housing stock of which new builds account for only a small proportion.

V-Shaped Scenario

The first Covid-19 related scenario we consider is that of a 'V shaped' recovery. Under this scenario there is a significant contraction in the economy in Q2 2020 due to the lockdown restrictions imposed by the government. However, after this period, as the restrictions are gradually lifted, the economy recovers rapidly and by 2021 the economy has recovered to the level expected under the baseline scenario. While the government-imposed lockdown at the end of March 2020 has resulted in a rapid and significant increase in the unemployment rate in

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[7] See for example: Quarterly Bulletin No.1 2020, Central Bank of Ireland (2020)

the economy, Beirne et al. (2020) and Fitzgerald (2020) have shown that the fall in incomes in 2020 will be significantly reduced due to the extraordinary measures annouced by the Irish Government. Therefore, under the 'V shaped' recovery scenario, we estimate that incomes will fall by an annualised rate of just under 2 per cent in 2020 and recover to the baseline level by the end of 2021.

New mortgage loans are forecast to fall significantly in Q2 2020, declining by 60 per cent for the quarter. This is the cumulation of a number of factors including increased uncertainty for buyers and sellers, physical restrictions limiting the ability of potential buyers to view houses and banks likely becoming more cautious about issuing credit in environment in which there are likely to be an increasing amount of non-performing loans. The collapse in property market activity during Q2 2020 is illustrated by the fall in sales transactions on the Property Price Register. Figure 5 shows that since the lockdown began in late March the number of sales transactions has plummeted relative to 2019. Under the 'V shaped' recovery we expect new mortgage loans to recover sharply in the following quarters but this will still not make up for the fall in new mortgages in Q2. As a result, the annualised growth rate of new mortgage loans in 2020 falls by almost 13 per cent. It recovers to the baseline level in 2021.

[Insert Figure 5 here]

Due to the government-imposed restrictions, activity in the construction industry has in effect been called to halt. This will lead to a collapse in the supply of new housing in Q2 2020. In the 'V shaped' scenario construction picks up sharply in the following quarters once the physical restrictions are lifted and by 2021 the rate of supply has fallen in line with baseline. However due to capacity constraints, new house building in the quarters following the lockdown does not make up for the supply lost in Q2. Overall, under this scenario we expect the number of houses built in 2020 to be just under 18,000 with about 28,500 new houses built in 2021.

Sluggish Scenario

The final scenario we look at is the most severe and involves a prolonged recovery period after the initial lockdown. The shocks imposed in Q2 for the 'sluggish' scenario are the same as those in the 'V-shaped' scenario. However, in the quarters following the initial lockdown the path to normality is significantly more drawn out than in the 'V-shaped' scenario.

As discussed previously, the government income support schemes have helped to alleviate the fall in income faced by many households who have been made unemployed. However, the

income lost cannot entirely be made up through the government scheme and the longer people are out of the job the greater the fall in income is likely to be. Further to this, due to the sizeable cost of these schemes to the exchequer, it is likely that the government will have to begin unwinding these supports after the lockdown period ends, exacerbating the fall in disposable income. Under this scenario total disposable income now falls by 7 per cent in 2020 relative to the previous year.

In the 'sluggish' scenario the lending of mortgage loans remain subdued after the initial shock in Q2. As the economy takes a long time to recover, uncertainty increases and buyers are less willing to take out mortgage loans. Banks will also be unwilling to increase lending as the level of credit risk increases. New loans through 2020 are down on the previous year falling by an annualised rate of 32 per cent.

In addition to the drop in housing supply in Q2 there is also a fall in supply in the latter half of the year. While the physical restrictions on construction are lifted after lockdown, the ability of construction firms to recommence their pre Covid-19 level of activity is restricted in this scenario. Increased precautionary measures to limit the spread of the virus such as the use of personal protective equipment and social distancing are likely to reduce the efficiency of construction. In an environment of falling demand for houses, firms may also reduce commencements leading to a fall in completions in the latter half of 2020 and into 2021. In this scenario the total amount of new housing built in 2020 is just over 15,000 with just over 20,000 new houses being built in 2021.

Impact on house prices

The results of these shocks on house prices is shown in figure 6. Under the baseline scenario house prices were set to increase by just over 1 per cent this year and just over 3 per cent in 2021. In the 'V-shaped' recovery scenario house prices are 4 per cent lower than baseline in 2020 and 6.4 per cent lower than the baseline level in 2021. The 'sluggish' scenario results in a more significant decline, with prices down by over 7 per cent compared to the baseline level in 2020 and almost 17 per cent lower than the baseline level in 2021.

In the case of the v-shaped recovery house prices by 2021Q4 are the same as that in 2020Q1 (the most recent actual observation), while prices under the sluggish scenario are 12 per cent lower than the most recent observation by 2021Q4.

[Insert Figure 6 here]

5.   *Conclusions*

Prior to Covid-19, house price inflation in the Irish housing market had slowed considerably; house prices had recovered from the significant fall in value in the 2007 – 2012 period, while the pace of house price inflation post 2013 had eventually lead to affordability pressures in the Irish market (see Corrigan et al. (2019)). These affordability constraints were underpinned by the introduction in early 2015 of a series of macroprudential measures by the Central Bank of Ireland. In particular the presence of the price to income ratio of 3.5 meant that house prices were in effect "anchored" to income levels in the Irish economy.

The scenario analysis presented here indicates that Irish house prices are set to fall over the next 18 months as a result of the Covid-19 downturn. This contraction in prices is due to the decline in household disposable income and the sharp fall-off in mortgage market activity which will inevitably result from the administrative closedown implemented by the Irish authorities. However, it is clear that this decline would have been significantly worse if the Irish Government had not introduced the significant welfare payments to address the substantial increase in unemployment. The recovery of housing demand in the Irish economy will depend on how long these payments remain in place and at what stage the authorities decide to remove them.

Another important consideration in the recovery of housing demand is the response of the financial sector. As the number of non-performing mortgage loans increase over this period due to affordability pressures, it is also possible that credit institutions will become increasingly strict in the number and size of mortgages they issue. The removal of the Counter Cyclical capital buffer by the Central Bank may help free up some credit but it is unlikely to completely offset the tightening of credit standards credit institutions will likely introduce over this period. In general, the sharp increase in uncertainty over this period may well deter people from making large purchases in the near term. All these factors are likely to reduce the demand for housing over the course of this year and 2021.

Arguably, the greatest impact of Covid-19 on the Irish housing market over the longer-term may well be on the supply side of the market. As noted previously a number of studies have highlighted the imbalance in the Irish market between supply and the structural demand for housing. The workplace restrictions imposed by the administrative closures have stopped all building activities in the state. Even as these restrictions are lifted it is likely that social

distancing requirements will remain in place which will curtail supply in subsequent months. The economic uncertainty also means that private investment in housing may decline, leading to a fall in supply of new houses in the future. Given the well-known supply shortages the country already faces this may put, additional upward pressure on house prices when the domestic economy recovers exacerbating the affordability issues already noted in the market.

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Table 1: Summary of Data: 1981- 2019.

Variable	Mean	Standard Deviation	Maximum	Minimum
House Prices	58.1	36.1	12.5	130.5
Mortgage Loans	12,548	7086	35,171	1,696
Disposable income	13,616	6,950	24,410	2,776
Deflator	0.74	0.24	1.04	0.24
Mortgage Rate	7.2	4.3	16.4	2.5
Housing Supply	5,605	3,777	18,268	889

Note: All monetary variables are in nominal terms, house prices are in index form with 2017 = 100, mortgage loans and housing supply are in actual units, disposable income is in € and the nominal mortgage rate is in percentage terms.

Table 2: Unit root tests for main variables: 1981 – 2019.

Test	$Ln\ P_t$	$Ln\ C_t$	$Ln\left(\dfrac{Y_t}{POP_t}\right)$	r_t	$Ln\left(\dfrac{H_t}{POP_t}\right)$	1 %
ADF t-test	-1.64	-2.75	-0.48	-2.14	-1.81	-3.46
ADF Z-test	-6.14	-17.06	-0.45	-11.22	-2.92	-20.3
Philips-Perron	-0.52	-1.46	-0.56	-4.07	-1.80	-3.47

Note: The lag lengths for all the unit-root tests are determined by standard AIC and BIC tests.

Table 3: Long-Run Single Equation for House Prices: 1981 – 2019.

Variable	Estimator		
	DOLS	SOLS	FM-OLS
Y_t/POP_t	1.474 (5.657)	1.334	1.414 (15.78)
C_t	0.197 (3.508)	0.172	0.184 (9.124)
H_t/POP_t	-1.113 (-0.931)	-0.315	-0.900 (-2.194)
r_t	-0.005	-0.006	-0.007

| | (-0.435) | (-2.428) |

Note: N= 156. T-statistics are in parenthesis. All variables except the real mortgage rate are in logs.

Table 4: Long-Run Equation for House Prices (instrumental variables): 1981 – 2019.

| Variable	Coefficient	T-Statistic
Y_t/POP_t	1.283	15.785
C_t	0.259	8.952
H_t/POP_t	-0.252	-0.682
r_t	-0.004	-1.548
Weak instruments test (exclusion test)	F(1, 151) = 106.92 with significance level 0.000	

Note: N = 156.

Table 5: Short-Run Equation for Changes in House Prices: 1981 – 2019.

| Variable	Coefficient	T-Statistic
ECT_{t-1}	-0.089	-5.474
$\Delta \ln P_{t-3}$	0.168	2.679
$\Delta \ln P_{t-4}$	0.365	5.687
$\Delta \ln \dfrac{Y}{POP_t}$	0.303	3.804
Δr_t	0.004	4.502
$\Delta \ln C_t$	0.022	2.239
$\Delta \ln C_{t-1}$	0.020	2.095
R^2	0.530	
Durbin Watson	1.808	

Note: N= 155.

**Figure 1:** Select Irish Macroeconomic and Housing Data: 1995 - 2019
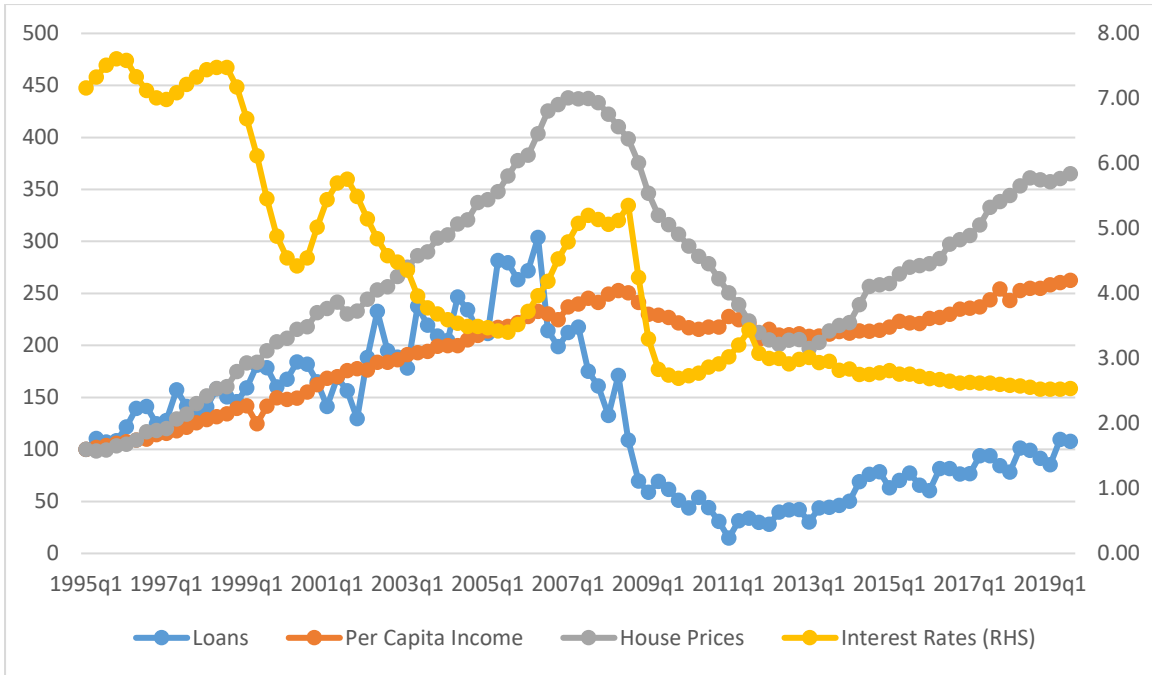
Note: For graphing purposes, mortgage loans, per capita income and house prices are expressed as indices, with 1995 = 100 in each case. Interest rates are in percentage terms and can be read off the right hand-side axis.

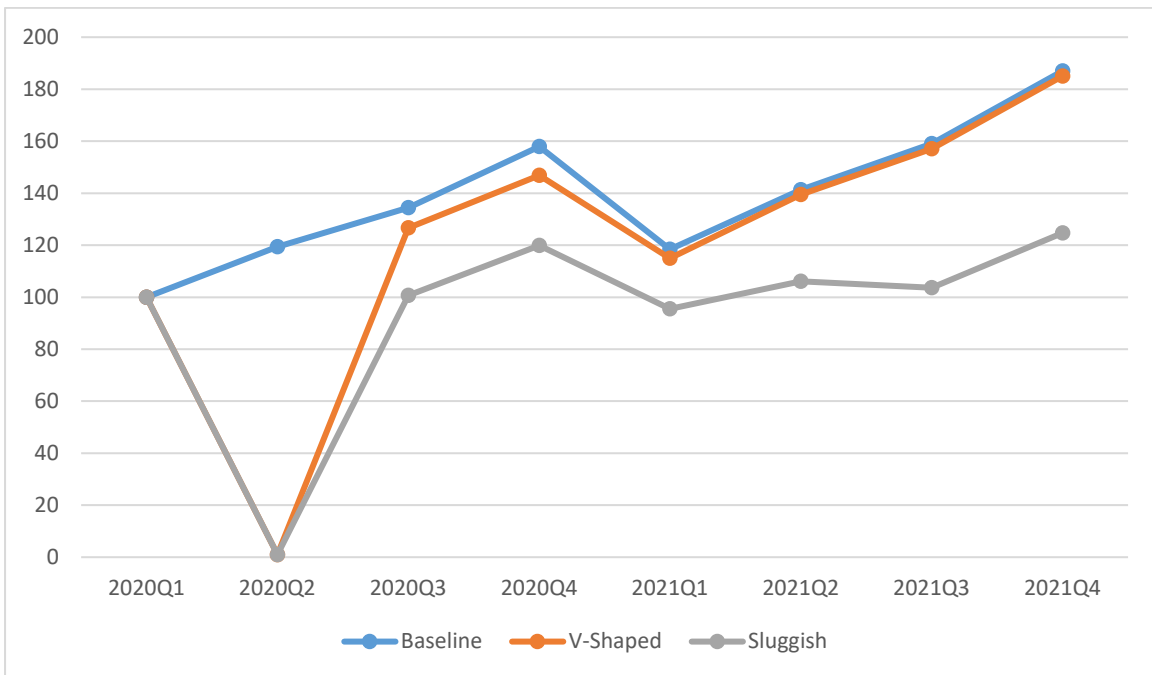**Figure 2:** Forecasts of household income under the three scenarios: 2020Q1 – 2021Q4
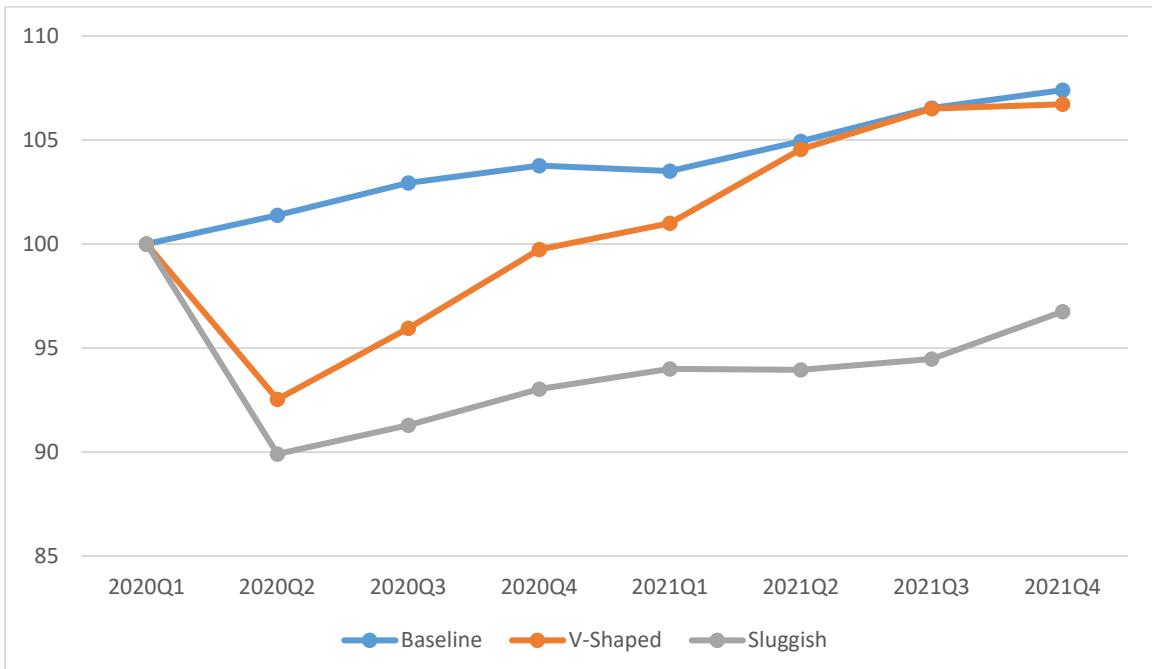
Note: All data are in index form with 2020Q1 set = 100.

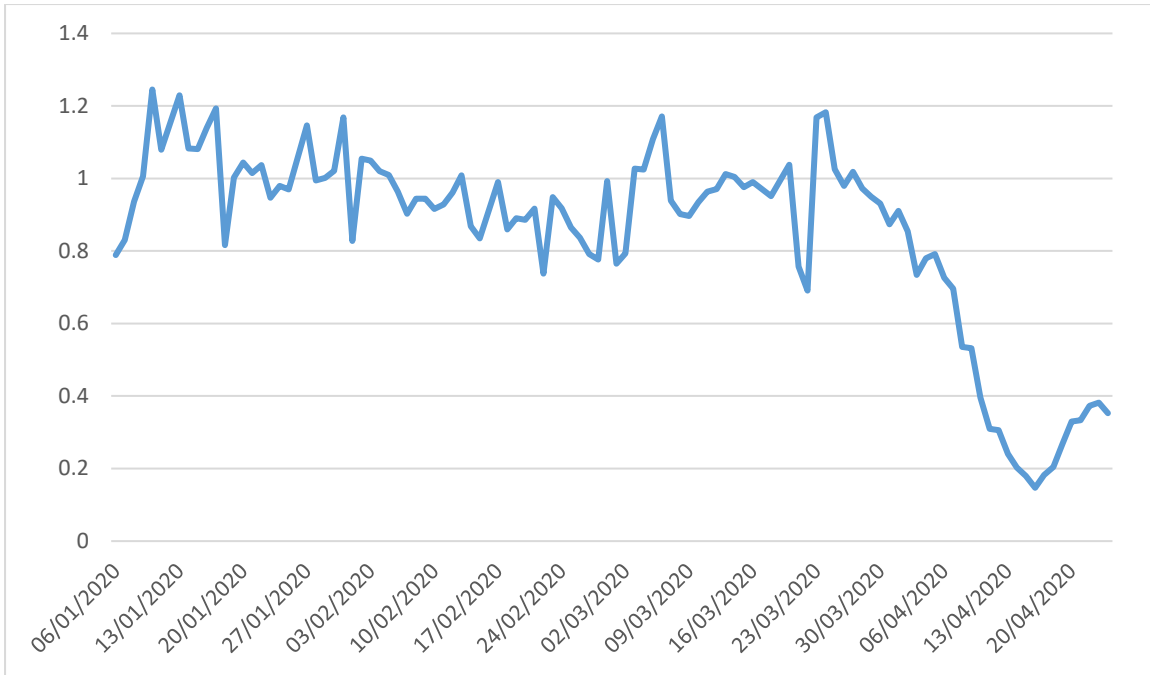**Figure 3:** Forecasts of mortgage loans under the three scenarios: 2020Q1 – 2021Q4
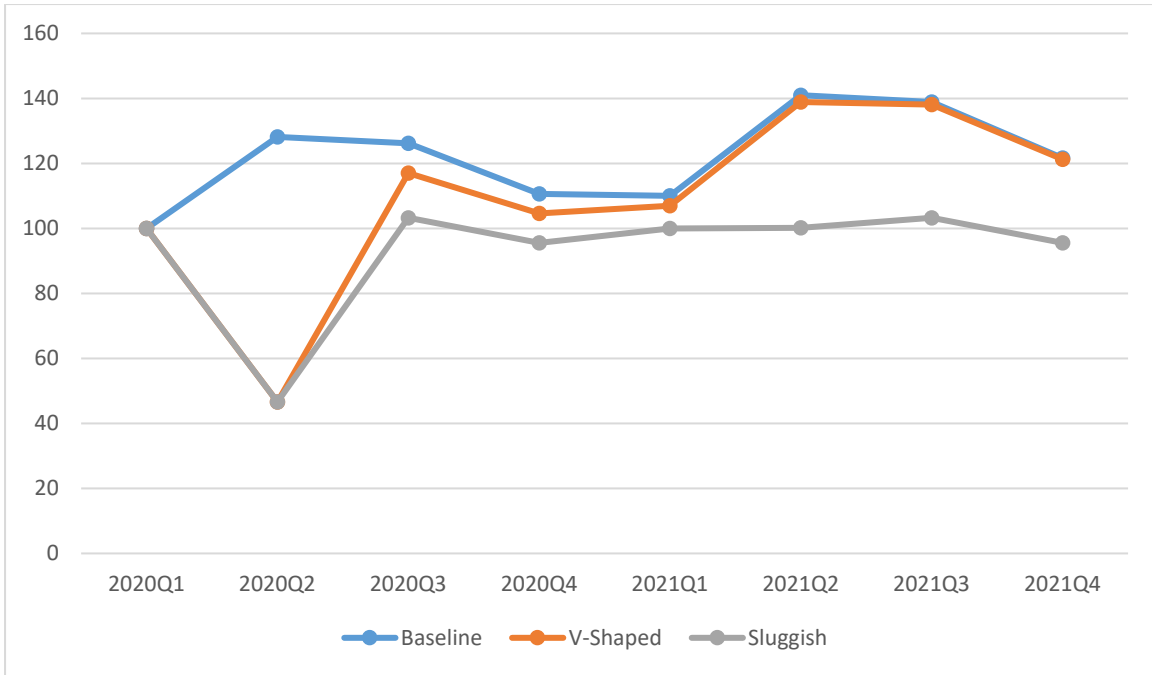
Note: All data are in index form with 2020Q1 set = 100.

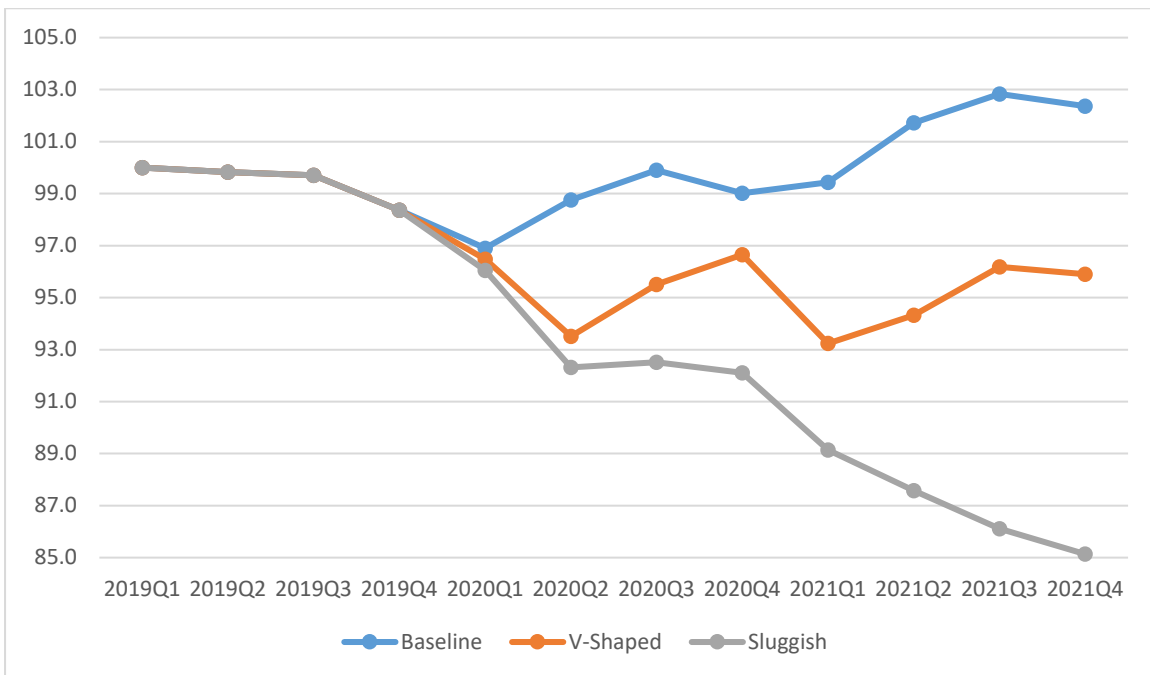**Figure 4:** Forecasts of housing supply under the three scenarios: 2020Q1 – 2021Q4

Note: All data are in index form with 2020Q1 set = 100.

Figure 5: Ratio of 7 day moving average sales transactions in 2020 with respect to that in 2019

Note: Property Price Register.

Figure 6: Forecasts of house prices (real) under three scenarios: 2019Q1 – 2021Q4

Note: All data are in index form with 2019Q1 set = 100.