Submission on the Loan-to-Value and Loan-to-Income Regulations

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1 Introduction

The Central Bank of Ireland has called for evidence-based submissions to
inform its review of the loan-to-income (LTI) and loan-to-value (LTV) mort-
gage rules introduced in early 2015. This brief note outlines, firstly, some
evidence of the immediate impact of the mortgage rules, in particular on
housing price expectations, on housing prices, and on transaction volumes.
In considering some of the likely future impact, secondly, around land-use
restrictions, commuting and energy efficiency, it also re-emphasises the limi-
tations of a loan-to-income based system and the strengths of a loan-to-value
based system.

Overall, as it outlined in the first section below, it is clear that the in ag-
gregate, the rules have had a positive effect in anchoring demand for housing
to the real economy. Nonetheless, there are non-trivial side-effects to the sys-
tem as currently designed. These would be mitigated by a transition between
now and 2020 to a system based almost exclusively on a strict loan-to-value
limit.

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the author's and not those of any institution or organisation to which he is affiliated.

Figure 1: Expected one-year house price growth, 2011-2016 [source: daft.ie]
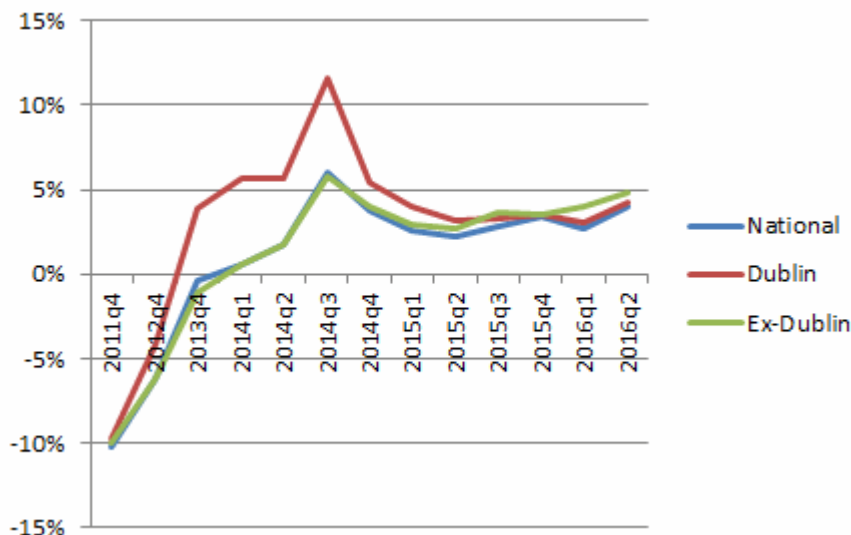
2 Current Impacts

2.1 The Impact on Expectations

There is clear evidence that even the announcement (in October 2014) that the Central Bank of Ireland planned to introduce mortgage rules in the near future has a substantial effect in cooling demand, by cooling housing price expectations. Figure 1 outlines the expected one-year change in house prices, nationally and for the Dublin and ex-Dublin markets, from late 2011 (the start of Daft.ie Sentiment Survey) to mid-2016. The survey, which is completed online by more than 1,000 respondents each quarter, shows a clear acceleration of house price expectations between late 2011 and the third quarter of 2014.

By September 2014, respondents in Dublin expected housing prices to grow by more than 10% in the next year. Three months later, this expectation had halved. With employment and income rising in late 2014, and new housing supply well below demand, the only factor changing between September and December was the announcement of as yet unspecified rules to take effect in 2015. Since late 2014, expected housing price increases in Dublin have cooled further and remained consistently at less than 5%. As outlined in the original submission/Appendix, a key determinant of housing demand is user cost and perhaps the most important component of this is expected capital gains. In a regime with low interest rates and low annual

Figure 2: Change in average value of a three-bedroom semi-detached house, 2014Q4-2016Q2 [source: daft.ie]
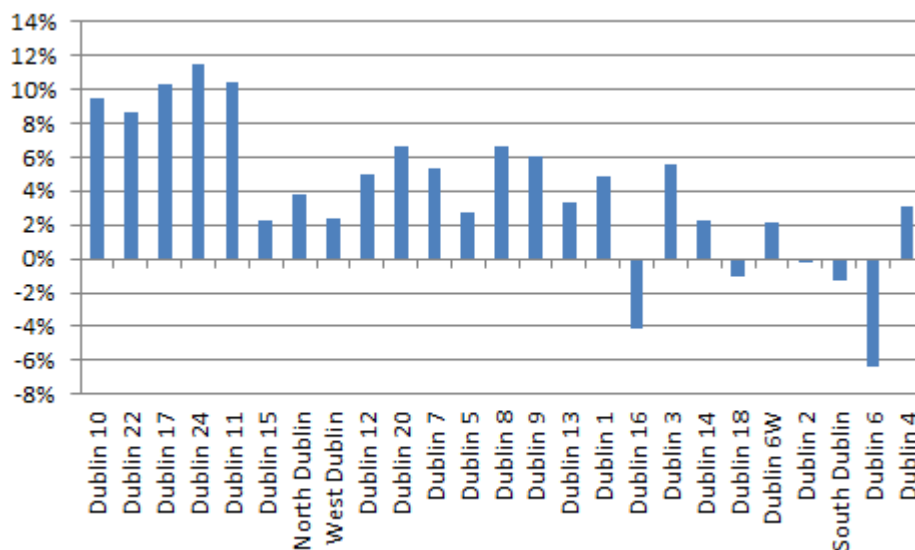
property taxes, expected capital gains exceeding 10% will "drown out" other components of user cost. This highlights the importance – and efficacy – of the Central Bank rules.

2.2 The Impact on Housing Prices

The principal concern on the part of policymakers, ahead of the introduction of the LTV/LTI rules, was the prospect of a housing price bubble concentrated in the Dublin area. From their lowest point in mid-2012 to late 2014, housing prices in Dublin had increased by almost 40%, according to the Daft.ie Report, while prices elsewhere in the country fell by over 5% in the same period. Figure 2 shows the percentage change in the average value of a three-bedroom semi-detached house, between 2014Q4 and 2016Q2, for each of 25 markets within Dublin.[1] The areas are ordered from left to right by the average cost of a property of this type, as at end-2014.

What can be clearly seen is the negative relationship between price level and price growth. The five cheapest markets in Dublin have seen the average cost of a family home increase by 10% in the 18 months since the introduction of the Central Bank rules. In the five most expensive markets, however, prices

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[1]The figures are derived from hedonic price regressions, which control for property characteristics and location.

Figure 3: Average number of transactions per month, involving newly built properties, selected markets [source: Property Price Register]
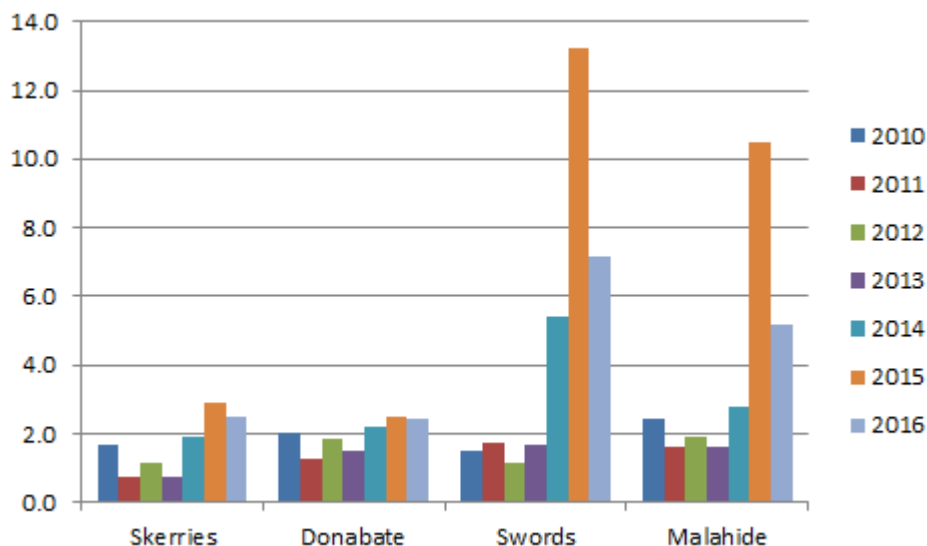
have fallen by an average 1%. It is worth stressing that this does not represent the continuation of a pre-existing trend. In the 18 months to 2014Q4, the average cost of such a property rose by 27% in the five most expensive areas and by 28% in the five cheapest areas.

2.3 The Impact on Transactions

A criticism of the mortgage rules often made in the media is that they have affected the volume of construction and thus the volume of transactions. In the previous section, which outlined average price by area, North County Dublin was shown to be one of the cheapest markets in the capital, with a three-bedroom semi-detached property averaging just over €260,000 in mid-2016 (compared to €490,000 in South County Dublin). Thus, if the viability of construction is affected by the Central Bank rules, its impact will be disproportionately seen in North County Dublin.

Figure 3 outlines the typical number of transactions that took place, per month, for selected North Dublin markets, by year from 2010 to 2016. Collectively, across these four markets, there were an average of just six properties sold per month, throughout the period 2010-2013. This doubled in 2014 to 12, before increasing to 29 in 2015. So far (using data to mid-August), transaction volumes have held up in 2016. In other words, transactions involving newly built properties since the introduction of the mortgage rules are run-

4

ning at more than twice the level of the last year before their introduction. While a pre/post comparison is different to a full counterfactual, the volume of transactions taking place currently in one of Dublin's cheapest markets does not indicate a shortage of supply, of credit or of effective demand.

More generally, while it is the case that the volume of transactions in the first half of 2016 was down slightly on the same period in 2015, this is likely to reflect to bunching of demand in early 2015, itself a product of the new mortgage rules. Put simply, those who had been contemplating buying within the next twelve months, as of September 2014, were much more likely to want to close their transaction with an "old mortgage" rather than wait for the rules to apply.

3   Future Issues

3.1   Land-Use Restrictions

A three-bedroom semi-detached property varies in price across Ireland by a factor of almost ten, between the cheapest area (Longford, roughly €70,000 on average) and the most expensive (Dublin 4, €600,000). However, incomes vary by far less than this, particularly on a like-for-like basis, while construction costs (excluding site costs) hardly vary at all. As outlined in the work of Albert Saiz, among others, given the low barriers to entry in construction, there are only two reasons why average housing prices differ from marginal cost in equilibrium: geographic constraints and policy barriers. In addition, geographic constraints (such as mountains and water) are only binding above a certain population density, not present in Ireland. Thus, the relevant barrier in Ireland is land use restrictions preventing new supply.

Therefore, in any economy with non-negligible land use restrictions, loan-to-income limits pose a problem, as they represent a spatially discriminatory constraint. Land-use restrictions mean that housing prices vary by far more than income does, with the implication that any loan-to-income limit that is binding in an high-price area cannot be binding in a low-price one – and, by corollary, any LTI limit that is binding in a low-price area would be so binding in a high-price area as to potentially stop the market. Only in an economy without land-use restrictions, and thus where the "sticker price" of a family home is similar in all regions, would a loan-to-income ratio be appropriate across the market. However, it would still be inferior to a loan-to-value restriction, for reasons outlined in the next section.

3.2　A Theoretical Framework

Related to this, and as outlined in my original submission (see the Appendix), a limit on the gross mortgage loan to gross household income is a very crude attempt to mitigate the underlying externality of excess leverage. Even leaving aside issues regarding shifts in the interest rate and household taxation regimes (outlined in more detail in the Appendix), consider a simple theoretical framework, with two regions, urban and rural, where (for simplicity) all jobs are located in the urban region. In this model, there are three forms of expenditure: housing payments (r), commuting costs (t) and all other expenses (c), for example groceries, where c does not vary between urban and rural regions.

A loan-to-income system only includes r in its calculation of affordability. However, if aggregate housing and commuting costs for a household based rurally with employment in the urban region exceed the same costs if they lived in the urban region (i.e. if $r_R + t_R > r_U + t_U$), then the household is worse off – and, crucially, financially less stable – buying in the rural region. This logic can be extended to a framework with continuous distance from the employment centre (d). In this instance, the key condition is the balance of the magnitude of the partial derivatives of housing costs ($\delta r/\delta d < 0$) and commuting costs ($\delta t/\delta d > 0$). Note that commuting costs include not just fuel but also the opportunity cost of time spent commuting and other factors and externalities, not limited to but including congestion and additional childcare costs.

An equivalent argument may be made regarding energy efficiency, as was noted in my original submission. To give a stylised example, a home with a B1 BER rating may involved a loan of 3.75 times the household income, compared to 3.4 for one rated C1. However, if the energy bills are sufficiently reduced, the household is less of a financial risk to the lending institution buying the more energy efficient home than the less efficient one. In other words, the loan-to-income ratio is an inadequate index for the all-in monthly cost (i.e. risk) of a house.

In contrast, the loan-to-value condition adapts to each of these scenarios. A family wishing to buy a more energy efficient property that costs 10% more can do so, provided they assemble more equity to reflect the greater absolute debt. The same applies for a family wishing to live closer to their employment centre or desired amenities. As private financial institutions will be concerned about capacity to repay in each case, the relative merits of such additional debt can be considered, rather than being ruled out *a priori*.

A Appendix: Original Submission, December 2014

This brief note outlines some thinking in relation to the proposed restrictions on residential mortgage lending, outlined in the Central Bank of Ireland Consultation paper CP87 (Central Bank of Ireland 2014). I first outline the context for credit restrictions, before outlining some theoretical and practical issues with the current proposals. The perspective adopted is rooted principally in the economics of housing markets, combining both macroeconomics and urban economics perspectives. The overall argument of this note is that restrictions on lending are necessary, but that, as currently proposed, they raise a number of theoretical and practical considerations, which should be addressed. In terms of the particular questions posed in CB87, the emphasis here is on Q1, Q2 and Q6, about the suitability of the measures proposed, as well as Q10, about unintended consequences.

B The Irish context

It is useful to state clearly up-front that placing acyclical limits on per-household mortgage lending is arguably the single most important macro-prudential tool available to policymakers. Housing has a unique place in modern economies, constituting both the most important good in the household's consumption basket and the dominant asset in the household portfolio. For example, it makes up 32% of the U.S. urban CPI basket and 24% of the UK's RPI and looms large in Irish household spending also.

It is therefore unsurprising that the housing market has assumed a central role in explaining business cycles (see, for example, Leamer 2007). What has become known as the Great Recession, starting in 2007, can only be understood by incorporating housing and lending for the purchase of housing. This is salient both globally, with the US subprime crisis, and more locally, with the extreme Irish housing market cycle between 1995 and 2013.

Using error correction and cointegrating vector methods, work-in-progress has highlighted that there are five long-run determinants of Irish house prices, once inflation in the wider economy is taken into account (Lyons & Muellbauer 2014). These include three fundamental supply and demand variables, and two asset considerations:

1. Income per household, which captures participation and unemployment, as well as trends in average incomes

2. Housing stock per household, measured in euro rather than unit terms, which also captures net migration

3. Number of people per household, which is the broadest measure of demographics, and captures features such as fertility, longevity and separation/divorce rates

4. User cost, which includes after-tax nominal mortgage interest rates, holding costs of property such as the Local Property Tax, and crucially expectations about future house prices

5. Credit conditions, which are tough to measure directly but are typically measured in the literature using the loan-to-value offered to the median first-time buyer

The first three factors affect rents, both actual (tenant/landlord) and implicit (owner-occupier), while the final two factors affect the yield, or relationship between house prices and rents. It should be clear from the above analysis that, given the nature of expectations and credit conditions in particular, there is no single equilibrium price for housing. While policy analysis that outlines simple ratios of prices relative to income, rents or other factors can be illustrative, it can mislead policymakers, politicians, journalists and others into thinking that there is a single level where prices should be. There are multiple equilibria.

As Figure 4 outlines, by uncovering the long-run house price equation at work with national house prices since 1980, it is possible to break down the various market cycles that have affected house prices in that period, into the constituent drivers. There are two salient and related points for the discussion here. Firstly, house price growth between 2001 and 2007, unlike the preceding period, where a mix of factors were responsible, was almost entirely driven by credit conditions. Secondly, the rapid boom in construction did – as basic economic theory would suggest – lead to lower house prices than would otherwise have been the case. This was not clear during the bubble due to the effect of credit on house prices.

Practically speaking, the experience of 1995-2007 teaches us that supply of dwellings, not supply of credit, is the best way to ensure abundant and affordable housing for Irish households. Limiting the amount of credit per household is, therefore, one of two policies necessary. The second, a topic for another platform, is increasing the supply of housing by lowering the cost of building homes relative to household income.

Figure 4: Annual house price growth attributed to drivers, by market phase, 1975-2012
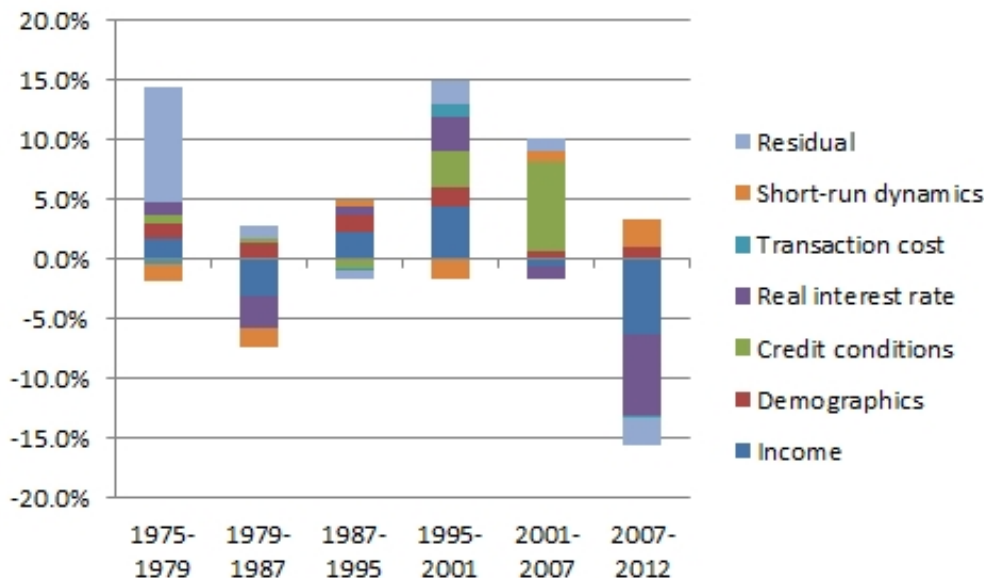
C Theoretical issues

C.1 Market failures

While I am strongly in favour of introducing limits for per-household mortgage credit, four theoretical issues arise in relation to the proposals in CBI paper CP87, principally about the use of loan-to-income (LTI) limits. Loan-to-value (LTV) restrictions have a clear theoretical justification: they limit leverage by creating "breathing space" between the value of the collateral and the amount borrowed. Due to the importance of habits, a lower maximum LTV has the beneficial side-effect of encouraging savings habits, by requiring first-time buyers to save over time. The analysis undertaken in Lyons & Muellbauer (2014) suggests that a five percentage point reduction in the typical loan-to-value offered to first-time buyers (e.g. from 85% to 80%) would reduce house price, relative to rents, by ten percentage points.

LTV restrictions also benefit financial institutions. Should issues arise in relation to repayment, the lower the original LTV, the less likely it is that the dwelling will be in negative equity and thus it can be sold. (Given that perhaps one in eight households is in negative equity, this benefit would also accrue to the household sector.) In relation to LTI restrictions, however, there is no clear theoretical justification. Whereas there is an obvious market

failure and externality by failing to limit leverage, it is clearly in the interest of financial institutions to assess the affordability of the mortgage in any case. It is not clear what LTI restrictions will bring over and above the impact of LTV restrictions. If the wider impact of the LTI restriction was neutral, the case could be made for both measures but there are negative side-effects of LTI restrictions, theoretically.

C.2   Capital markets

The first relates to capital markets. As proposed, limiting the ratio of the total mortgage to total gross household income is an extremely blunt tool. It is ignorant of two features: the user cost regime (in particular interest rates) and spatial variation (discussed below). The average nominal mortgage interest rate in the decade to 1995 was over 10%, compared to less than 4% in the decade to 2012. This has a huge impact on affordability, above and beyond a simple LTI ratio. In particular, a much higher ratio of debt to income is possible in a regime where interest rates are low.

Some have argued that it would be possible to correct for this issue, by instead using a maximum ratio of the mortgage repayment (suitably stress-tested) relative to disposable income. This still misses significant considerations, by conflating the mortgage for the total input costs of day-to-day life. Consider a household making the choice between two homes of comparable size. One, however, is closer to where the family work and go to school, and is also more energy efficient. While its mortgage repayment of €1,400 is above the maximum threshold relative to its disposable monthly income, the family would be better off in that house than in the other home, where they would need to spend €1,100 a month on the mortgage plus an additional €350 on petrol and €100 on domestic energy bills.

Under an LTV restriction, a household merely has to save 10% more to afford a house that offers lower energy or petrol bills, which is justified due to the externality costs of excessive leverage. Under an LTI restriction, a household with a set income will never have the option of buying such a house.

Even switching to monthly disposable income, rather than gross income, the LTI restriction disincentivizes healthy investment. In practical terms, LTI will lead to greater sprawl and congestion (as well as greater fuel consumption), as it does not distinguish between what are in effect close substitutes: additional mortgage debt compared to additional petrol or energy bills.

C.3   Spatial issues

It is possible to argue that the LTI could be tweaked even to deal with these issues, by calculating the combined burden of mortgage debt and fuel/energy costs associated with a particular property, presumably against a higher maximum ratio relative to monthly disposable income. Even if such a complicated system were introduced, however, it remains ignorant of the huge variation in house values around the country and the (healthy) reasons for this.

Currently, in the Irish housing market, hedonic regressions indicate that there is a 15-fold variation the price of the same dwelling – a three-bed semi-detached house – around the country. Whereas the value of a three-bed semi-detached house in Roscommon in late 2014 is below €50,000, the value of the same dwelling in parts of South County Dublin is over €700,000. The variation in property market values is far greater than the variation in household incomes, which – for comparable households – is closer to 50% than 1500%. Indeed, for certain sectors, in particular the public sector, there is no variation in wages between like-for-like households.

This huge variation in values, compared to incomes, is entirely healthy. Households with comparable incomes and comparable space requirements have the opportunity to choose different bundles of amenities. A particularly important amenity for many households is access to a thick labour market, and for many households, the depth of consumption amenities offered by urban centres is of great value, thus proximity to larger cities is important. But such considerations are not important for all, hence a fraction of the population chooses to live in rural locations.

Practically speaking, however, this means that an LTI restriction can never be binding across all segments of the market. Taking round numbers for simplicity, suppose the typical first-time-buyer household earns €50,000 and they are looking for a three-bedroom semi-detached home. If a maximum LTI of 3.5 is in place, this means their mortgage can be no more than €175,000 and the price of the home they buy can be no more than €220,000 (assuming a 20% deposit). This is useless, both in the large parts of the country where three-bedroom semi-detached properties are worth less than half that limit and a different kind of useless in parts of Dublin where the same home is worth more than twice that limit. Whereas the LTV is a clear measure of leverage (and thus a maximum LTV is protection from leverage), the LTI is an arbitrary limit.

C.4   Future-proofing

Taking a bigger time-scale, the last century has illustrated that services, in particular differentiated market services, are income-elastic. Whereas agricultural commodities and manufacturing merchandise comprised the majority of household spending in the early 1900s, now services dominate expenditure. Consider, now, housing as two services: shelter and location. Housing as shelter may have limited income elasticity: above perhaps 50sqm or 100sqm per person, there are limits to the value of additional dwelling space.

However, housing as access to location-specific amenities appears to have large income elasticity. Consumption amenities have grown in importance, seen for example in the phenomenon of the reverse commute, and thus in coming decades it is likely that a greater fraction of household income will be spent on location – the reason the value of a particular type of home varies so dramatically geographically. This is perfectly healthy, and not restricted under an LTV system (beyond having to save slightly more to spend slightly more). But, as before, an LTI introduces an arbitrary limit on the extent of agglomeration. And by affecting agglomeration, this affects the variety of differentiated services available to all households.

D   Practical issues

It has been suggested that the measures outlined in Consultation Paper CB87 would be brought in on 1 January 2015. This raises a number of one-off transitional issues. The aim of limits on per-household mortgage lending is to ensure sustainable long-run expectations and leverage, the two factors that affect the ratio between fundamentals (as outlined above) and house values. It is not necessary for the immediate maximum LTV to be the same as the ultimate desired maximum, provided the transition path is done in a way that does not encourage leverage in the interim.

In practice, consider two paths of minimum deposits from 2015 to 2020. The first has a minimum deposit of 5% in 2015, 10% in 2017, 15% in 2019 and 20% in 2020. This would clearly have perverse incentives. A household with savings of €20,000 now and which could expect to have no more than €40,000 saved by 2020 would do its best to borrow as soon as possible. (It would be able to borrow €380,000 in 2015 and €160,000 in 2020.) An alternative is a minimum deposit of 15% in 2015, 16% in 2016 and so on to 20% in 2020. This has a starting point not far from current lending standards and a pace of increase in minimum deposit required that is roughly in line with the capacity to save. Thus, the typical household should be roughly

indifferent between buying in 2015 or waiting.

E   Conclusion

Restricting mortgage lending per-household is a straightforward and sensible policy option for limiting the risks associated with residential mortgage market, which is based on leverage. Some have argued that this is not the time in the market cycle to limit credit. This is firstly spurious, as the intention is not to limit the quantity of loans, rather their average size (and thus could potentially lead to more loans, for a given capital stock). This line of reasoning, secondly, also misses the obvious lesson of recent Irish economic history: the supply shortages of 1995-2001 directly led to the credit-fuelled bubble of 2001-2007. The shortages had this effect by raising expectations about future house prices held by both borrowers and lenders, and through the latter channel affecting the minimum deposit required.

Similarly, others have argued for procyclical LTV (and/or LTI) requirements. This assumes an understanding of the market that is only available *ex post*. An acyclical set of restrictions is both easy to implement and easy to understand.

This brief note is in broad support of the measures proposed and, in terms of the particular questions posed in CB87, the emphasis here has been on Q1, Q2 and Q6, as well as Q10. It started by setting out a general framework for understanding the Irish housing market, based on academic research spanning the period back to 1980. It also discussed a number of theoretical issues, in particular relating to the arbitrary nature of the LTI limit, compared to the obvious purpose of an LTV in correcting a market externality.

In particular, unlike the LTV measure, LTI brings the potential for unintended consequences in relation to investment, environmental sustainability, congestion, sprawl and agglomeration economies. These have been largely ignored in the macroprudential literature to date, given the lack of an urban economics perspective in the nascent field. In addition, a transitional issue was raised, about the speed with which any measures should be brought in.

Affordability on a month-to-month basis is a key concern of financial institutions. Excessive leverage at a systemic level is the concern of policymakers. The Central Bank's efforts should be exclusively on loan-to-value measures, not loan-to-income ones, for the reasons outlined above.

References

Central Bank of Ireland (2014), Macro-prudential policy for residential mortgage lending: Consultation Paper CP87, Consultation Paper 87, Central Bank of Ireland.

Leamer, E. E. (2007), Housing IS the Business Cycle, NBER Working Papers 13428, National Bureau of Economic Research, Inc.

Lyons, R. C. & Muellbauer, J. (2014), Explaining the bubble: House prices, user-cost and credit conditions in ireland, 1975-2012, Technical report, TCD Department of Economics. forthcoming.