Discussion

1. Christine Whitehead

Introduction

I am most grateful for the opportunity to comment on such a thoughtful and interesting paper – and one which takes a view about the role of modelling which very much chimes with my own: that model development needs to be grounded in reality and that simple models often have the best chance of providing useful insights. Complexity can come later when the basic dynamics have been addressed.

Some of the ideas that lie behind the model were discussed at a conference in Sydney in September 2009 and later extended (Ellis 2011). That conference was the first time I met Luci Ellis and I was impressed by her understanding of the need to relate the behaviour of property markets to issues of financial stability – the topic of today's Conference.

My comments centre around four main issues: (i) the objectives of the model and its structure; (ii) the model's findings and their potential implications for policy; (iii) international evidence relevant to these findings; and (iv) ways forward, both in terms of developing the model and with respect to possible policy measures to improve financial stability.

The objectives of the model and its structure

The starting point for the model

A core objective of the Conference and this paper in particular is to bring together macro and monetary specialists on the one hand, and those who concentrate on the operation of property markets on the other – and to make each better understand the other. In the main they do not engage. Property analysts generally take the macro environment as given and then ask what follows for their particular concerns. Macro specialists tend to regard property as a dangerous source of instability, a conduit and leading indicator of stress, but one which can effectively be described in terms of aggregate variables without recourse to more detailed analysis of the fundamentals of these markets and the distinctions between them.

One objective of this paper is to question some of these presuppositions and to suggest that there needs to be rather greater understanding of exactly how the conduits between property markets and overall financial stability operate. The paper discusses important differences between commercial and residential property markets with respect to their impact on macro volatility, and differentiates between demand and supply pressures. In this context the paper argues that there are good reasons to expect commercial property markets to generate greater volatility than

housing markets and that in both cases supply conditions may be more important than conditions in the mortgage market, whatever the original cause of instability.

A second objective is to see whether a highly simplified partial equilibrium model which tracks the effects of a change in credit conditions can shed light on these important relationships and help to clarify the relative merits of different policy instruments aimed at reducing market volatility and the negative effects that these may have on macro stability. It is worth noting that this is, of necessity, seen as the only policy goal and that the only relevant policy instruments in the model are those within the remit of the monetary authorities. It is up to the property market specialists to analyse the effects on other housing and industry objectives and to argue about trade-offs when these are not fully congruent with macro stability.

Core attributes of the model

The model is basically made up of two distinct and traditional existing models, one of credit control and the other of supply response. The starting point is a sudden slackening in credit conditions in a world where all (identical) individuals are credit constrained. The impact of this change is first on demand; then on price with a feedback effect because price rises lead to expectations of further price increases; and then on supply. The supply model is basically a cobweb/hog cycle model where supply responds to earlier price increases and where the relative elasticities help determine how volatile the outcomes might be.

The credit constraint in the model is based on the loan-to-income (LTI) ratio, while loan-to-value (LTV) ratios are held constant for each cohort of purchasers and the deposit is assumed to be available. Negative equity is seen as a prerequisite of financial distress and is mediated by the capacity to pay, which will be affected by changes in interest rates and employment conditions. Everyone is in the same boat and everyone is an owner-occupier; there is no alternative source of housing. The formulation of the supply side is straightforward, depending on responsiveness to dwelling prices but with a lag reflecting speed of adjustment.

These are, of course, extreme simplifications and an assessment of the model depends upon whether its predictions speak to real world experience and clarify the factors that policymakers and regulators should be taking into account when using more sophisticated techniques.

Four factors stand out as of particular importance: expectations, which reinforce the demand response to any weakening of the credit constraint and therefore can be expected to generate a greater supply response although not immediately; the loan contract form (annuity versus interest-only mortgages), which can affect the extent and timing of financial distress in terms of negative equity and the likelihood of default; the timing of purchase decisions in relation to when the downward shock to prices occurs, which helps determine which cohorts suffer negative equity; and the time-to-build lag, which affects the extent of over-response on the supply side – the longer the time it takes to bring supply to the market, the greater the chance of over-response.

The most important findings

As always is the case, the findings follow from the assumptions. There is thus a continuing debate as to whether they are robust, particularly because of the model's partial equilibrium nature. But

at least with a simple model you can reasonably easily track the conduit between assumption and outcome.

An important issue is the distinction between the impact of a fundamental and sustainable change in credit conditions, and a change which is unrelated to fundamentals and will ultimately be reversed. Here the assumption is that the observed easing of credit is out of line with fundamentals and will therefore be reversed. If the change were in line with fundamentals the outcome would be desirable (although because the rapid demand response includes an expectations element and the supply adjustment is slow but significant, there could still be some resultant volatility). In the 1970s and 1980s for instance, when deregulation occurred in many countries, the outcomes were mainly desirable, even though they did generate some overheating. In the 1990s and 2000s there was a general belief that fundamentals had changed further because of lower inflation and interest rates. Later in the cycle it became obvious that the system was out of line with fundamentals. Even so, by no means all of the earlier credit relaxation was the result of overenthusiasm; excessive caution also has costs.

Diversity in loan contract forms matter because of their differential effect on risk and financial distress, so it is not enough to look simply at aggregate lending figures. In this context, one simple reason why commercial property is seen to be a source of more concern with respect to financial stability than housing is that commercial lending is almost always in the form of interest-only loans. This means that the borrower will go into negative equity far more rapidly than under traditional loan forms and will have a considerable incentive to default at the time of renegotiation. Of course the other major issue here is that the commercial property is not the borrower's home.

Probably the most important finding is that relatively elastic supply responses may well be undesirable in the face of price volatility because, when prices turn down, there is more likely to be oversupply and continuing downward pressure on prices. This can lead to greater financial distress through its impact on negative equity. Equally, developers, while increasing their output, take out more loans and are overexposed relative to asset values, with adverse effects on their viability and the security on their loans.

The pattern of transactions also matters, as those who have purchased or invested nearer the time of the downturn will run into difficulties more quickly. If there has been a concentration of loans made just before the 'crash', problems of financial distress are exacerbated – something which was observed in many countries in the late 1990s, but has been less of an issue among mortgagors this time around because of low levels of activity in the run-up to the crisis, particularly in Europe.

Another particularly important finding is that longer times to build increase volatility, as prices bear even more of the adjustment to demand and expectations because the investment (supply) comes on to the market later, by which time the cycle may have turned and the demand disappeared. This generates an overhang in new supply which puts further downward pressure on prices during the downswing.

So what do the findings imply for where policy should concentrate? In the paper the emphasis is on interest rates and particularly, because of the latest experience, on their potentially asymmetric benefits in the downturn because they reduce repayments under variable-rate systems, giving consumers a greater chance to maintain their repayments. Other instruments, such as limiting LTI and LTV ratios, as well as the use of longer-term and interest-only instruments, may also have

traction. Equally interesting, but not under the monetary authority's control, are mechanisms for introducing greater flexibility, particularly on the supply side, with respect to build times and adjustments to changing market circumstances. But the most important lesson is that policymakers need better to understand how regulatory and macro policy instruments feed through into property markets of different types and thus affect financial stability differentially.

International evidence

Here I am mainly drawing on evidence from Europe and particularly on the results from the series of studies that the Finance Working Group of the European Network of Housing Research has been carrying out since before the crisis.[1]

The global financial crisis, starting from 2007, provides an extreme example of many of the issues analysed in the paper. Few commentators doubted that during the early to mid 2000s credit markets had become very much more lax and that this had resulted in rapid increases in debt-to-GDP ratios, a cause for concern to international and national commentators alike (Girouard, Kennedy and André 2006; Girouard *et al* 2006). Most commentators, however, expected a soft landing as fundamentals re-emerged. The reality has been very different in most European countries – and provides examples of many of the predictions made by the model.

Much of Europe has experienced price falls and continuing volatility, especially since 2007. The main exception has been Germany, where after a decade or two of falling real prices there are now signs of upward pressure, and Switzerland, where the growth in owner-occupation over the last few years appears to be supporting quite large price increases.

Consistent with the model the biggest problems have been in the two countries with the greatest supply responsiveness – Ireland and Spain. Ireland in particular has suffered continuing falls in dwelling prices of possibly over 50 per cent, although data are difficult to interpret. Both countries have large supply overhangs and no chance of coming back to equilibrium in the next few years. In both countries it is the supply side, especially in terms of commercial property, which has impacted most on banks and financial stability. These are also the two countries where construction accounted for a very large proportion of GDP and so had the furthest to fall.

In most other countries that have been particularly badly affected by the financial crisis, supply elasticities were very much lower and stimulus packages have been needed to support supply in the face of the crisis. In the Netherlands, the United Kingdom and much of Scandinavia, overhangs were reduced rapidly with the help of government initiatives.

The evidence across many European countries is that the increasing importance of variable interest rate mortgages, far from increasing risk as usually predicted, but consistent with the model, have helped support existing purchasers and reduced problems of arrears and foreclosure. The fact that employment in many European countries has remained relatively high in the face of falling demand has also been of fundamental importance.

1 The following references provide much of the supporting evidence for these comments:
Post-financial crisis commentary: Scanlon, Lunde and Whitehead (2011); Scanlon and Whitehead (2011); Whitehead and Scanlon (2011); Scanlon, Whitehead and Lunde (2012).
Pre-financial crisis: Whitehead and Gauss (2007); Scanlon, Lunde and Whitehead (2008).

The United Kingdom for instance appears, at least in the short term (now stretching to five years), to have benefited from many of the attributes which in other conditions are argued to be particularly undesirable – including very low supply elasticities and the use of variable interest rate mortgages, as well as the fact that few first-time buyers were able to enter the market prior to the crisis because of affordability problems (rather than credit constraints).

Contrast this with the crisis of the late 1980s–early 1990s. Across much of Europe there were high levels of transactions immediately before this crisis, rapid declines into negative equity and very large numbers of households unable to maintain their payments. This resulted in enormous problems of arrears and possessions in the housing market and an even bigger problem of bankruptcies in the commercial property market.

Where there is perhaps less resonance with the findings of the model is in the experience with new mortgage products and higher LTV and LTI ratios.

There was rapid growth in the use of new mortgage products as well as lessening of credit constraints during the early 2000s across most of Europe. Innovations included:

- The increasing use of variable-rate mortgages, even in countries such as Denmark which had a centuries-long history of fixed-rate products.
- The rapid growth of interest-only mortgages without a defined method of repaying the principal – as a means of helping affordability.
- Longer mortgage terms – up to one hundred years (and maybe more) in Spain for instance – again looking to improve affordability in a low interest rate environment.
- Remortgaging in line with increases in capital often as a way for existing mortgagors to consolidate their debts. Often this did not result in higher LTV ratios because of increasing dwelling prices.
- Higher LTV ratios, again to enable the purchase of increasingly costly housing. As prices were rising much faster than incomes this worsened LTI ratios, although not always repayment-to-income ratios because of falling interest rates.
- Self-certified mortgages, especially in the UK's subprime and near-prime market, which at its height took perhaps 5–7 per cent of the overall mortgage market.

Clearly, these products increased the risks to borrowers if dwelling prices were to fall, interest rates to rise, or incomes and employment to decline. But much of the evidence shows that the picture was more nuanced than these general statements imply, and overall there is very little evidence that these products were a significant source of observed problems. Even in the context of the subprime market, LTV ratios were much lower than in the traditional first-time buyer market so negative equity was less of a problem. Moreover, self-certification was often a necessity for self-employed households (sometimes using the money to support their business) more because of the specifics of regulatory requirements rather than because of a move to over-indebtedness. One result was that subprime lenders were quicker than traditional lenders to call for possession once the downturn hit, and thus did not take significant losses. Rather it is the lack of funding sources, and indeed demand, that has driven subprime lenders out of the market.

As already noted, in many western European countries, economy-wide outcomes have so far limited the risks associated with many of these products. Equally, most governments and

mortgage industries have developed screening and forbearance measures which have led to far fewer defaults than predicted at the beginning of the crisis. As examples, many French loans go up to 125 per cent of the value of the home, but other requirements with respect to income and employment have ensured that defaults are only in the hundreds. In the United Kingdom, industry-based forbearance rules, which were implemented 'voluntarily' in the 1990s (and indeed had been part of industry practice since the 1890s), were formalised and have resulted in effective management of arrears in the vast majority of cases. Possessions are now lower than before the crisis.

Another reason is that much of the lending went to established home owners who were not generally over-indebted. The proportion of first-time buyers had been declining in many countries because of affordability issues and transactions were generally at relatively low levels before the crisis. Moreover many first-time purchasers who did buy were self-regulating by not taking all the funding being offered. The situation was therefore rather more stable than the aggregates might have predicted.

Of course this is partly because dwelling prices have rebounded in most European countries and interest rates remain low. Conditions may well worsen and, in any case, problems will continue for long periods. This is particularly obvious in Ireland where legally enforced forbearance over the short term is combined with very widespread negative equity. Similar issues apply in Spain although the means of addressing them is different; there have been many more foreclosures of marginal buyers and new loans are often only available for properties owned by the bank in question. But in both countries it is the supply-side loans, both to housing and commercial property developers, which have caused the major headaches for bankers and the government, not the demand side. This picture is mirrored, although usually not to the same extent, across western Europe.

Even though the empirical evidence is against innovative products being a key cause of instability, regulatory and government responses across Europe have tended to concentrate on reducing or eliminating their use. In the United Kingdom, the FSA is consulting on restricting the use of interest-only mortgages to those who can already afford annuity loans; in Denmark they are looking to limit interest-only mortgages and maybe to further constrain variable-rate mortgages; in Sweden LTVs are to be limited to 80 per cent. Only in the context of loans to those in negative equity to help them adjust has there been some moderation of immediate regulatory restrictions in Ireland and the United Kingdom. It would be good to see a little more detailed analysis of the role played by different products – but one cannot be surprised that risk-averse regulators are acting to restrict their use, especially given political pressures.

But the most important general lesson from European markets may be that demand-side crises can be addressed much more readily than supply-side crises. The position with respect to developer loans is far less tractable and has been subject to much less detailed analysis. The impact of declining dwelling prices, commercial rents and transactions across all property markets on developer balance sheets (and thus on bank balance sheets) has had dramatic effects on investment capacity. The process of unwinding looks as though it will take many years, putting downward pressure both on construction industries across Europe and on economic growth potential.

Ways forward

Relaxing the assumptions

While the international evidence supports many of the findings of the model at least in general terms, given its massive simplifications it can really only be the starting point for more detailed analysis.

Areas of immediate concern include:

- Both the form of the expectations variable on the demand side and the lack of a supply-side expectations variable. The current form dampens the price effect over time. As John Muellbauer said in discussion, using a different form which exacerbated the impact might give very different results. One would also expect developers to take account of expected future prices, especially where there is a known time to build. Examining a number of formulations of expectations on both sides of the market would probably generate food for thought.
- The assumptions around negative equity and its relation to financial distress among consumers perhaps needs further thought. It may well be that other measures, such as arrears and possessions, are highly correlated with negative equity so the simplification does not matter, but trying different formulations might well prove valuable. Many of the negative outcomes initially predicted in 2008 in Europe have not happened, in part because negative equity is not a direct source of distress – even though it clearly impacts on the extent of industry losses if mortgages are not insured.
- The effect of inflation. More rapid inflation allows easier adjustment to real dwelling price equilibrium and shorter periods of negative equity, which again would impact on the scale of financial distress as identified in the model.
- The assumptions of one dwelling/one mortgage over the lifetime of existing owners. This clearly allows easy calculation of losses and the extent of negative equity, but excludes issues relevant to financial stability where the majority of additional mortgage debt has been going to existing owner-occupiers.
- Similarly, restricting the consumption side to identical individuals, all of whom face the same credit constraint, obviously makes the model more tractable but at the cost of missing important relationships between aggregate borrowing and stability.
- The same issues apply to the lack of a private rental sector, especially with respect to effects on stability, as its existence introduces a group of stakeholders with different equity, risk profiles and patterns of borrowing. In practice, transfers of both dwellings and households between the sectors has had some dampening effect on volatility, and limited some of the most negative consequences of the financial crisis.
- The most important area of concern for academic economists would undoubtedly be the partial equilibrium nature of the model. However, addressing this concern would involve a large-scale project which may not be feasible at this time.

Nobody could expect all these issues to be addressed within the model, although some could be introduced without adding too much complexity. Others would probably best be addressed

outside the model by supplementing the model with a more general analysis of the core factors linked to volatility and thus financial stability – and in particular looking at whether there are ways by which the outcome of a given shock could be dampened. Factors that moderate the scale of the problem may well be just as valuable in policy terms as addressing the initial cause.

Policy implications

The main policy implications follow from the findings – and again are inherently indicative.

First, the details of the housing and credit markets matter. Understanding aggregate macro variables is simply not enough to effectively understand the nature of the conduit from property to stability.

It is important to try to distinguish between changes which relate to fundamentals and relaxing constraints when fundamentals do not change. Often there will be elements of both and a risk-averse system may need to assume the worst – or at least to look more carefully at more detailed evidence better to understand the causes. Even adjusting to changes in fundamentals may need to be managed, especially if the scale of change is large, simply because supply cannot adjust rapidly. Dampening unnecessary volatility is highly desirable – as long as it does not generate other large scale negative impacts, for instance on housing supply.

There is the usual issue of whether regulators know best. Obviously they are professionals and in a better position than market players to take an overarching view of risks and their broader effects. But they themselves may not always look at the correct indicators or may interpret them in a partial fashion – and they should not automatically assume that consumers need to be protected from themselves. Some of the suggested post-crisis regulatory changes seem to be more about not getting it wrong in the same way as last time rather than making a positive contribution to stability.

Finally on the housing front, the fact that the model suggests that inelastic supply might help financial stability is not a reason for developing policies to reduce supply responsiveness. Rather the markets should be looking at ways better to predict and adjust to changing circumstances and so reduce the costs of maladjustment. Making the system more inflexible is not the answer.

Perhaps the most important policy implications come from the result that the negative stability outcomes relate more to the supply side than to the mortgage market, and often more to commercial than residential. Relatively, far more emphasis should be put on a better understanding of supply-side issues and how these can be managed into the longer term.

A final comment

The paper has presented enormous food for thought. Yet it is inherently only a starting point for more formal and more detailed analysis. Some relatively simple extensions could well provide insights into the robustness of the findings and their relative importance in limiting the negative impact of property markets on financial stability. Even so, the core findings, which I take to be (i) that aggregates are not enough, and (ii) that there is a need to take more account of supply response, timing and adjustment, are both likely to withstand increased complexity.

Most of my comments have been around the assumptions and findings of the model and on the potential impact of different stabilising instruments. A more traditional economist than I would have concentrated more on its formulation as a partial equilibrium model. Developing a model within a general equilibrium framework would provide greater robustness – but at a real cost.

Finally, I would not base policy directly on the findings – and nor would Luci. But I would take them very seriously as a starting point for a better understanding of the risks of volatility and how these can be mitigated.

References

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2. General Discussion

Several different issues were taken up by participants. One participant was interested in how the model's results, and the associated policy conclusions, would change with a different assumption about the formation of housing price expectations. It was noted that the model's adaptive expectations on the level of housing prices implied people are constantly forecasting housing prices which are lower than actual outturns during a boom. This is likely to produce a very different set of dynamics (see, for example, Muellbauer (this volume)). In response, the paper's presenter, Luci Ellis, commented that the qualitative results are not affected by the assumption of extrapolative expectations.

Another participant queried the robustness of one of the model's results suggesting monetary policy was more effective in stabilising financial outcomes during the cleaning phase (easing policy rates during the bust) relative to the leaning phase (tightening policy rates during the boom). They suggested that if a risk-taking channel were added to the model, the initial shock to housing prices – designed as a decline in lending standards – could subsequently be moderated through a change in monetary policy and the effectiveness of leaning in the model would increase. In regard to this possibility, Dr Ellis said that although the model was deliberately simple to isolate specific channels through which property market developments could affect the risks to financial stability, the addition of a risk-taking channel could be a useful extension for further research. In regard to the model's result that suggests that monetary policy has an asymmetric effect on measures of financial distress, she said the amortisation effect would still be present, so monetary policy would still be relatively more effective in the bust than the boom.

The policy implications of supply-side flexibility in the property development sector also generated discussion. One participant expressed concern about the lack of a trade-off between the benefits of inelastic supply, as per the model results, and their costs following a permanent shock to the system. The participant said this lack of a trade-off was generated by the temporary and exogenous nature of the shock driving the model's cycle. It was suggested that a different scenario could be generated by using a trend increase in income or a higher level of demand for housing caused, for example, by an easing of one of the constraints mentioned in Warnock and Warnock (this volume). In this situation, very inelastic supply would have a cost for society because not enough resources would go to real estate. Dr Ellis said they had modelled a permanent shock and this still suggested an overshoot in housing prices because of the inherent sluggishness of supply. She went on to say there was, to some extent, a US story motivating the way the shock was designed. In particular, the easing in lending standards in the United States was temporary as per the model's shock, precisely because it had been excessive and ultimately undermined the viability of the lenders that had entered the market or gained market share during the boom phase.

Two questions raised by the discussant were also the subject of robust discussion. These were: (i) can policymakers gauge the fundamentals; and (ii) are regulators better informed than the market? One participant said a more appropriate question to answer, bearing in mind that policymakers are acting under uncertainty, was whether the probabilities of what we are seeing are consistent with fundamentals rising or falling and is there some probability that regulators have a different perspective? The participant argued that the answer to this rephrased question was yes; if a policymaker sees a construction boom occurring, asset prices rising, and a lot of innovation in the financial system with credit growing strongly and new competitors coming into the system, they are in the position to say risk is rising or the probability of something going wrong is increasing and this justifies thinking about a policy response. Another participant agreed and expressed the view that within a regulatory institution there are more people working on this problem, and thus, relative to other market participants, regulators are better placed to take the whole system into account and have a better sense of the fundamentals. In response, the discussant, Christine Whitehead, said it is concerning to observe regulators and international organisations rejecting evidence because it does not fit their models. Too many are still thinking in silos and this Conference is an attempt to break these down, Dr Whitehead said.