The housing finance revolution

Discussion of paper by R Green and S Wachter at
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Introduction

Let me begin by saying that I enjoyed reading the paper and learned a great deal from it. Most importantly, I also agreed with almost all of their analysis and conclusions. That said, one possible shortcoming of the paper is that more emphasis might have been put on the interdependencies between the individual forces that the authors suggest have driven the housing finance revolution. As we assess the turmoil that has struck financial markets in the last month, the complexity of these interdependencies, and their capacity to produce non-linear outcomes, has become all too obvious. In consequence, whereas the Green and Wachter paper has a longer historical sweep and focuses primarily on the United States, the emphasis of my comments will be on the implications of more recent structural developments. As well, I will try to give a more global perspective, without in any way wishing to deny that the global housing revolution was indeed pioneered in the United States. This global perspective builds on a recent working group report commissioned by the Committee on the Global Financial System[1] and other BIS work.

Before commenting directly on the paper, it would be useful to put the subject matter of this conference in a broader context. Certain facts can be cited to support the view that the global economy is exhibiting a number of serious "imbalances", defined here as significant and sustained deviations from historical norms.[2] Perhaps most germane to this conference, housing is only one of many asset classes which currently appear to be expensively priced relative to historical values. Such assets include (or at least did include, prior to the recent financial turbulence) equities, sovereign bonds, junk bonds and many derivatives, to say nothing of fine art, fine wines and even stamps. Moreover, these high prices emerged against the background of unusually easy global credit conditions and the ample use of leverage. Finally, these unusually easy credit conditions and high asset prices have been associated with historically unusual patterns of spending in many countries. Among the most notable of these would be the very low level of household saving in a number of countries (including the United States, the United Kingdom, Canada, Australia, New Zealand and Sweden) and the very high level of fixed investment in China, much of it directed to the production of goods for export.

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[1] This committee of national experts from central banks meets regularly at the BIS. In addition to this published report, the Working Group on Housing Finance has held regional meetings on recent development in housing finance in Asia and in central and eastern Europe, and is currently organising a third meeting to be held in Latin America. A publication summarising the findings from all these meetings will follow.

[2] A useful reference to such thinking is provided by an earlier paper which a colleague and I presented at this conference three years ago. See Borio and White (2004).

Deviations from historical norms, whether in the financial or real sphere, need not mean-revert, but the historical evidence indicates they often do. Such a process could begin in the financial sphere, with a so-called "Minsky moment"[3] as we may indeed be witnessing today. In contrast, it could begin on the real side of the economy, in any one of a number of ways. For example, consumers might retrench in response to a growing debt burden, or corporations might cut investment in response to past overinvestment or other fears (say, worries about rising protectionism) that called future profit growth into question. Where the process starts is not so important. What is important is the likelihood that the financial and real sectors will interact and reinforce each other in the downward phase of the cycle, similarly to their interaction on the way up. In current circumstances, an example of such interactions might well be a significant degree of credit rationing in the mortgage market that could amplify the downturn in an already weak US housing market.

Let me now focus more directly on the recent revolution in housing finance, as described in the Green and Wachter paper. Like all good essays, their paper deals with three questions: what has been going on; what have been the "drivers" of these changes; and what might be the implications? My comments will deal with each of these in turn.

1 What has been going on?

Green and Wachter make two central points. First, the most important development in housing finance has been the transition from a highly regulated system to a more efficient market-driven system, more closely linked to lending conditions in capital markets. Second, they note that this trend is global in scope. They also make the ancillary points (consistent with the comments just above) that in many countries the rate of growth of credit has accelerated sharply, and that house prices have also been rising rapidly almost everywhere. All of this is both true and essentially unprecedented.[4]

All this said, it might be useful to add some further details about the first point and a qualification to the second. The additional observations about "what" has been happening could be pertinent to analysing the implications. As is often the case, the devil may be in the details.

In the CGFS report referred to above, a number of points are made. First, there has been a global trend to easier credit conditions in obtaining housing finance. Margins for mortgages (over sovereign debt) have generally fallen and loan-to-value ratios have risen. Second, and closely related, there has been an increase in subprime lending,[5] particularly in the United States but also in some other countries. Third, mortgage contracts now offer more consumer choice. In practice, this has meant greater use of variable rate mortgages even in countries (like the United States) which have traditionally relied on fixed rate mortgages.[6] Fourth, off-balance securitisation has become more widespread geographically, and global investors have shown a greater willingness to buy financial products backed by subprime mortgages.

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3 See Minsky (1992).

4 Bob Shiller in this volume makes the point still more emphatically: "There appears to be no prior example of such dramatic booms occurring in so many places at the same time".

5 By this is generally meant loans to households with bad credit records or incomplete documentation to support mortgage applications.

6 The secular movement to lower nominal mortgage rates over the last two decades seems to have generated the belief that they would go lower still.

Fifth, the capacity to withdraw owner equity from appreciating house prices has materially increased in a number of countries.

This brings me to my qualification. Subject to these global trends, which imply a degree of convergence in the structure of national housing markets, there continue to be wide differences across countries. Some countries remain noticeably more "conservative"[7] when it comes to housing finance (eg Germany) while others have become increasingly "liberal" (eg the United States, the United Kingdom and Australia). These differences are supported by the fact that mortgage origination continues to be dominated by local lenders with local knowledge. Only in the United States, Mexico and central and eastern Europe do foreign banks have a significant influence.

Among the more important differences would certainly be the relative popularity of fixed versus floating rate mortgages, with the United States in the former camp (though changing) and countries like the United Kingdom and Spain in the latter. Another would be the nature of prepayment provisions and the determination of who pays the costs; in this regard, the repayment option implicit in US fixed term mortgages is virtually unique.[8] A third difference, related to this second one, is the ease with which equity can be withdrawn, again with the United States providing the greatest opportunities for such behaviour. A fourth difference has to do with the use of off-balance sheet securitisation of mortgages, a practice which is widespread only in the United States and Australia. Finally, the United States and Australia stand out again in their reliance on independent originators of mortgages destined to be sold on to others.

Commenting on such differences, Green and Wachter note that many countries do seem to have well functioning systems for housing finance without any significant degree of off-balance sheet securitisation. They also make the point that the S&L crisis in the United States was not inherent to a depository system, but due to bad regulation. I think both points are true, and they highlight the conclusion drawn in the paper that there might be no single "best" way to provide housing finance over time. Nevertheless, it is worth making the point that differences between countries with respect to housing finance could well be material in affecting the cyclical behaviour of different countries.[9] In particular, housing cycles might tend to be more extreme in countries with more "liberal" lending environments.[10]

2 What have been the drivers?

The Green and Wachter paper points to deregulation (often after previous difficulties), technical progress (credit scoring, better risk management) and lower interest rates (globally) over the last 25 years. Again, while essentially agreeing with them, let me add two observations and a qualification. The observations have to do with interdependencies and dynamic processes, while the qualification has to do with an omitted and important driver.

My first observation refers to the two-way interaction between deregulation and technology. Deregulation is often driven by technology. In effect, policies often simply adapt to the facts ex post. A good example is drawn from my home country, Canada, where foreign banks

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[7] Put otherwise, "conservative" systems are more friendly to the lenders, while "liberal" systems are more friendly to the borrowers. Generally, bankruptcy regimes in these different countries can be similarly classified.

[8] The Danish mortgage market has some similarities but also important differences. See Frankel et al (2004).

[9] Muellbauer, in this volume, makes the same point.

[10] For an empirical confirmation of this, see, for industrial countries, Tsatsaronis and Zhu (2004) and, for Asia, Zhu (2006).

were legally allowed "entry" in the early 1970s. This was an almost inevitable response to a wave of US "suitcase bankers" booking their Canadian business in New York by telephone. Reversing the causation, technology is given freer rein by deregulation. As an extreme example, consider India, where for many years computers were banned in the banking business to save jobs. Consider as well the tremendous innovations in finance introduced by a number of the larger Wall Street firms after the savings and loan crisis, and the regulatory changes it prompted. Indeed, I think these private sector initiatives are not given enough emphasis in the paper, at least relative to that put on the technological advances introduced by Fannie and Freddy over the course of the years.

My second observation has to do with the interaction of lower interest rates and the financial innovations prompted by technological advances and deregulation. Green and Wachter are correct in stating that a major force driving the housing finance revolution was "the steady decline of interest rates worldwide". Yet it is important to be clear about the nature of the transmission mechanism. If the essence of the housing finance revolution is simply more mortgage credit, then the link is more readily apparent. Lower mortgage rates might be expected to increase demand. This is particularly so in nominal terms, given the way that the inflation premium in mortgage rates front-loads payments to compensate for declines in the real value of principal. And if, as a result of greater "affordability", financial institutions find more borrowers "creditworthy", then the supply of such credit would also increase.[11] And if, as Green and Wachter assert, lower nominal interest rates also lead to higher house prices, then we have in turn the potential for more collateral, leading to still more borrowing, still higher house prices, and so on. Indeed, in the limit, they state that "if expectations about future house prices are based on observed ex post house price changes, bubbles can emerge". This causal part of the story I have no problem with.[12]

However, if the essence of the housing finance solution is easier credit terms (at any given interest rate), new instruments and more off-balance sheet securitisation, then it is somewhat less easy to see the link with lower interest rates. Yet perhaps the key is another set of interactions. Lower interest rates can increase the search for yield, if lenders suffer from a degree of money illusion or if they have previously committed to relatively high rates of return on their own liabilities. Recent years of declining rates have also been years of increasing competition, which sharpens the need to be inventive and come up with new products. Indeed, as Raghu Rajan (2005) noted here two years ago, such an environment also provides the incentive for investors to seek ways to raise perceptions of the risk-adjusted rates of return they have generated. This encourages the development of new instruments to push risks into the tails of distributions, where they are more likely to be ignored until disaster strikes.[13]

My qualification has to do with another "driver" which is not mentioned in the paper; a generalised reorientation of banking towards the retail market. There was a collapse during the 1990s, and subsequently, of corporate investment in many countries after earlier booms. Prominent examples would include Germany after reunification, Southeast Asia after the Asian crisis, and many industrial countries in response to the collapse of the TMT[14] bubble

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[11] Credit scoring is effectively a form of rationing, implying that lower interest rates which increase such scores will also increase the supply of credit. Since credit scores also increase as the evaluated value of the house rises relative to the size of the mortgage, another endogenous element comes into play which can further increase the amplitude of the housing cycle. See Frankel (2006).

[12] Evidently, however, I would not go as far as Bob Shiller who seems to feel that higher house prices are almost wholly driven by psychological propensities and that interest rates have little or nothing to do with this process.

[13] On this, see also Knight (2007).

[14] The technology, media and telecommunications sectors were at the heart of stock market developments. They were also characterised by heavy physical investment in the late 1990s.

around the turn of this millenium. In response, banks and other financial players began consciously, and sometimes with government support,[15] to pursue a strategy based on expanding their retail business. In emerging market economies, this process was further supported by rapid urbanisation. In industrial countries, or at least a few large ones, this retail orientation was accompanied by a widening acceptance of the "originate and distribute" model, itself made possible by some of the technological developments referred to in the Green and Wachter paper.[16]

3 What might be the implications?

Let me consider the implications at three levels. First, the effects on the direct participants; second, the effects on the broader financial system; and third, a brief reference to the macroeconomic implications. At each level, the housing finance revolution could imply both positive and negative effects, and reasonable people could easily arrive at different judgments as to which effects are dominant. Fundamentally, the closer we are to complete markets, the better, but with markets not fully complete, we still live very much in the world of the second best.

Implications for direct participants

The housing finance revolution has made it much easier for **borrowers** to get access to mortgage credit and to purchase their own homes. Most commentators would consider this to be a good thing, though it must also be noted that there are countries like Germany and Switzerland where the standard of housing seems very high in spite of a much higher proportion of renters. Borrowers today also have many more options in the mortgage contract, which again seems good in itself. Debt servicing obligations can also be tailored to allow households to smooth consumption intertemporally in the face of shocks of various sorts. Again, a good thing.

But there are also downsides. One is that good decision-making by households faced with more choice, requires more information and more sophistication. Green and Wachter suggest that these attributes could well be lacking. In particular, in good times, households could overestimate their capacity to handle debt service when times turn bad (or "teasers" expire). This seems to be a traditional human failing, repeatedly referred to in both the Christian Bible and the Koran as well as in other ancient books. Moreover, as attested to by the recent experience with subprime loans in the United States, it was apparently all too easy

[15] The role of government support in housing finance has historically been quite important; see, for instance, the experience in Asia (Chan et al (2006)). This support, however, has also been extended to other forms of consumer credit. As shown by the experience in Korea, and a number of other Asian countries, there is evidence that in some cases the process got out of hand; see Kang and Ma (2007).

[16] A final "qualification" to the Green and Wachter list of "drivers" is one that I find rather less convincing; namely, that the housing finance revolution was influenced by more general macroeconomic conditions than just lower interest rates. It could be contended that the "Great Moderation" led not only to lower expectations of inflation (helping to lower interest rates), but also to expectations of lower volatility for both inflation and output growth. If so, this might in turn have increased the appetite for risk-taking and debt accumulation. One problem with this hypothesis is that, whereas aggregate macro statistics have indeed been more stable in recent decades, income at the level of the household seems to have become more volatile. See Kohn and Dynam (2007).

for the unscrupulous to dupe many borrowers into accepting obligations they could not possibly honour.[17]

A second downside is that households have now become exposed to market swings affecting both levels of debt service[18] and credit availability. In sum, the housing finance revolution has helped transfer financial risk directly to households, and these risks now sit somewhat uneasily along with other newly transferred risks: greater uncertainty about pay and employment (in a more "flexible" workplace), greater uncertainty about pension income (given the demise of defined benefit private pension plans, and worries about social security) and greater risks associated with globalisation and the introduction of new technologies.

Turning now to **originators and lenders**, a stronger reliance on capital markets for funding has a number of positive implications. In particular, there is now a greater capacity to use financial markets to mitigate risks of all sorts. What used to be geographically concentrated credit risk can now be diversified away, at the same time helping others to diversify their portfolios without the trouble of originating mortgages. Liquidity risk can also be reduced by transferring, through securitisation, the financing of mortgages to those (like pension funds) who have long-term liabilities. And by tapping into more diverse sources of funding, the credit cycle might be smoothed and the risk of credit crunches lowered.

Yet, again, there are downsides. One of them has to do with incentives. If originators are not planning to hold on to the mortgages, they might not be as inclined to do due diligence. This creates a problem right at the beginning of the financing chain. Those who package the risks, and those who take on the risks, might also fail to perform due diligence. They might put excessive trust in the originators. They might believe that all the risks they take on can be diversified away. Or, they might put excessive trust in the capacity of modern techniques for risk management. Green and Wachter refer to all of these possibilities. What, however, is not alluded to is that all of these possibilities are enhanced and intermingled in an environment where everyone seems to be making lots of money. As was the case with Enron, WorldCom and Parmalat, the underlying problem is that no one is ever prepared to ask hard questions when profits seem "too good to be true".

A second downside of the increased reliance on securitisation has to do with valuation issues. Valuation of such products requires information that may not be available or may be hard to interpret. Consider, for example, the information deficit with respect to the US subprime mortgage market. Not only were many loans undocumented, but much of the information provided was clearly fraudulent. Furthermore, the data used to calibrate all valuation models were generally of very recent vintage, failing to cover one complete credit cycle. And inadequate data is not the only problem. Consider as well the sensitivity of valuation methodologies to assumptions about the possibility of default, loss-given-default, default correlations, and the relationships between all of the above. Work by two of my colleagues at the BIS[19] shows that such errors in calibrations can have first-order effects on "mark to model" evaluations. Finally, we know that correlations based on historical data move around enormously, in part because (as Green and Wachter rightly stress) household behaviour can in fact change significantly over time. Taken all together, there are formidable

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[17] See Gramlich (2007). In particular, 2/28 mortgages, with upfront "teaser" rates and prepayment penalties extending beyond two years, were designed to force a refinancing with an associated payment of fees to the originators.

[18] One evident exposure is via adjustable rate mortgages. Perhaps less well recognised is the exposure of many households, particularly in central and eastern Europe, to exchange rate changes. In that region, it has become quite common practice to take out mortgages denominated in euros or Swiss francs.

[19] Tarashev and Zhu (2007).

technical obstacles to getting "mark to model" evaluations right, particularly for complex products.

Finally, two other downsides affecting financial institutions suggest themselves. The first is enhanced reputational risk. When loans to households turn bad, and foreclosures rise, the political process is such that someone will inevitably be blamed, and not only the guilty. This could affect originators and other lenders, as well as those responsible for the securitisation process. Even the reputation of rating agencies might be affected, in spite of their assertions that investors were remiss in not using ratings in the way that the rating agencies intended. An important issue would be the effect of such a loss of reputation on the continued capacity of the institution to function effectively.[20] A second downside risk must be an increase in operational risk associated with more complex instruments, particularly if there is a whole string of independent agents standing between the initial originator and the ultimate lender.

Implications for the financial system more broadly

The more effective transfer of risk, away from originators and packagers to other financial institutions with longer-term liabilities and to households themselves, is generally thought to have made the financial system more stable. Similarly, with exposure to households now complementing the more traditional exposure to the business sector, there is a further, welcome element of diversification in the face of risk. Yet, as pertains to those directly involved in this market, there are also downsides when considering the functioning of the financial system as a whole.

The first of these has to do with a sudden drying up of liquidity. In this regard, interdependencies again suggest themselves. Institutions depend on market liquidity to execute their investment strategies and to undertake risk management. Markets in turn depend on institutional risk capital for market-making. In this way, market liquidity and funding liquidity are fundamentally interdependent[21] and the interactions between them can be powerful. Moreover, particularly in times of stress when concerns about counterparty risk tend to rise, these interactions can also be discontinuous. We have observed such a phenomenon in recent weeks, triggered by an unexpected worsening in the subprime mortgage market in the United States.

The underlying problem is opacity, particularly for complex instruments like collateralised debt obligations. There are two ways in which this increases uncertainty. The first has to do with valuation problems. Not only is valuation difficult, as noted above, but such point estimates can be highly misleading in that they ignore higher moments of the probability distribution of the expected returns.[22] The second concern has to do with distributional issues. As a general rule, we do not know where the credit risk implicit in securitised lending goes. We presume it has gone to those best placed to manage it, but it might also rest with the least well informed, the most gullible or the most adventurous in terms of leverage. There could also be hidden elements of unwelcome concentration. This could add off-balance sheet exposures to property to on-balance sheet exposures, which are already quite high in many countries. The combination of these two forms of uncertainty make potential losses particularly hard to estimate. In such an environment, there is an increased potential for almost anyone to become suspect as a counterparty. And an added recent concern,

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[20] In the United States, many mortgage loan originators have already closed down, potentially restricting the future supply of mortgages.

[21] See Borio (2003) and, for a recent formalisation, Brunnermeir and Pedersen (2007).

[22] See Borio and Tsatsaronis (2004).

particularly with respect to larger financial institutions, has been that many of them are known to have substantial obligations to provide liquidity to others should the need arise.[23]

A sudden increase in such concerns effectively led the global interbank market to cease functioning as from the middle of August this year. Suddenly shunned by money market funds,[24] the asset-backed commercial paper (ABCP) market dried up. Banks, fearful that they would have to provide liquidity to those no longer having access to the ABCP market, began to hoard cash and withdrew from the term interbank market. Moreover, with the spread between Libor and the policy rate rising to levels not seen since 1987, this put pressure on a whole host of interrelated markets, most notably those for forward foreign exchange contracts and interest rate swaps, both of which are priced off Libor. Difficulties such as these underline the fact that we do not yet live in a perfect financial world and that shocks can both originate and propagate in unexpected ways.

Implications for the broader economy

This issue is not mentioned in the Green and Wachter paper, in effect being reserved for later papers. Yet the issue of the possible interrelationships between the financial and real sectors of the economy deserves to be highlighted up front. The fundamental question is whether the housing finance revolution has contributed to the decline in the household saving rate seen in many countries and, if so, whether there is some potential for a rebound. There are a number of reasons to think a rebound is likely.

First, the largest declines in household saving do seem to have been in those countries with the most "liberal" lending environments, implying that there has been a link between access to credit and the propensity to spend. Thus, should there be a growing unwillingness to borrow further (say, due to accumulated debt levels, or an overhang in the stock of houses and cars already purchased) or a growing inability to do so (say, due to falling collateral values or tighter lending standards) this might well lead to a reversal of earlier consumption trends. Second, to the extent that consumers have in recent years been enabled, by the removal of earlier credit constraints, to more optimally allocate spending over time, there must by definition be a later period of more subdued spending. Third, at the level of theory, it is not at all evident that an increase in house prices constitutes an increase in national wealth, since the cost of housing services rises pari passu with the price of a house.[25] When the consumers of housing services recognise these future liabilities, there will be a further need for retrenchment in the purchase of other goods and services.

Some micro data that have been collected for a limited number of countries do indicate that it is wealthier people that account for a disproportionate amount of outstanding mortgage debt. To some, this implies a greater capacity to continue spending, even in the face of a turn in the credit cycle. A counterargument notes that a weakness in the housing market does seem empirically to have significantly reinforced economic downturns in a number of countries. Unfortunately, we have no historical data to confirm that this past vulnerability reflected a more equal distribution of debt than what we observe today. In sum, the jury is still out, though the time for its return does seem to be rapidly approaching.

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[23] These would include "conduits" (associated with banks), other special purpose vehicles and hedge funds for which the bank played the role of prime broker.

[24] The process apparently began with an increase in market volatility that caused money market funds to begin worrying that they might incur losses on their holdings of ABCP. This raised the issue of reputational risk ("break the buck") were they in turn not able to redeem liabilities at par, as they had always done.

[25] For a fuller treatment of this, see White (2007).

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