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The Irish Credit Bubble

Morgan Kelly, University College Dublin

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1 Introduction.

During the 1990s, rising employment resulting from improved competitiveness caused Ireland to experience rapid economic growth.[1] As Ireland converged to average levels of Western European income around 2000 it might have been expected that growth would fall to normal European levels. Instead growth continued at high rates until late 2007, since when it has turned sharply negative.

The proximate cause of the boom and bust in Ireland since 2000 is well known: construction. Ireland went from getting 4–6 per cent of its national income from house building in the 1990s—the usual level for a developed economy—to 15 per cent at the peak of the bubble in 2006–07, with another 6 per cent coming from other construction. This construction boom led to an employment boom which drove wages in all sectors of the economy to uncompetitive levels; and generated the tax revenues that funded substantial rises in government spending.

However, driving the construction boom was a less recognised boom, in bank lending. As Figure 1 shows, in 1997, Irish bank lending to the non-financial private sector was only 60 per cent of GNP, compared with 80 per cent in most Eurozone economies and the UK.[2] The international credit boom then saw these economies experience a rapid rise in bank lending, with loans increasing to 100 per cent of GDP on average by 2008. [3]

[1] See Honohan and Walsh (2002), especially their Figure 5.

[2] Schularick and Taylor (2009) find similar figures across a wider set of industrialized economies. In what follows we adopt the usual convention of expressing Irish figures as a fraction of GNP, and international numbers as a fraction of GDP.

[3] Data in Figure 1 on bank lending for UK from Bank of England, for Eurozone economies from the ECB: Aggregated balance sheet of euro area monetary financial institutions, excluding the Eurosystem http://www.ecb.int/stats/money/aggregates/bsheets/html/outstanding_amounts_index.en.html. Data for private sector lending before 2003 includes insurance companies, pension funds, and other non-monetary financial intermediaries. We remove them in 1997 by assuming that they are the same proportion of lending in each economy as 2008.

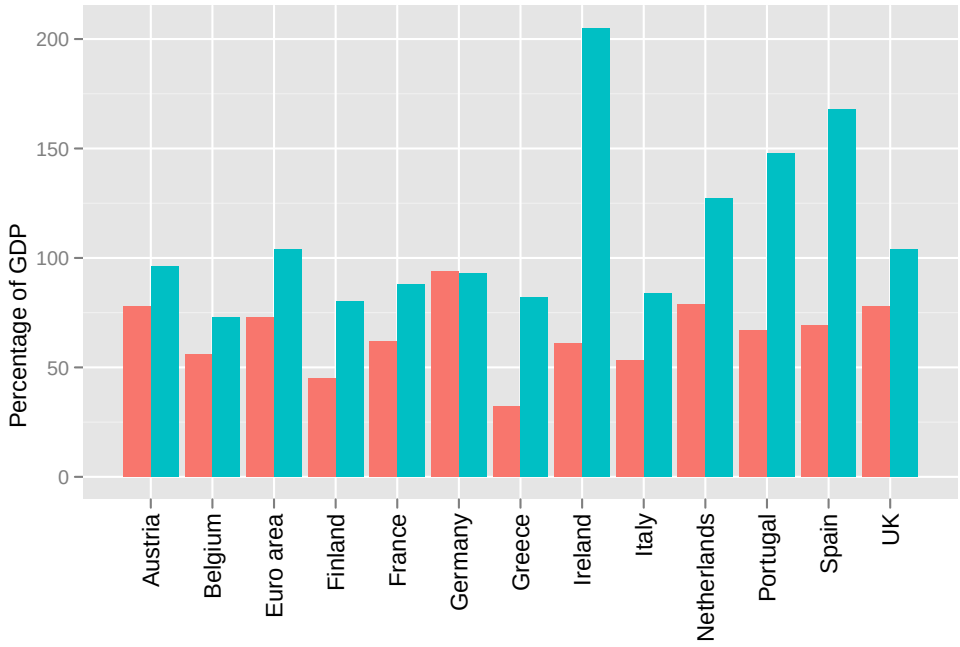

Figure 1: Bank lending to households and non-financial firms as a percentage of GDP for Eurozone economies and the UK, 1997 and 2008.

These rises were dwarfed, however, by Ireland, where bank lending grew to 200 per cent of national income by 2008. Irish banks were lending forty per cent more in real terms to property developers alone in 2008 than they had been lending to everyone in Ireland in 2000, and seventy-five per cent more as mortgages.

This more than tripling of credit relative to GNP in 11 years created profound distortions in the Irish economy. The most visible impact was on house prices. We show below that the rise in Irish house prices has little to do with falling interest rates and rising population, and is almost completely explained by increased mortgage lending. In 1995 the average first time buyer took out a mortgage equal to three years' average earnings, and the average house (new or secondhand, in Dublin or elsewhere) cost 4 years' average earnings.

By the bubble peak in late 2006, the average first time buyer mortgage had risen to 8 times average earnings, and the average new house now cost 10 times average earnings, while the average Dublin secondhand house cost 17 times average earnings. These rises in mortgages and house prices became mutually reinforcing, with larger mortgages driving house prices higher; while rising house prices made banks willing to grant larger mortgages.

As the price of new houses rose faster than the cost of building them, investment in housing rose. Ireland went from completing around 30,000 units in 1995 to 80,000 in 2007: one new housing unit for every 20 households.

Like any bubble, the rise of Irish property prices contained the seeds of its own collapse. Property bubbles grow as long as buyers are willing to borrow increasingly large amounts in the expectation that prices will continue to rise. This process inevitably hits a limit where borrowers become reluctant to take on what start to appear as impossibly large levels of debt, and the self-reinforcing spiral of borrowing and prices starts to work in reverse.

In Ireland buyers started to become nervous sooner than most observers imagine: the number and average size of mortgages approved (to all categories of borrower: first time buyers, movers, and investors) peaked in the third quarter of 2006. By the middle of 2007 the Irish construction industry was in clear trouble, with unsold units beginning to accumulate.

This property slowdown was bad news for the Irish banking system which had lent heavily to builders and developers to finance projects and to make speculative land purchases. Share prices of Irish banks fell steadily from March 2007, with the crisis coming to a head in late September 2008 with a run in wholesale markets on the joint-second largest Irish bank Anglo Irish. After aggressive denials that the banking system faced any difficulties, the Irish government has been forced to respond with a sequence of increasingly desperate and expensive improvised measures.

It guaranteed all deposits and senior debt in the six Irish banks in September 2008; was forced to nationalise Anglo Irish in January 2009; invested €3.5 Bn in preference shares in the two large retail banks AIB and Bank of Ireland in February 2009; and established a National Asset Management Agency (NAMA) to buy non-performing development loans from banks in November 2009.

It is currently proposed that NAMA buy loans with a face value of €70 Bn for €55 Bn. However, even assuming that the government's forecasts of interest costs and the recovery of property prices—which appear to lie in the upper tail of optimism—prove correct, the situation of the Irish banking system will remain difficult.

The business model of the Irish banks for the last decade was to borrow heavily in wholesale markets to lend to developers and house buyers. The collapse of this model leaves them with three, inter-related problems.

1. Large losses on loans to builders and developers.

2. Heavy reliance on wholesale funding.

3. The likelihood of considerable defaults on mortgages.

While NAMA is intended to repair, for now, the damage to the asset side of Irish bank balance sheets from developer loans, their liability side appears unsustainable. The aggressive expansion of Irish bank lending was funded mostly in international wholesale markets, where Irish banks were able to borrow at low rates. From being almost entirely funded by domestic deposits in 1997, by 2008 over half of Irish bank lending was funded by wholesale borrowers through bonds and inter-bank borrowing. This well of easy credit has now run dry. In the words of Bank of England Governor Mervyn King: "But the age of innocence—when banks lent to each other unsecured for three months or longer at only a slight premium to expected policy rates—will not quickly, or ever, return."[4] As foreign lenders have become nervous of Irish banks, their place has increasingly been taken by borrowing from the European Central Bank and short-term borrowing in the inter-bank market. Payments from NAMA will allow Irish banks to reduce their borrowing by a trivial amount.

Without continued government guarantees of their borrowing and, more problematically, continued ECB forbearance, the operations of the Irish banks do not appear viable. Borrowing in wholesale markets at 5.6 per cent[5] to fund mortgages yielding 3.5 per cent is not a sustainable activity, and Irish banks face no choice but to shrink their balance sheets by repaying debt and returning to their earlier state of being funded mostly by deposits. It appears likely that the leverage of the Irish economy will return to normal international levels, with bank lending in the region of 80–100 per cent of GNP, back where it was in the late 1990s.

While the stock of credit to the Irish economy will contract by at least half, when we remember that loans equivalent to 80 per cent of GNP are tied up in mortgages (most of them of recent origin with terms of 35 years or more), the flow of new lending will contract even more sharply. It follows that property prices that were inflated by bank lending will drop steeply.

Should lending criteria return to their late 1990s standards, our results indicate that the prices of new houses and commercial property will return to an equilibrium two thirds below their peak levels, with larger falls possible for secondhand property. This means that, supposing residential prices have already fallen 40 per cent from peak, prices still have to fall by about half from their present levels. Were prices then to grow in line with real incomes,

[4]Cited by Pozen (2009, 165)

[5]The annual yield on a 5 year bond issued by AIB on 5 November 2009, 285 basis points over the mid 5 year swap rate. "AIB sells €750m five-year bond after ratings downgrade." *Irish Independent*, 6 November 2009.

at around 2 per cent per year, it will take about 50 years for real prices to return to their 2006 peaks.

The third problem of the Irish banks is their mortgages. Recent US experience highlights two factors that rapidly increase the likelihood of mortgage default: falling house prices, and, most importantly, unemployment. Both have become realities for many Irish borrowers in the last year. In September 2009, 14.4 per cent of US mortgages were at least one payment past due or in foreclosure; while in Florida, whose investor fuelled housing bubble closely resembles the Irish one, the figure is 25%.[6] Dealing with the financial and, more importantly, human cost of widespread mortgage defaults will be the next, and far more challenging, step of the Irish banking crisis.

By pushing itself close to, and quite possibly beyond, the limits of its fiscal capacity, the Irish state has succeeded in rescuing Irish banks from their losses on developer loans. Despite this, these banks remain as zombies entirely reliant on continued Irish government guarantees and ECB forbearance, and committed solely to reducing their own debts.

While bank capital levels are, probably, adequate for the markedly smaller scale of their future lending, we will see below that even fairly modest losses on their mortgage portfolios will be sufficient to wipe out most or all of that capital. Having exhausted its resources in rescuing the Irish banks from the first wave of developer losses, the Irish state can do nothing but watch as the second wave of mortgage defaults sweeps in and drowns them.

In other words, it is starting to appear that the Irish banking system is too big to save. As mortgage losses crystallise, the Irish government's ill conceived project of insulating bank bond-holders from any losses on their investments is sliding beyond the means of its taxpayers.

The mounting losses of its banking system are facing the Irish state with a stark choice. It can attempt a NAMA II for mortgage losses that will end in a bond market strike or a sovereign default. Or it can, probably with the assistance of the IMF and EU, organise a resolution that shares property losses with bank creditors through a partial debt for equity swap. It is easy for governments everywhere to forget that their states are not wholly controlled subsidiaries of their banks but separate entities; and a resolution that transfers bank losses from the Irish taxpayer to bank bond holders will leave Ireland with a low level of debt that, even after several years of deficits, it can easily afford.

[6]Mortgage Bankers Association, *National Delinquency Survey*, November 19 2009, http://www.mbaa.org/NewsandMedia/PressCenter/71112.htm

The rest of this paper is as follows. Section 2 outlines the rise in Irish bank lending since 2007, and how this lending was funded by wholesale markets. Section 3 shows how the rise in Irish house prices is almost entirely explained by increased mortgage lending. Section 4 shows how the rise in house prices generated a large expansion of construction activity. Section 5 looks an earlier Irish bubble, in agricultural land. Section 6 examines the problems of bank funding and mortgages; and Section 7 looks at the causes of the Irish bubble.

2 Irish Bank Lending.

Figure 2 shows deposits and lending to the private sector of Irish banks relative to GNP since the last quarter of 1992.[7] It can be seen that Irish banks were more or less completely deposit funded until 1997, with loans and deposits both around 75% of GNP, and loans to the non-financial sector about 60% of GNP. By comparison, loans to the non-financial private sector of UK banks were one third higher at 80% of GDP, the average level that Schularick and Taylor (2009) find across 12 industrialized economies at that time.

By 2004, UK lending had risen to 95% of GDP, but had been overtaken by Ireland with lending of 100%. However, as Figure 2 shows, at this stage Irish lending accelerated rapidly.

By the middle of 2008 the international credit bubble saw UK non-financial lending rise to 104% of GDP, again close to the international average reported by Schularick and Taylor (2009). In Ireland however, non-financial lending had risen to 200% of GNP, with total lending equal to 250% of GNP, and rising to 270% if securitised mortgages are added. By contrast, deposits had risen only to around 125% of GNP. By the first quarter of 2009, a combination of continued increases in lending (nominal lending peaked in mid-2008 and has fallen slightly since) and falling GNP meant that non-financial lending had risen to 225% of GNP and total lending to 290%, rising to 320% of GNP when securitised mortgages are included.[8]

It is this more than tripling of bank lending that accounts for the Irish boom since 1997. Effectively the Irish economy segued from one driven by competitiveness in the 1990s to one driven by a credit fuelled bubble in the 2000s.

[7] Numbers are from Table C3, column 1 and Table C8 of the Irish Central Bank *Quarterly Bulletin*

[8] The growth of Irish credit does appear sedate however when compared with Iceland, where lending to firms and households went from 1.8 times GDP in 1999 to 5 times in 2008. http://www.sedlabanki.is/?pageid=552&itemid=198dfc1c-a027-4abf-b95f-c51fda8bc5f5, http://www.statice.is/Statistics/National-accounts-and-public-fin

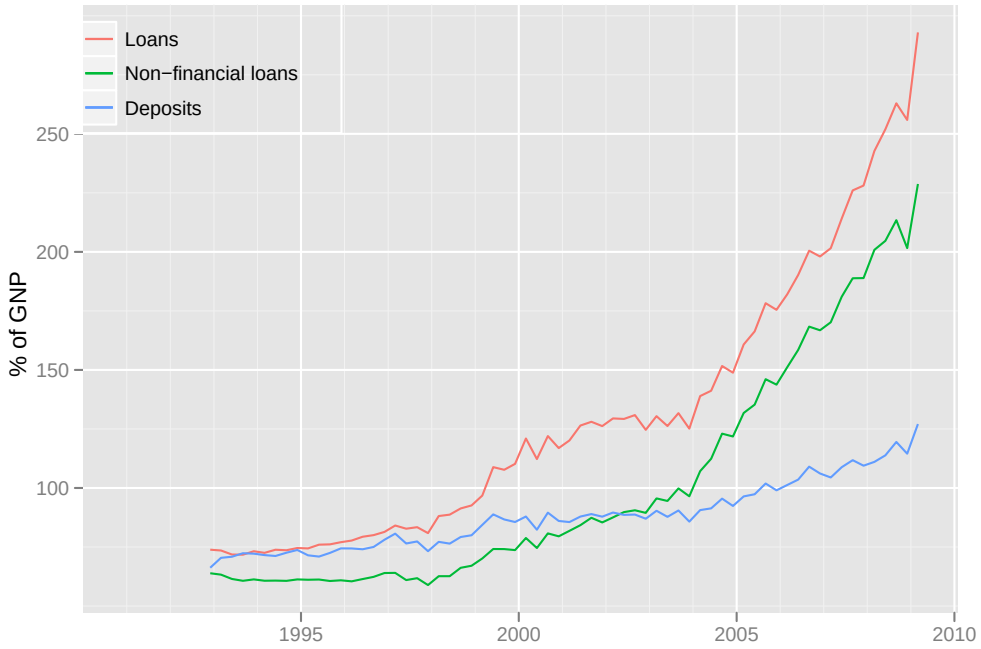

Figure 2: Lending to the private sector and deposits of Irish banks as a percentage of GNP, 1992 to 2009.

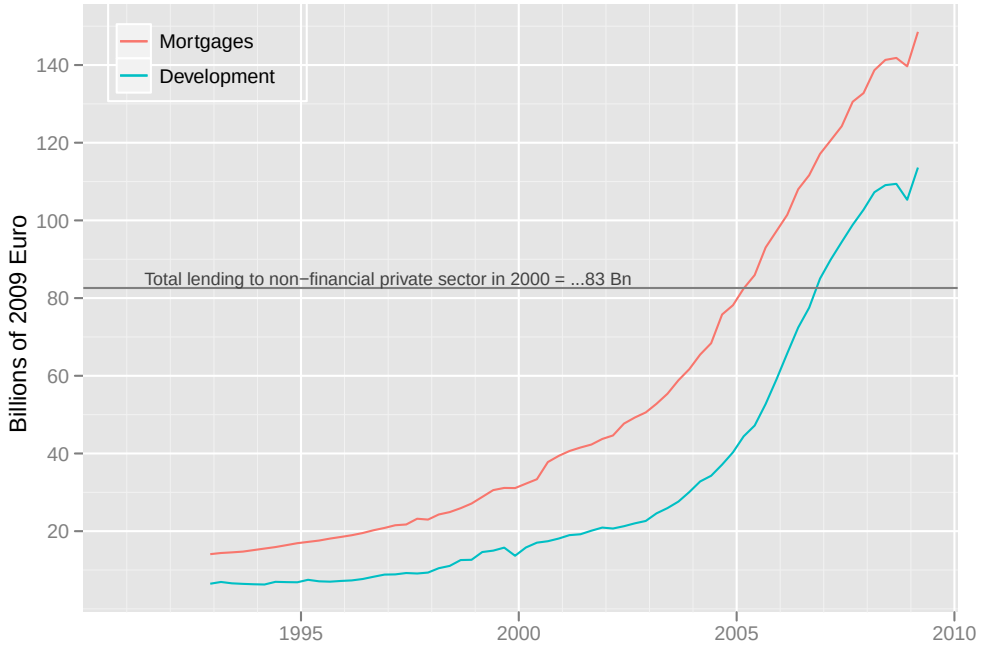

Figure 3: Property lending in billions of 2009 Euro, 1993–2009.

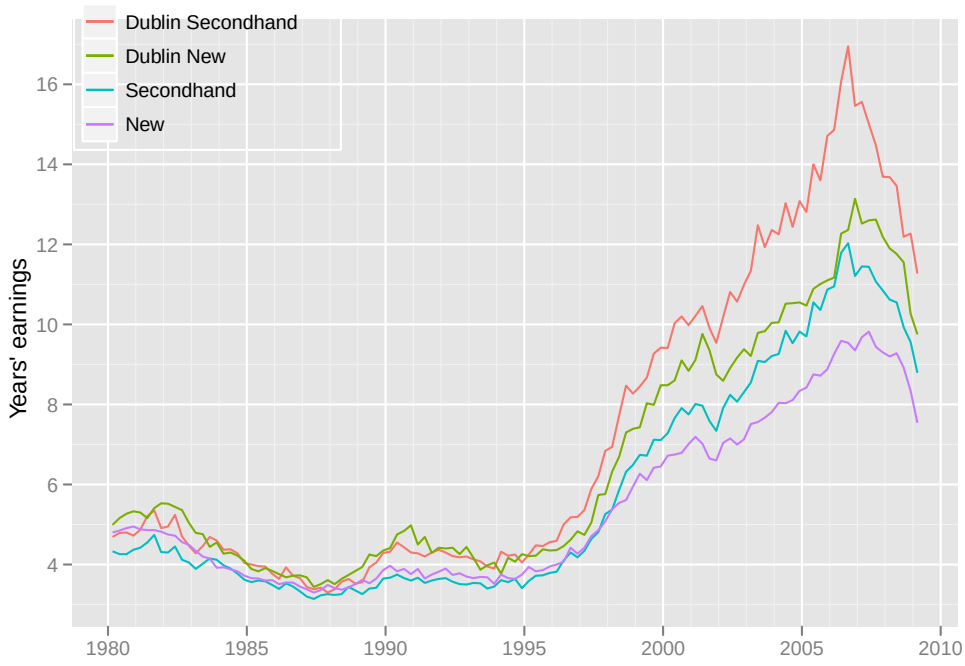

Figure 4: Irish house prices relative to average earnings, 1980–2009.

Particularly large rises occurred in property lending, both in mortgages to households and in loans to builders and developers. As Figure 3 shows, at the start of the credit bubble in 1997 banks were lending €20 Bn in mortgages in 2009 prices, and €10 Bn to developers.[9] By 2008, the value of mortgage lending (including the quarter of mortgages that were securitised) had risen to seven times its 1997 value, while lending to developers was 11 times its 1997 value.

For comparison, during this time, thanks in large part to the construction activity generated by this lending, real GNP rose by 75%. To put these number in further perspective, the total value of bank lending to the non-financial private sector in 2000 was around €80 Bn in 2009 prices. Irish banks were therefore lending 75% more in mortgages than they had been lending to everyone in Ireland 8 years earlier, and 40% more to developers.

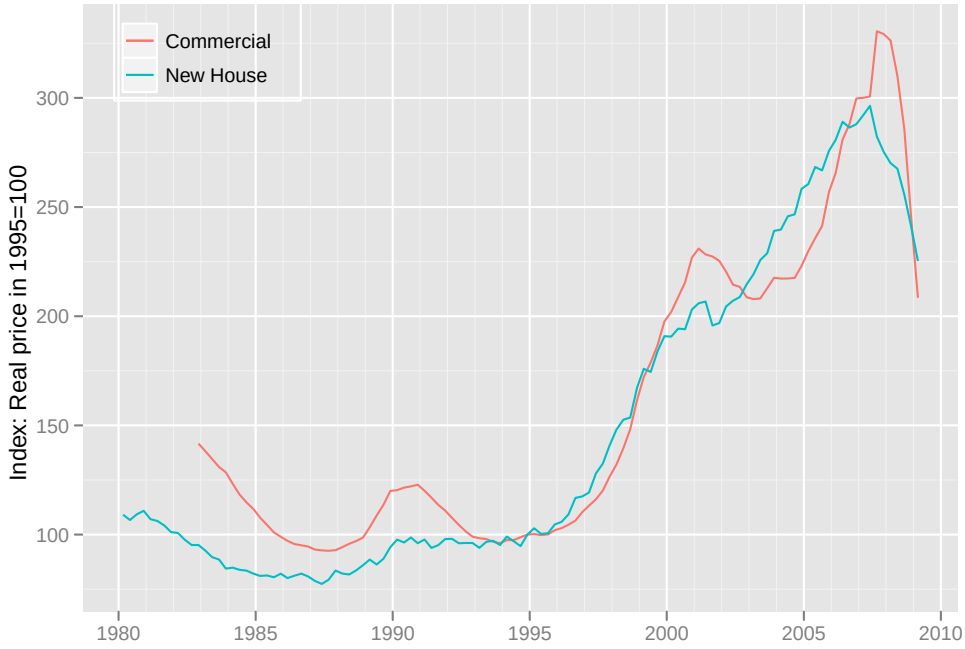

Figure 5: SCS-IPD index of commercial property prices compared with price of new houses, both in 2009 prices. 1995=100.

3 Lending and Property Prices.

This explosion of bank lending led to predictable rises in the prices of Irish houses and commercial property. Figure 4 shows that in 1995, the average price of a house in Ireland (new or secondhand, in Dublin or elsewhere) was equal to 4 years' average earnings in industry.[10] At the peak in late 2006, new house prices nationally had risen to 10 times earnings, while Dublin secondhand prices had risen to 17 times earnings.

Figure 5 shows that SCS-IPD index of commercial property prices, adjusted for inflation, showed similar rises to new house prices. The same underlying processes are driving both markets.[11] The peak in commercial prices occurred about a year after the residential peak, in late 2007.

[9]Classified in Table C8 of the Irish Central Bank *Quarterly Bulletin* as Construction and Real Estate Activities.

[10]Department of Environment data. The ESRI index is similar.

[11]A Jorgensen procedure finds a cointegrating relationship between the two series until 2006 significant at 1% of $P = 0.97C$ where P, C are real price of new houses and commercial property with value in 1995 Q1 set to 100.

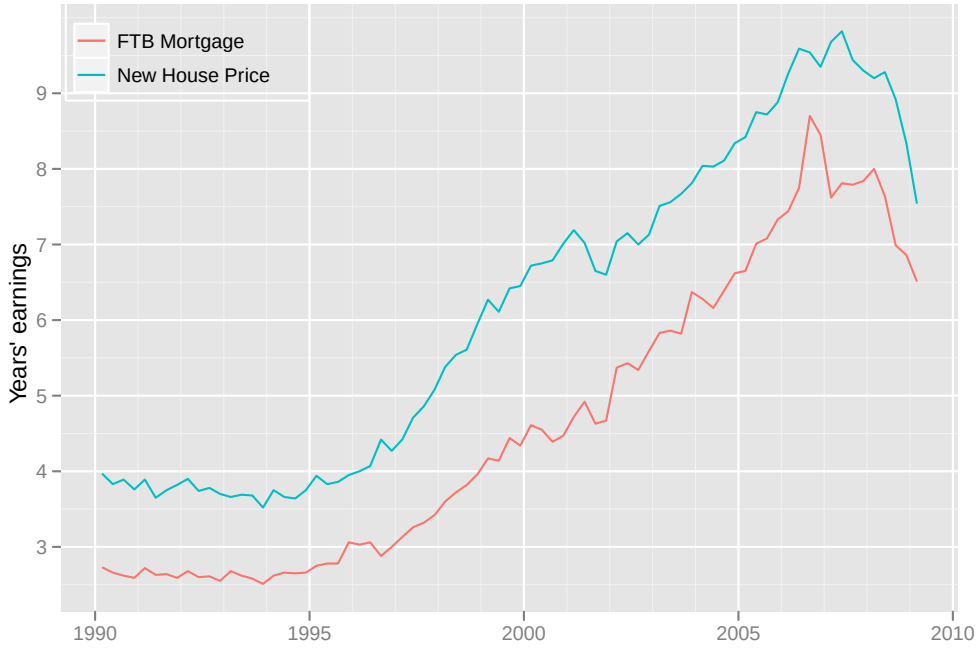

Figure 6: Average first time buyer mortgage and new house prices, relative to average earnings.

The dearth of transactions makes the extent of subsequent falls hard to gauge. The most plausible estimates for housing are those of the estate agents Sherry-FitzGerald who estimate nominal prices nationally have fallen from peak nationally by 37% and in Dublin by 42% by mid 2009.[12]

What drove the rise in property prices? The proximate cause was bank lending. In a market with rising prices, borrowers were willing to accept any loan that banks would give them so, with property supply fixed in the short run, prices moved in proportion to the size of new loans.

The cleanest data on new lending is the Department of Environment series on mortgage approvals for first time buyers. Figure 6 plots the size of mortgages to first time buyers and new house prices, both relative to average earnings. Two things stand out. First, the two series move closely together.

[12]http://www.sherryfitz.ie/aboutus/NewsItem.aspx?ID=515. One anecdotal data point comes from the Commercial Court which is hearing a large volume of cases brought against property developers by their creditors. Mr Justice Peter Kelly has stated that he is dealing "on a daily basis" with cases with valuations of commercial property showing falls in value of 70–80 per cent. *Irish Times*, 20 October 2009. "Judge says cases showing falls in property values of up to 80%"

Intercept	Mortgage	Interest	Popn	SER	R^2	DW
7.5092	1.1259**	−0.1149**	−0.0016	0.3217	0.9676	0.5495
(4.2788)	(0.2212)	(0.0202)	(0.0014)			

OLS regression of average new house price relative to average earnings on average first time buyer mortgage relative to average earnings, real mortgage interest rates, and population. Quarterly data. Andrews HAC standard errors in parentheses.

Table 1: Mortgage lending and new house prices in Ireland, 1979–2006.

Table 1 shows that mortgages have a strong impact on house prices, with a €1 rise in mortgages increasing house prices by €1.13. On the other hand, interest rates have a modest effect. In order to cause the ratio of price to earnings to rise by one (say, from 4 to 5 years' earnings), it takes a fall of nearly 9 percentage points in mortgage interest rates. In other words, rising house prices were driven predominantly by increases in the size of mortgages that banks were willing to give, with interest rates playing a secondary role, and population none at all.

Looking at cointegration, the first eigenvalue implies a long run relationship between house prices, mortgages, and real interest rates of

$$\frac{P}{Y} = 1.33\,\frac{M}{Y} - 0.17r$$

where P is the average price of a new house, Y is average industrial earnings, M is average first time buyer mortgage, and r is the real mortgage lending rate.[13]

The second notable thing about Figure 6 is that the peak of first time buyer mortgages (in number as well as value) occurred in the third quarter of 2006, and then declined quite sharply. Mortgages for movers and residential investment borrowers follow a similar pattern.[14] While the total value of mortgages continued to rise after 2006, it did so at a much slower rate.

Just as in the United States, rapid increases in credit were accompanied by a marked deterioration in lending standards. Among first time buyers purchasing new houses in 2006,

[13]Using a two lag VAR, a Johansen procedure identified cointegration relationships significant at 5%: $(1, -1.31, 0.16), (1, -0.70, 0.20)$ with eigenvalues $0.20, 0.14$. Including observations after the market peak in 2006 caused the relationship to disappear, consistent with the idea that the post-bubble housing market is qualitatively different from the bubble one, with falling supply and demand for credit, large stocks of unsold houses, and uncertainty about the magnitude of future price falls.

[14]http://www.ibf.ie/pdfs/IBFPwCMortgageMarketProfileQ407.pdf

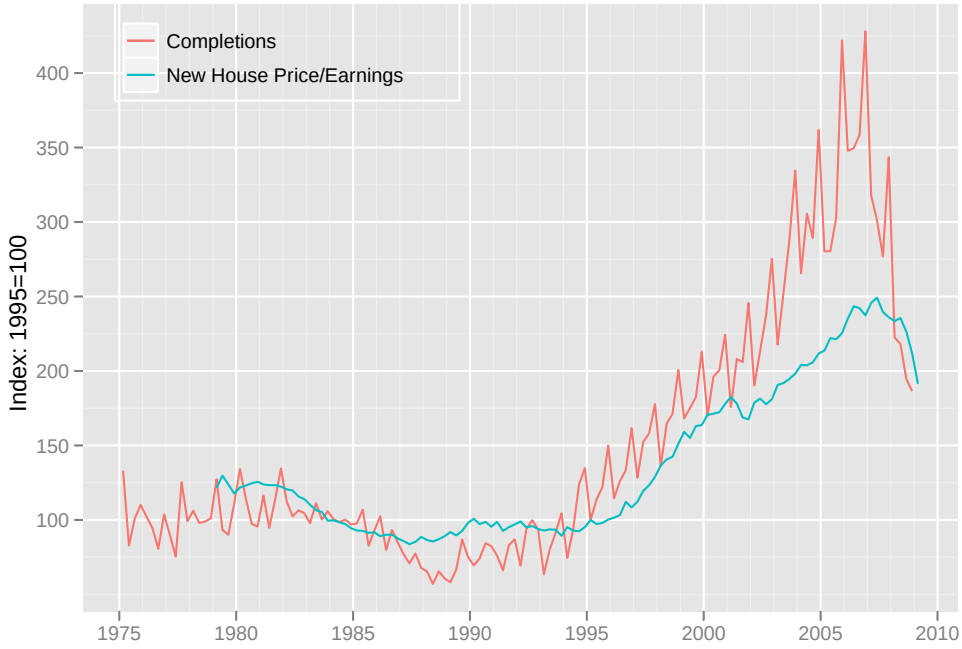

Figure 7: Quarterly housing completions and new house prices relative to earnings. 1995=100.

only 24% had loans to value below the traditional maximum of 80% (and this falls to 15% in Dublin), 64% had ratios above 90%, and 30% were 100% mortgages. Looking at terms of mortgages, only 17% of first time buyers of new houses took out mortgages of less than 25 years, and 58% took out loans of more than 30 years, while for Dublin the corresponding figures are 9% and 69%.

4 House Prices and Construction.

Q theory predicts that residential investment should rise as the price of houses rises relative to their construction cost. Because labour and material costs move with average earnings, the ratio of new house prices to earnings gives a proxy for Tobin's average q. Figure 7 shows how private housing completions and the ratio of new house prices to average earnings rose together until 2007. Looking at logs of the two series between 1979 and 2006, applying a Johansen procedure to a VAR with 8 lags and seasonal dummies, we find a significant at 1 per cent cointegrating relationship $\ln(C) = 1.56 \ln(P/Y)$ where C is private completions per quarter, and P/Y is the ratio of new house prices to average earnings. In other words,

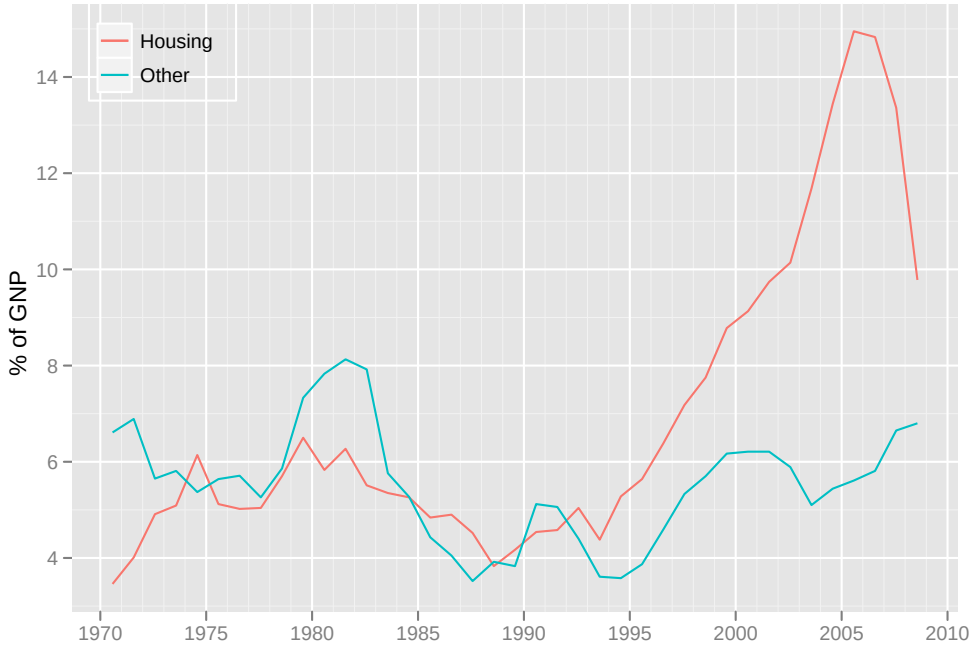

Figure 8: Share of construction in GNP, 1970–2008.

holding earnings constant, a 10 per cent rise in house prices is associated with a 15 per cent rise in completions.

Figure 8 shows the marked impact of house building on GNP. Until 1997 Ireland, like any other industrial economy, got from 4 to 6 per cent of its GNP from building houses. By 2006–07 this had risen to 13%. For comparison, in the other major European housing boom, in Spain, housing investment peaked at 9% of GDP. Adding other construction (but not roads), building was accounting for an extraordinary one fifth of Irish national income at the peak of the bubble in 2007.[15]

If we look at the increase of Irish GNP between 2000 and 2007, 28 per cent is accounted for directly by the growth of construction output.

This construction boom created two serious distortions in the Irish economy. First, as labour demand rose, particularly for less skilled labour, wage rates across the economy were driven up out of proportion to productivity growth, leading to a fall in international competitiveness. Between 2000 and 2008 hourly earnings in manufacturing relative to major

[15]These data somewhat overstate the contribution of construction to Irish GNP to the extent that they include imported inputs. However the bulky nature of building materials ensures that most are produced domestically.

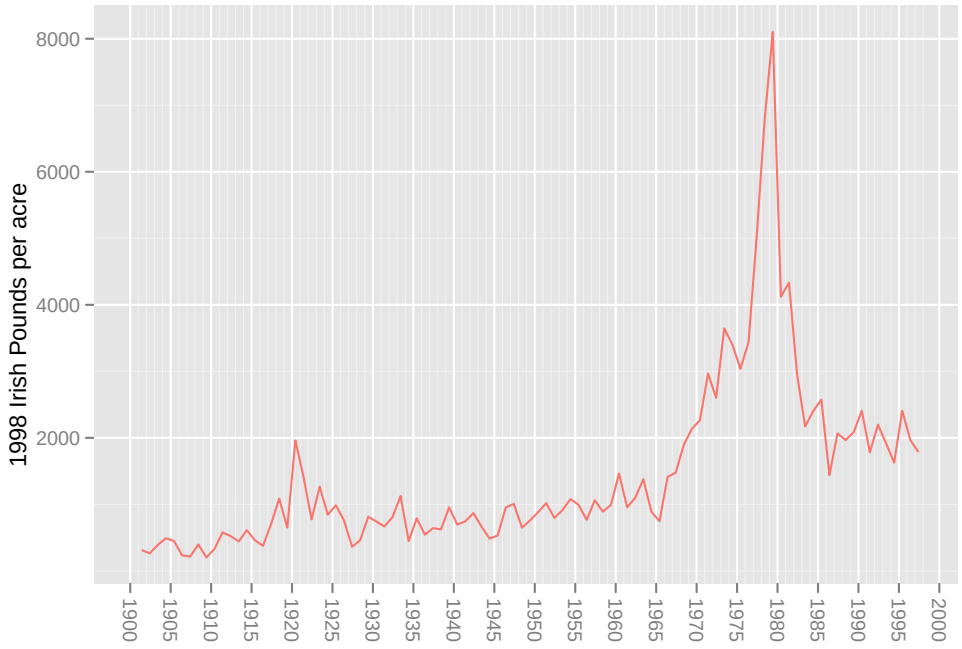

Figure 9: Real price of land in the Limerick region, 1901–1996.

trading partners rose 20 per cent.[16] The second effect of the building boom was a large rise in government revenue which funded a large rise in government expenditure which is proving painful to reverse with the ending of the boom.

5 The previous bubble.

The credit fuelled bubble in property prices was actually the second asset bubble in Ireland in a generation. Figure 4 shows real land prices in the Limerick region estimated by Roche and McQuinn (2000), expressed in 1997 pounds (multiply by 1.75 to convert into 2009 euros).

After accession to the European Economic Community in 1973, Irish banks began to lend heavily to farmers to modernise and expand. As a result, the real price of agricultural land tripled between 1975 and 1977, reaching a peak equivalent to €14,000 per acre in 2009 prices. Real Irish GNP in 1977 was 28 per cent of its 2008 level, so this price is roughly equivalent to €50,000 per acre in current purchasing power for purely agricultural land. For comparison, during the recent boom, when agricultural land prices were driven by demand

[16] Central Bank of Ireland, *Quarterly Bulletin*, Table B4.

for potential development, prices peaked in 2006 at an average of €21,000 per acre nationally, and €35,000 in Dublin, Kildare and Wicklow.[17]

The bubble quickly burst as farmers ran into difficulties servicing loans: between 1977 and 1980 real price fell by around 75 percent and remained at this level, more or less where it had started in 1973, until 1995, eighteen years after the peak. It can also be seen that, after an earlier boom at Independence in 1921, it took 50 years for prices to regain their peak.

6 The Irish banks after the bubble.

The collapse of the building boom left Irish banks facing large losses to builders and developers. Despite denials by the banks that they faced any difficulties, their share prices started to slide steadily after March 2007.

This decline accelerated after May 2008 as domestic banking difficulties started to merge with the deepening international financial crisis. The crisis came to a head on 29 September with a run in wholesale markets on the most aggressively expansionary of the Irish banks, Anglo-Irish.

Although the crisis had been building for 18 months, the government and financial regulators appear to have been taken entirely by surprise. At a late night meeting with banks, the Irish government committed itself to the unusual step of guaranteeing all existing senior debt of Irish banks (among European economies, only Denmark subsequently did this) as well as deposits. In addition, as well as guaranteeing the two large retail banks (AIB and Bank of Ireland) and two smaller mortgage lenders; for reasons that have never become clear the Irish government agreed to guarantee two specialist property development lenders (Anglo-Irish Bank and Irish Nationwide Building Society) despite already well known deficiencies in their corporate governance.

The most likely rationale for the Irish government's actions is that it still believed that the liquidity problems of the Irish banks merely reflected market nervousness in the wake of the Lehmann collapse, and not justified concerns about the solvency of these institutions.

Despite the liability guarantee the shares of Irish banks continued to slide, with Anglo-Irish bank being nationalised in February 2009, and the government announcing that it would establish a bad bank called NAMA to buy non-performing development loans from banks.

[17] http://www.knightfrank.ie/documents/Farms%20Market%20-%2009.pdf

The idea of a bad bank is simple. Suppose that a bank has €10 Bn of capital and has loans of €100 Bn, including €20 Bn of development loans. Suppose that they suffer 50% losses on these development loans, which wipes out their capital and leaves them insolvent.

If the government buys the €20 Bn of non-performing loans at their face value, the banks are recapitalized and can continue lending at their previous level, although the tax payer faces a significant loss, while the bank's shareholders and bond-holders lose nothing.

This appears to be the arrangement originally envisaged by the Irish government. To mitigate adverse selection problems, every borrower of the the banks associated with NAMA with more than €5 million in property loans (performing or otherwise) would have all their loans, including non-property loans, transferred to NAMA which would then function as their bank. NAMA's portfolio would be approximately one third development land, one third unsold development projects, and the remaining third being so-called associated loans, the non-property loans of transferred borrowers.

Two complications intervened. First, the borrowers being transferred to NAMA included many of the largest and most profitable firms in Ireland. Predictably, a large UK bank offered to repay the loans of these firms to NAMA banks if they transferred their business to it. As a result, the Irish government has apparently agreed that Irish banks will be given a veto on the transfer of borrowers to NAMA. This means the the adverse selection problem reappears, and the portfolio of NAMA, in particular the associated loans that were supposed to generate most of its cash flow, will be worse than the government's business plan predicted.[18]

The second complication came from Europe. First, the European commission dictated that the Irish government could pay only 70 per cent of the face value of non-performing loans. In terms of our example, this would mean that the bank receives €14 Bn for its €20 Bn of bad loans, leaving it with only €4 Bn of capital. To maintain a minimum capital ratio of 8% of loans, the bank must either raise another €4 Bn of capital in the market, or halve its loan portfolio to €50 Bn. For the two main Irish banks, the 30 per cent NAMA haircut on transferred loans would reduce their book value of their equity by approximately half.

For AIB, transferring €24 Bn of loans to NAMA entails a haircut of €7.2 Bn. Given that they have already written down these loans by €2.2 Bn, their common equity will fall by €5 Bn or 49 per cent.

[18] http://www.ibf.ie/pdfs/IBFPwCMortgageMarketProfileQ407.pdf

For Bank of Ireland, transferring €15 Bn of loans to NAMA entails a haircut of €4.6 Bn. Given that they have already written down these loans by €0.8 Bn, their common equity will fall by €3.8 Bn or 57 per cent. [19]

However, more recently the ECB has required the Irish government to value each asset being transferred individually at market rates, rather than paying 70 per cent of their face value, sight unseen. It therefore seems likely that the amounts that banks receive, particularly for development land, could be considerably less than the 70 per cent first envisaged.

To understand if NAMA will work, we must first ask what problems the Irish banks face. There are three, inter-related ones.

First, Irish banks have suffered large losses on developer loans. Secondly, to fund sharply increased lending, Irish banks borrowed heavily in wholesale markets. Thirdly, losses on other loans, in particular mortgages, are likely to be substantial.

The Irish government has, through NAMA, addressed the first problem of developer loans and, in doing so, has pushed the Irish state close to, and quite possibly beyond, the limits of its fiscal capacity. However, NAMA does not address the other two problems: on the liability side of heavy wholesale debt, and on the asset side of further possible losses on other loans. We address these problems in turn.

6.1 Bank liabilities.

The first problem that the Irish banks face is that while NAMA remedies many of the current (if not future) problems with the asset side of their balance sheet, the liability side remains difficult. As Figure 2 shows, the extraordinary expansion of Irish bank lending after 1997 was funded mostly in wholesale markets, both through inter-bank borrowing and bonds. Like other financial institutions, Irish banks were able to take advantage of the great moderation before mid 2008 to borrow wholesale at almost central bank rates, and to lend at low rates in the Irish property market.

Figure 10 shows the evolution of the non-capital liabilities of Irish banks.[20] It can be seen that in 1999, public deposits were much the largest liability. By December 2007, bonds, were almost as large as public deposits, while inter-bank deposits were considerably larger.

[19] Figures based on Supplementary Documentation National Asset Management Agency 16 September 2009 www.nama.ie/Publications/2009/Supplementary_Documentation.pdf and Hank Calenti *Irish Banks–Vegetative State–Reduce to Underperform.* RBC Capital Markets, 13 August 2009.

[20] Figures are total liabilities of Irish banks to Irish and foreign residents from Central Bank *Quarterly Bulletin* Table C3 minus liability totals from Table C6 for credit institutions with mostly foreign operations. The inter-bank deposit figure excludes lending of Irish banks to each other by subtracting loans to Irish resident financial intermediaries. 1999 figures have been multiplied by 1.4 to express them in 2009 prices.

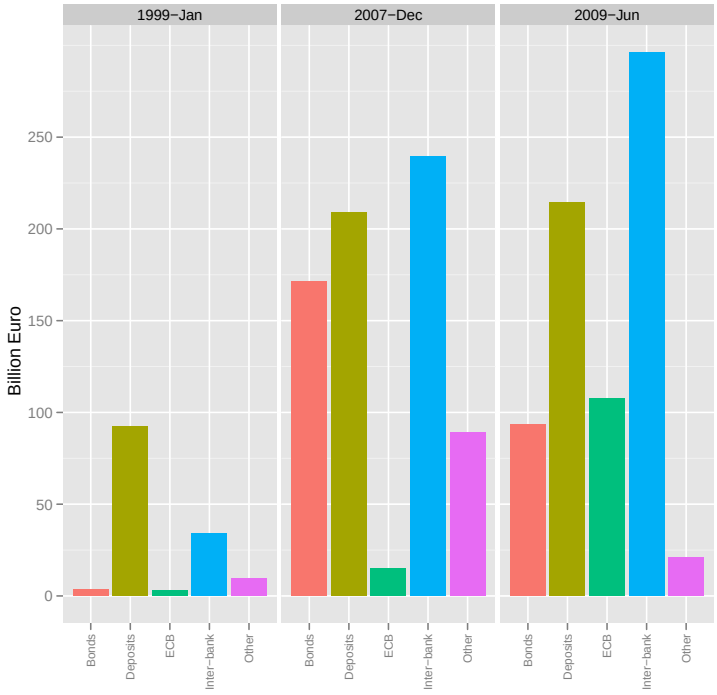

Figure 10: Non-capital liabilities of the Irish banks.

From early 2008, the Irish banks have faced a sustained loss of bond funding, which have been replaced by inter-bank borrowing, and borrowing from the European Central Bank. There has also been a marked decline in "Other liabilities" corresponding to swap contracts.

The positions of AIB and Bank of Ireland are particularly worrying. AIB had outstanding bonds in August 2009 of €24 Bn (plus €5 Bn subordinated debt) and ECB borrowings of €34 Bn. Bank of Ireland had bonds of €45 Bn (plus €8 Bn subordinated) and ECB borrowing of €17 Bn. By comparison, even if valuations go as they hope, AIB will receive only €17 Bn from NAMA, while Bank of Ireland will receive €11 Bn.

The problem of the size of bank debt is compounded by its short maturity. In 2010 AIB has €9.8 Bn of bonds maturing, Bank of Ireland €12.2 Bn, and the nationalised Anglo Irish €9.2 Bn. In addition the Irish state will have to borrow about €20 Bn, and roll-over €7.4 Bn in maturing debt. Borrowing such sums, on top of issuing €55 Bn of NAMA debt to the banks, is likely to prove challenging, even if markets do not continue to grow more nervous about the sovereign and quasi-sovereign debt of weaker Euro-zone states.

Difficulties of funding Irish bank activities are likely to be aggravated by the announced withdrawal of ECB support. During the international financial crisis Irish banks were able

to benefit from the ECB's policy of quantitative easing by borrowing against lower quality assets at 1 per cent interest. Now that the French and German economies have technically left recession, the ECB has announced that special lending facilities will start to be curtailed. To the extent that the ECB feels it necessary to re-establish a reputation for political independence, harsh treatment of one of the smaller, peripheral Euro-zone economies could be seen as a useful way to send a signal to international markets and larger Euro zone economies that it still takes the stability pact conditions seriously.

In summary then, the business model of Irish banks for the last decade of borrowing heavily in wholesale markets to lend in Irish property markets appears defunct. Irish banks now face wholesale lending rates of 5.6% to fund mortgages paying 3.5% interest.

Even domestic deposits are proving problematic as the Irish economy shrinks. Deposits from Irish residents have fallen by 5.5 per cent in the year to September 2009, probably as a result of dis-saving by households and firms. Banks may also lose deposits as people vote with their wallets on the politically unpopular bank bailout, and transfer their savings to institutions not involved with NAMA and guaranteed by more credit-worthy sovereigns.

In these circumstances, the Irish banks must shrink their balance sheets, by reducing lending and repaying debt. It seems likely that Irish credit levels will return to average international levels in the region of 100% of national income. However, because €110 Bn of their lending (equal to 80 per cent of GNP) is tied up in recently issued mortgages of 35 years or longer, it seems unlikely that there will be very much new lending to any sector of the Irish economy for the foreseeable future.

The large mortgage book of Irish banks creates another problem for them. The interest rate on most of these mortgages is set as a fixed markup over ECB rates, so the Irish banks have a limited capacity to recapitalize themselves by widening their lending spreads, as US banks did in the early 1990s after the Savings and Loan Crisis (Koo, 2008, 10).

This sharp contraction in the supply of credit is likely to coincide with a sharp fall in demand. Irish firms and households have run up unusually large debts to fund purchases of property which has fallen sharply in value. Just like Japan in the 1990s (Koo, 2008, 1–37), their overwhelming priority will be to reduce borrowings to sustainable levels.

As expanding credit caused property values to rise, so contracting credit will cause them to fall. If a return to reliance on the retail funding used until 1997 leads to a return to the lending standards of the mid-1990s, then Figures 6 and 5 would predict a fall in new house prices and commercial property prices of about two thirds from peak levels. There is a risk, moreover, that a more or less complete cessation of lending for two or three years if banks

are forced rapidly to reduce wholesale borrowings, could result in even larger falls than this in the medium term.

The return of the Irish economy to normal levels of bank lending and property prices is to be welcomed. However, it does make it inevitable that the Irish state will suffer large losses on bad loans taken over by NAMA.

The Irish government is assuming that property prices have fallen by 40 per cent from peak, and that if prices rise by 10% in the next decade (in other words to 2004 levels), that NAMA can break even. However, what we have seen is that the only way that property prices can return to 2004 levels is for bank lending to grow at 2004 levels. Given the state of Irish bank balance sheets, even after NAMA, this is an impossibility.

6.2 Mortgages.

As well as problems of excessive debt on the liability side, Irish banks face the prospect of further loans losses, particularly on mortgages. As we saw in Figure 3, mortgage lending rose to €150 Bn, or over 100 per cent of late 2009 GNP, about €40 Bn of which was securitized.

In the US in September 2009, over 14 per cent of mortgages were at least one payment overdue or in foreclosure; with 25 per cent in Florida. Looking at a very large sample of US mortgages, Foote et al. (2009) identify two factors that overwhelmingly drive default: falls in house prices and unemployment. Among prime mortgages, they find that a 10 per cent fall in house prices increases the risk of a mortgage being in default for 90 days by 82 per cent; while a one percentage point increase in unemployment increases the risk by 22 per cent (Table 5). The level of strategic default is low even in states with non-recourse lending, and most homeowners go to considerable lengths to continue paying their mortgages even when faced with severe negative equity, viewing the prospect of losing their homes as terrifying.[21]

A notable aspect of US mortgage delinquency is the relatively high rate of self-cure: delinquent mortgages that start performing again. Adelino, Gerardi and Willen (2009) find that about 30% of US mortgages that are two months delinquent have started performing again within twelve months. This reflects the relative ease of finding a new job in the US. The loss of competitiveness of the Irish economy during the bubble, and the fact that many of the unemployed from the building industry have little formal education, suggests that transitions

[21] White (2009) argues that the levels of default are irrationally low for homeowners, reflecting their shame and fear at defaulting on loans, and suggests that a higher level of default would be a socially efficient means of giving more bargaining power to households in negotiating with banks over sharing the losses from falling house prices.

from unemployment to employment will be rarer, and the rate of self-cure correspondingly lower.

The recent falls in Irish house prices and swift rise in Irish unemployment to 12.5 per cent (compared with 10 per cent in the US) suggests that US rates of default are a strong possibility here.[22] In addition to unemployment, Ireland has a uniquely large source of default risk in emigration. Emigration is one circumstance where strategic default becomes compellingly easy, and the possibility of walking away on a deeply underwater property loan is likely to join unemployment as a compelling reason to make a new life overseas.

Default rates for homeowners in the US start to rise sharply as the loan to value ratio exceeds 120 per cent.[23] How close is the average Irish borrower to this cutoff? If we look at the average first time buyer who took out a 35 year, 90 per cent mortgage at 3.5% interest three years ago at the peak of the market, it would take a fall in prices of 29 per cent to leave their outstanding loan balance (which has now been paid down by 5 per cent) twenty per cent larger than the value of their home. For the average mover, taking out a 30 year, 70 per cent loan to value mortgage at that time, it would take a fall of 45 per cent. Given that house price falls around 40 per cent have already occurred, it can be seen that many first time buyers who bought around the market peak are well within the danger zone, with movers getting close to it.

In the US, banks currently recover around 57 per cent of their outstanding loan in a foreclosure (Foote et al., 2009). In Ireland, the difficulties of evicting people from their family homes may make the losses of Irish banks from non-performing mortgages somewhat larger.

For AIB, it would take a loss of 16 per cent on its mortgage book of €33 Bn to wipe out its post-NAMA book capital of €5 Bn. However, it would only a loss of 5 per cent on Bank of Ireland's much larger mortgage book of €59 Bn to wipe out its post-NAMA book capital of €3 Bn.

The difficulties of the Irish banks do not end with property loans. Loans to businesses account for about one quarter of the loans of the two large Irish banks. Again, substantial losses are possible here. With construction accounting for one fifth of national income in 2006–07, many Irish firms were heavily or entirely reliant on supplying the construction sector and have had their market effectively disappear.

[22] Unemployment shows no sign of levelling off: the Department of Enterprise redundancy series has been steady at 6,000 per month since the summer: http://www.entemp.ie/employment/redundancy/statistics.htm

[23] First American CoreLogic *Negative Equity Report 2009 Q3*, Figure 4 http://www.calculatedriskblog.com/2009/11/negative-equity-report-for-q3.html

The property related borrowings of the owners of smaller Irish companies are a particular concern. By self-selection, the entrepreneurs who establish and run small and medium enterprises are more motivated than average to make money, and the surest way to make money in Ireland during the bubble decade was to borrow heavily to invest in land and property. The heavy personal debts of these business owners are now an impediment to their companies' survival and may lead to large job losses as owners are forced into bankruptcy over losses in property speculation. The destruction of the Irish entrepreneurial class may prove one of the most enduring and costly consequences of the property bubble.

7 Explaining the Irish Credit Bubble.

Credit booms occur sufficiently often and with sufficiently alarming results to have generated a large economic literature. Financial accelerator models emphasise how, in a model of asymmetric information about project quality, rising prosperity increases the value of collateral, which stimulates lending, which further increases the value of collateral (Kiyotaki and Moore, 1997, Matsuyama, 2007). Rajan (1994) emphasises herding among banks, Dell'Ariccia and Marquez (2006) show how reduced adverse selection during booms causes lending standards to be relaxed, while Berger and Udell (2004) examine the loss of institutional memory among loan officers during booms. In the context of the Asian crisis Corsetti, Pesenti and Roubini (1999) argue that the existence of state guarantees of bank liabilities, explicit or implicit, encouraged moral hazard where foreign lenders extended credit to domestic banks for sub-optimal projects.

Notable recent empirical studies of international bubbles include Mendoza and Terrones (2008) who show how rapid TFP growth and relaxed supervision precede credit booms in developed economies, while developing economy booms are associated with capital inflow. Among studies of the US sub-prime crisis, Dell'Ariccia, Igan and Laeven (2008) find that areas with the largest credit expansions experienced the largest declines in credit standards, while Mian and Sufi (2008) show that income and mortgage credit growth are negatively correlated across zip codes during the sub-prime boom of 2002-2005, consistent with the idea that an increased supply of credit rather than improved fundamentals drove lending.

All of these factors were present for Irish banks, and their impact was magnified by failures of regulation by the Central Bank and government. The rapid expansion of credit in the Irish economy and the consequent rise in property prices and construction activity represent systematic failures of control at all levels of the Irish economy.

At the first level, bank management lost awareness of the riskiness of their portfolios, extrapolating past rises in incomes and property prices to assume that prices could only go on rising or, at worst, stabilise. The financial accelerator was amplified in Ireland by the extreme narrowness of markets, especially for commercial property, so expansions of credit by a single bank could have a large impact on prices.

The mis-management of Irish financial institutions was amplified by the presence of a genuinely rogue bank, Anglo Irish. Through aggressive property lending, this had gone from an insignificant merchant bank in the 1990s to the joint-second largest bank by 2007. The two large retail banks, AIB and Bank of Ireland came under sustained pressure from analysts to match the profits and growth of Anglo Irish, and responded with ultimately baleful consequences.

Since the seventeenth century, financial innovation has consisted in banks finding new ways to lose money. However, while US, UK and European banks lost money in exotic derivatives, Irish banks lost money the old fashioned way, by making bad property loans.

It is well known that banks get carried away during booms, which is why institutions called central banks exist to curb their enthusiasm. The Irish Central Bank has not had a history of independence from government and, after joining the Euro-zone, contented itself with gathering statistics and issuing currency, and made no effort to control the obvious credit bubble engulfing the Irish economy. While there was no explicit relaxation of regulation as occurred in the Nordic economies prior to their credit boom in the late 1980s (Englund, 1999), the mind set of Central Bank that Ireland was a small region of a larger economy where prices and interest rates were set exogenously so policy could have no impact, did lead to the effective disappearance of the active regulation that had been maintained when Ireland had an independent currency.

While the Irish Central Bank lost power to set interest rates, we have seen above that interest rates actually had a limited impact on property prices: the decisive effect was increased size of loan. Had the Central Bank restricted mortgages to traditional levels of 80% loan to value, and three to four times income, house prices would have risen in line with income and many of the distortions of the past decade would have been avoided.

The failings were even graver with respect to development loans where, in many cases, collateral was dispensed with, and banks lent against so-called "personal guarantees" that the bank would have recourse to the borrower's personal assets in the event of default. Large developers were able to borrow hundreds of millions without posting collateral on the strength of their believed equity in other highly leveraged projects they had undertaken.

In summary, the activities of the Irish banks remained extremely simple by international standards and could easily have been regulated had the will to do so been present.

Given the weak independence of the Irish Central Bank, the will to control banks derived ultimately from government. As Johnson (2009) argues, the expansion of banking activities since 1990 has seen the effective capture of governments by the financial industry, as politicians in industrialized economies came to view finance as the root of national prosperity. Two factors in Ireland aggravated this tendency. The first is the small size of the country which ensures that politicians and financiers are inevitably well known to each other: it is easy to become "too connected to fail."

Secondly, the unusual magnitude of the Irish credit bubble made the apparent bounty of the banks' activities appear larger here than elsewhere. In particular the rise in employment stemming from the construction boom—particularly among low skilled workers in rural areas without other forms of employment—generated a natural alliance of interests among politicians, developers and banks.[24]

The Irish government was therefore poorly equipped to understand the crisis when it finally occurred in late September 2008. Instead of recognising the borrowing difficulties of Irish banks as the result of well grounded market apprehension about their solvency, the Irish government responded to the crisis as if it were a temporary problem of liquidity in the aftermath of the Lehman collapse.

Once committed to guarantee all senior debt as well as deposits of all six Irish banks, the Irish government found itself in the position of not being able to change direction to share losses with bank bond holders without being forced to admit that it had made a mistake in its initial guarantee.

However, the question remains of why, given that Ireland's bankers were probably no more reckless, its regulators no more spineless, and its politicians no more clueless than their counterparts elsewhere, how did Ireland come to have a far larger credit boom than other wealthy economies, with the exception of Iceland? The most likely reason is that Ireland's credit boom was preceded by a decade of real, competitiveness driven growth. Irish lenders, borrowers, and regulators became accustomed to economic growth of 6–7 per cent that disguised the magnitude of the credit bubble that followed it.

[24]This is not to deny that Irish banks may have exerted more direct means to control the political process but, until Irish members of parliament have to declare their liabilities as well as their assets, it is not possible to establish how many leading politicians received large, interest free loans from two banks.

8 Conclusions.

In the last decade, the Irish economy has experienced an unusually large credit bubble. Lending as a fraction of GNP increased from 60% in 1997, to over 200% in 2008, twice the level of other industrialized economies.

In the aftermath of this bubble, the Irish banking system faces three inter-related problems. The first is that it has made large losses on loans to property developers. The second is that it has large wholesale liabilities to international bond holders and, increasingly, to the European Central Bank. The final problem is that it faces likely further large losses on mortgages and business loans.

The Irish government's policy response has been solely to address the first problem of losses on developer loans by establishing a state institution to buy these loans. However, by ignoring the second problem of the large wholesale liabilities of the Irish banks, this project will inevitably end in expensive failure.

As Irish banks are forced to repay this wholesale borrowing and to shrink their balance sheets to normal international levels, the sharply diminished supply of credit will lead inevitably to continued sharp falls in property prices. These falls in property prices will result in severe losses for the Irish taxpayer on the ill-conceived NAMA project.

Despite having pushed the Irish state close to, and quite possibly beyond, the limits of its fiscal capacity with the NAMA scheme, the Irish banks remain as zombies whose only priority is to reduce their debt, and who face complete destruction from mortgage losses.

The issue therefore is not whether the Irish bank bailout will restore the Irish banks so that they can function as independent commercial entities: it cannot. Rather it is whether the Irish government's commitments to bank bond holders when added to its existing spending commitments, will overwhelm the fiscal capacity of the Irish state, forcing outside entities such as the IMF and EU to intervene and impose a resolution on the Irish banking system.

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