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WHATEVER HAPPENED TO IRELAND?

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ABSTRACT

Whatever Happened to Ireland?*

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JEL Classification: E52 and O52
Keywords: credit bubble and Irish economy

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* An earlier version of this paper circulated under the title “The Irish Credit Bubble.” I would like to thank Colm McCarthy for useful discussions. All errors and interpretations are mine.

Submitted 14 April 2010

Whatever Happened to Ireland?

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Abstract

While Irish GNP quadrupled between 1990 and 2007, this Celtic Tiger growth came from two distinctive, sequential booms, with export driven growth during the 1990s being followed after 2000 by a credit fuelled construction boom. Bank lending rose from 60 per cent of GNP in 1997 to 200 per cent in 2008, causing a house price bubble and a building boom where 20 per cent of GNP came from construction. The collapse of the credit bubble leaves Ireland with high unemployment, uncompetitive wages, a large government deficit, and insolvent banks. Despite the Irish government's already having committed itself to spend the equivalent of half of GNP to cover bank losses on developer loans, substantial further spending will be necessary to cover losses on other loans.

1 Introduction.

The dizzying trajectory of the Irish economy over the past 20 years—from basket case to superstar and, almost, back again—raises the natural question: "What happened to Ireland?". How did an economy where employment doubled and real GNP quadrupled during the "Celtic Tiger" era from 1990 to 2007, come to have real GNP contract by 17 per cent by the end of 2009 (with further falls forecast for 2010), the deepest and fastest contraction experienced by a western economy in the postwar period?[1]

*School of Economics, University College Dublin and CEPR. An earlier version of this paper circulated under the title "The Irish Credit Bubble." I would like to thank Colm McCarthy for useful discussions. All errors and interpretations are mine.

[1]Ireland is one case where the classroom distinction between GNP and GDP really matters: largely because of transfer pricing by foreign corporations taking advantage of its 12 per cent rate of corporation tax, GDP is 25 per cent higher than GNP, and has fallen only 12.5 per cent. In what follows we shall present most Irish numbers as a percentage of GNP, because this is the relevant figure for employment and discretionary taxation, and present numbers for other countries in the usual percentage of GDP form.

The key to understanding what happened to Ireland is to realise that, although GNP grew by 5 to 15 per cent every year from 1991 to 2006, this Celtic Tiger growth stemmed from two very different booms. First, during the 1990s, there was rising employment associated with increased competitiveness and a quadrupling of real exports. 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 2007 despite falling competitiveness, driven by a second boom in 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 boom 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 tax revenues that funded substantial rises in government spending.

However, driving the construction boom was another boom, in bank lending. As Figure 1 shows, back in 1997 when the Ireland's economy really was among the best performing in the world, Irish banks lent sparingly by international standards. Bank lending to the non-financial private sector was only 60 per cent of GNP, compared with 80 per cent in Britain and most Eurozone economies. 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.

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 to house buyers.

This more than tripling of credit relative to GNP in 11 years distorted the Irish economy profoundly. Its most visible impact was on house prices. 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' 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, with the average Dublin secondhand house costing 17 times average earnings.

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. This is almost half as many houses as were being built in Britain, which has 14 times the

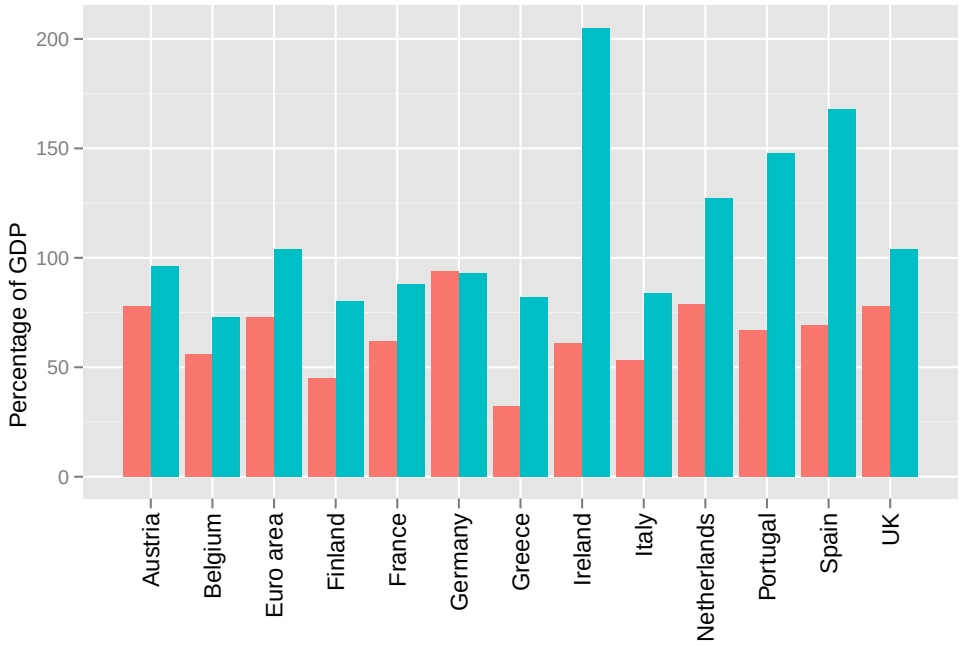

Figure 1: Bank lending to households and non-financial firms as a percentage of GDP (GNP for Ireland) for Eurozone economies and the UK, 1997 and 2008.

population of Ireland; and would be equivalent to the US, which has 75 times the population of Ireland, having 6 million completions, almost three times its peak rate.

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 the flow of new mortgages approved peaked in the third quarter of 2006, and then fell rapidly. By the middle of 2007 the Irish construction industry was in clear trouble, with unsold units beginning to accumulate. Current estimates are that 17 per cent of housing units are vacant (Williams, Hughes and Redmond, 2010).

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 improvise a series of increasingly desperate and expensive responses.

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.

The Irish government has currently spent, or committed itself to spend, around €40 Bn on NAMA, and to inject around €30 Bn into Irish banks.[2] Despite this large sum (equivalent to half of GNP) substantial further expenditure will be necessary to recapitalise the two major banks; and even then the situation of the Irish banking system will remain difficult.

The business model of 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. First, they have made large losses on property development loans; secondly, they are heavily reliant on wholesale funding; and thirdly, they face the prospect of further large losses on mortgages and other loans. The Irish government bailout only addresses the first problem.

The liability side of Irish bank balance sheets appears unsustainable. The aggressive expansion of Irish bank lending was funded mostly in international wholesale markets, and by 2008 over half of Irish bank funding came from wholesale markets. 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.

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[3] to fund mortgages yielding 3 per cent is not a sustainable activity, and Irish banks face no choice but to shrink their balance sheets by repaying debt. 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.

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

[2]Economic and Social Research Institute, *Quarterly Economic Commentary*, Spring 2010 p55.

[3]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.

new houses and commercial property will return to an equilibrium two thirds below their peak levels, with larger falls possible for secondhand property.

The third problem of the Irish banks is their mortgages. Recent US experience highlights two factors that increase the likelihood of mortgage default: falling house prices, and, most importantly, unemployment. With house prices fallen by around 40 per cent from peak, and unemployment above 13 per cent, 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%.[4] Dealing with the financial and human cost of widespread mortgage defaults will be the next 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. It remains to be seen whether the Irish state has the capacity to absorb further bank losses on mortgages and business lending, or whether the Irish government's project to protect bank bondholders from any losses on their investments proves to be beyond the means of its taxpayers.

On top of the collapse of its banking system, the ending of its property bubble leaves two other problems for Ireland: unemployment and government deficits. Fifteen years of economic boom allowed the Irish government to cut income taxes, increase spending and run a budget surplus, by relying heavily on expenditure taxes. Between 2007 and 2009, tax revenue fell by 20 per cent, while expenditure rose by 9 per cent; moving the state from a balanced budget to a deficit of 12 per cent of GDP. In contrast to its hesitant handling of the banking crisis, the Irish government moved decisively to reduce expenditure and increase tax rates, and appears on target to reduce its deficit to 3 per cent of GDP by 2012.

A less tractable problem is unemployment. The construction boom, where one fifth on national income came from construction, led to an employment boom, particularly for young males who left school early to earn high wages in building. With the end of the boom, numbers employed have fallen by 12 per cent (16 per cent if we exclude the public administration, education and health sectors which are dominated by the public sector), unemployment has risen above 13 per cent, while the number of males aged 20-24 in employment has fallen by 47 per cent.[5] The decline in Irish competitiveness (hourly earnings in manufacturing have risen over 40 per cent relative to its main trading partners since 2000) which cannot be solved

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

[5]Central Statistics Office, Quarterly National Household Survey Quarter 4 2009

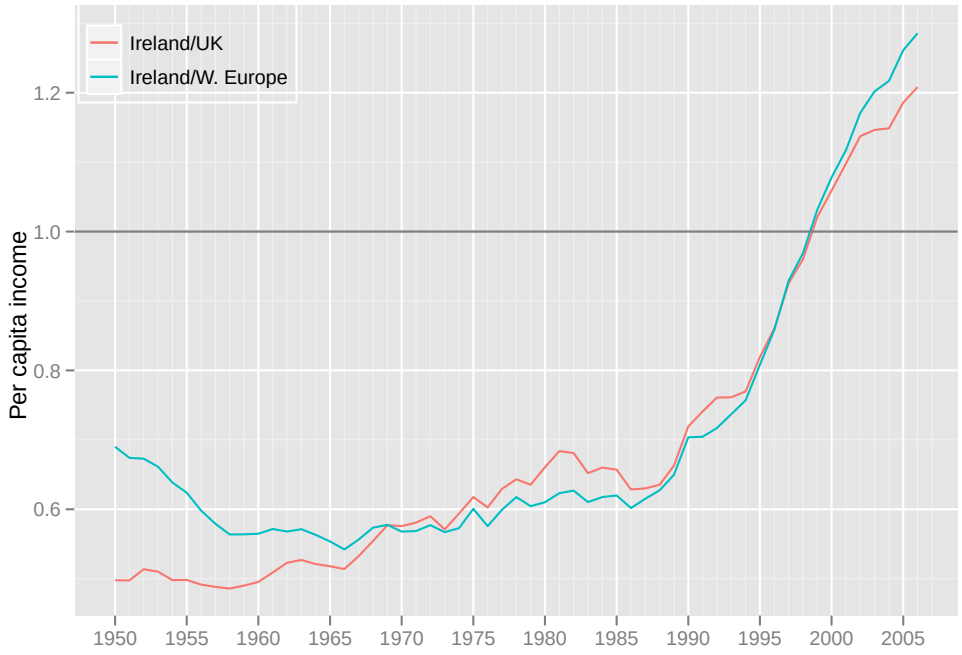

Figure 2: Irish income relative to Britain and Western Europe, 1950–2006.

by a devaluation, combined with the low educational level of most of the unemployed, will frustrate efforts to reverse this employment decline.

The rest of this paper is as follows. Section 2 outlines the evolution of the Irish economy before 2000, from stagnation to export driven growth. Section 3 outlines the rise in Irish bank lending since 1997 while Section 4 shows how the rise in Irish house prices is almost entirely explained by increased mortgage lending. Section 5 shows how the rise in house prices generated a large expansion of construction activity. Section 6 looks at the problems facing the Irish banks; Section 7 looks at the causes of the Irish bubble, and Section 8 concludes.

2 Background.

We begin by briefly outlining the growth of the Irish economy before 2000, from stagnation until the late 1980s, to competitiveness driven boom in the 1990s. The first period is well covered by Ó Gráda and O'Rourke (1995), the second by Honohan and Walsh (2002).

Figure 2 shows Maddison's estimates of Irish GDP per capita, relative to the UK and the 12 most prosperous western European economies from 1950 until 2006. Ireland's under-

performance before the late 1980s is striking. Irish income rose from half to two thirds of British levels by 1980, but actually diverged from western European levels, falling from 70 per cent in 1950 to around 60 per cent by 1960, where it languished until the late 1980s. While unimpressive, this performance would have been worse without mass emigration. Irish population in this period was a little over 3 million, and 600,000 people emigrated between 1950 and 1987 (Ó Gráda and O'Rourke, 1995, Table 13.6). Effectively, before joining the European Community in 1973, the Irish economy had a dual labour market with a small number of workers in protected industries earning British wages, and a large segment of the population unemployed, out of the labour force, or engaged in marginal activities, particularly in agriculture.

As Figure 2 shows, the Irish economy started to converge rapidly to western European levels from around 1990. Like most overnight successes, the Irish economic miracle was decades in the making, being built on steady improvements in educational levels, improved infrastructure, and dismantling the corporatist ideology that had been the basis of economic policy since the 1930s through liberalising labour markets and curbing the rent seeking activities of state owned corporations. An important factor, that most Irish studies somehow neglect to mention, was the strong growth of the UK economy, its largest export market, in the 1990s.

The key to understanding Irish economic growth during the 1990s, as Honohan and Walsh (2002) emphasise, was that growth was driven by rising employment rather than wages. Figure 3 shows how employment and real wages in manufacturing relative to Ireland's main trading partners moved together until 2000, with the 50 per cent rise in employment between 1990 and 2000 being associated with falling real wages relative to other economies.

By 2000, Figure 2 shows that the Irish economy had more or less converged to western European income levels, and it might have been expected that economic growth would fall to ordinary European levels. Instead, as Figure 3 shows, employment continued to grow rapidly, rising nearly 30 per cent between 2000 and 2007, despite sharp falls in competitiveness. The average annual growth rate of exports fell from 15 per cent per year before 2000, to 5 per cent afterwards, meaning that exports ceased to generate significant new employment. Of the half million jobs created between 1999 and 2008, only 2 per cent were in exporting companies.[6] The Irish boom of the last decade was the result of a credit fuelled property bubble that will be the focus of the rest of this paper.

[6]http://www.finfacts.ie/irishfinancenews/article_1018704.shtml

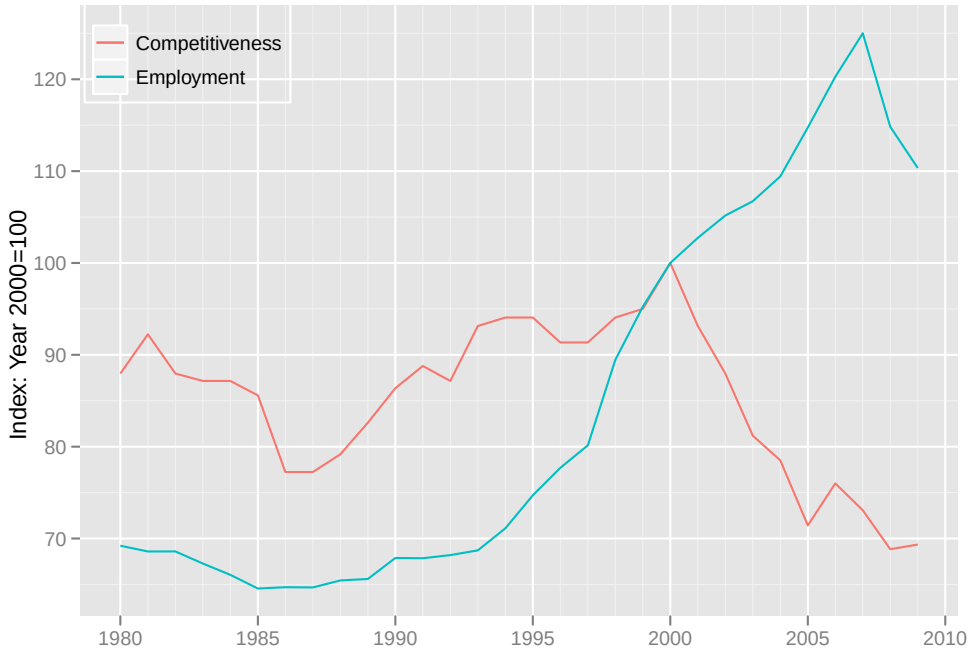

Figure 3: Irish competitiveness and employment, 1980–2009.

3 Irish Bank Lending.

Figure 4 shows deposits and lending to the private sector of Irish banks relative to GNP since the last quarter of 1992.[7] 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.[8]

By 2004, UK lending had risen to 95% of GDP, but had been overtaken by Ireland with lending of 100%. However, as Figure 4 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

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

[8]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.

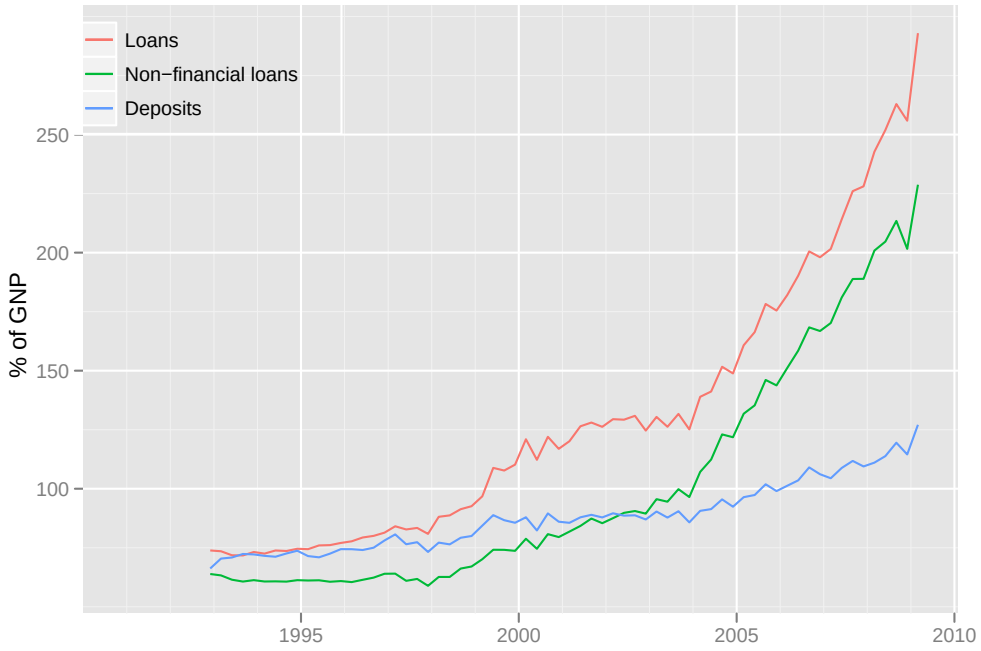

Figure 4: Deposits and private sector lending of Irish banks as a percentage of GNP, 1992 to 2009.

(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.[9]

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

Particularly large rises occurred in property lending, both in mortgages to households and in loans to builders and developers. As Figure 5 shows, at the start of the credit bubble in 1997, banks were lending €20 Bn as mortgages in 2009 prices, and €10 Bn to

[9]Irish bank lending relative to national income actually grew faster than in Iceland, but from a lower base. Lending to firms and households in Iceland 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

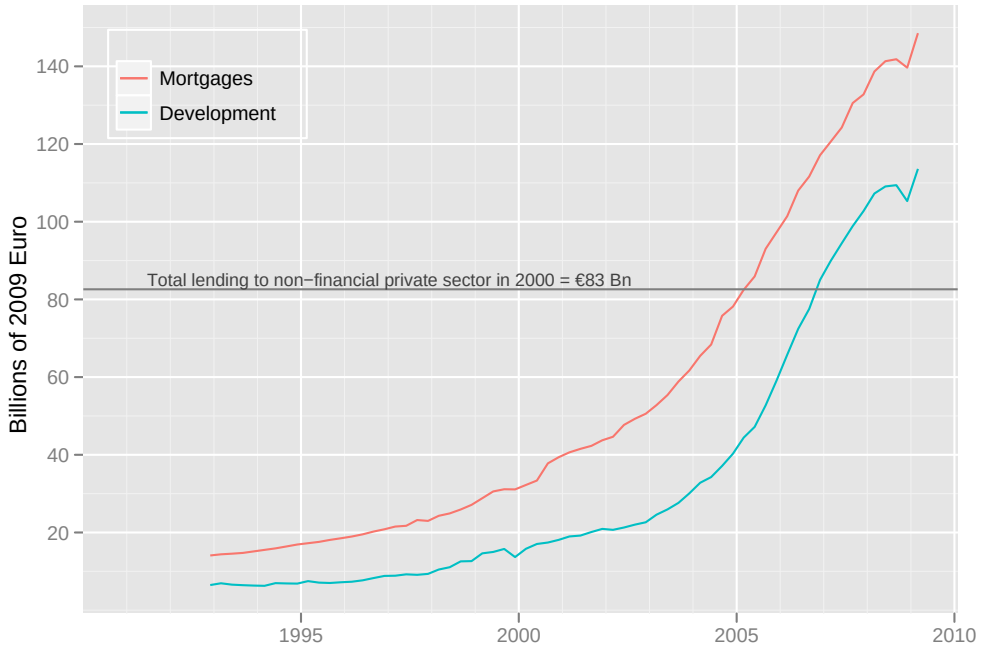

Figure 5: Property lending in billions of 2009 Euro, 1993–2009.

developers.[10] 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. 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 eight years earlier, and 40% more to developers.

4 Lending and Property Prices.

This rapid expansion of bank lending led predictably to rises in the prices of Irish houses and commercial property. Figure 6 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

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

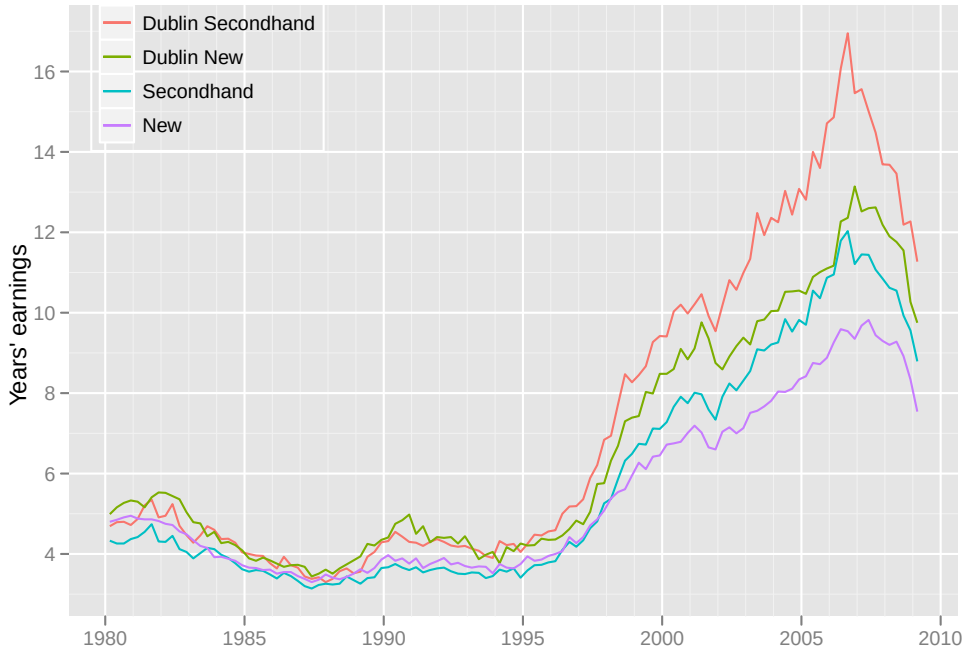

Figure 6: Irish house prices relative to average earnings, 1980–2009.

in industry.[11] 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.

Commercial property prices moved closely with new house prices.[12] The peak in commercial prices occurred about a year after the residential peak, in late 2007.

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.[13]

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

[12] A Jorgensen procedure finds a cointegrating relationship between the two series from 1983 until 2006 significant at 1% of $P = 0.97C$ where P, C are quarterly real price of new houses and commercial property, the latter measured by the SCS-IPD index.

[13] http://www.sherryfitz.ie/aboutus/NewsItem.aspx?ID=515. Some revealing anecdotal data comes from the Irish Commercial Court which is now hearing a large volume of cases brought by banks against property developers. A judge there 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%." In once case, development land valued by a bank at €31 million in 2006 has now been revalued at €0.6 million, a fall of 98 per cent. *Irish Times*, 20 February 2010, "Land valued at €31m worth just €0.6m now."

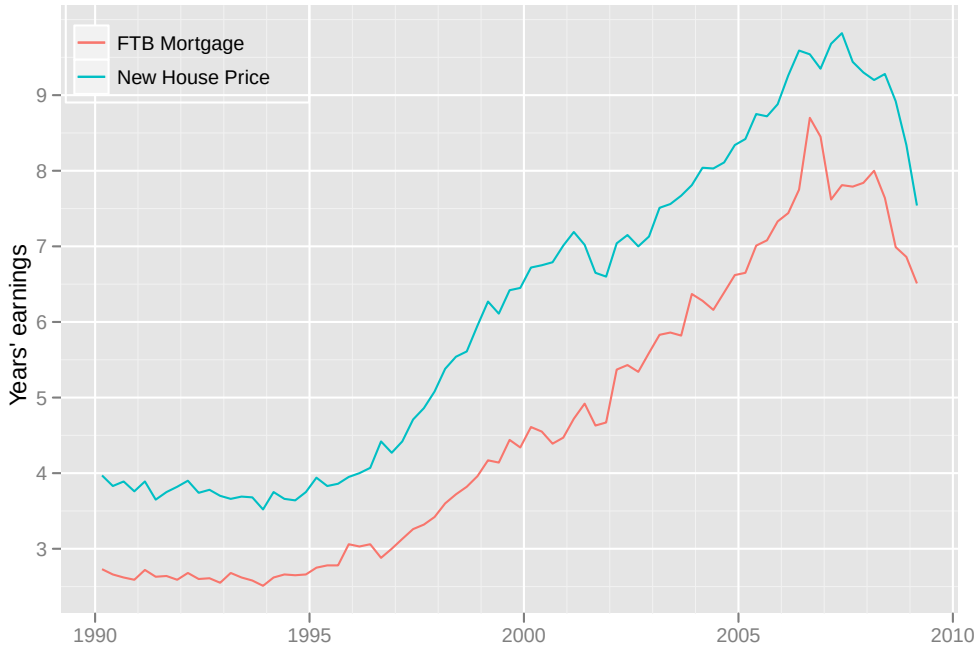

Figure 7: Average first time buyer mortgage and new house prices, relative to average earnings.

What drove the rise in property prices? The proximate cause was bank lending. In a rising market, buyers were willing to accept the largest loan that banks would give them so that, 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 Irish Department of Environment series on mortgage approvals for first time buyers. Figure 7 plots the size of mortgages to first time buyers and new house prices, both relative to average earnings, and shows how the two series move closely together.

Looking at quarterly data from 1979 to 2006, the first eigenvalue of a Jorgenson cointegration 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.[14] This shows that while

[14]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

mortgage size had a strong impact on prices (a €1 rise in mortgages increasing house prices by €1.33), the impact of interest rates is modest. In order to cause the ratio of price to earnings to rise by one (say, from 4 to 5 years' earnings), it would take a fall in mortgage interest rates of nearly 6 percentage points.

Contrary to the consensus that the low interest rates caused by joining the Euro were the cause of the Irish property bubble, we can see that their impact was modest when compared with the larger mortgages that banks were willing to offer. We find no impact of population or employment on house prices: house prices fell relative to earnings until 1995 (reflecting the tight credit policies in force while Ireland had its own currency) while employment was growing rapidly.

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

Figure 7 shows that the average value of first time buyer mortgages peaked in the third quarter of 2006, and then declined quite sharply. Numbers of mortgages show the same pattern, and other categories of mortgages experienced the same falls.[15] Does this decline in the flow of new mortgages reflect a fall in demand, reflecting buyer anxiety about the house prices, or a fall in supply, as banks tightened lending standards? Given that the average term of mortgages continued to rise after 2006, and that loan to value ratios continued to decline, we can conclude that the reduced volume of new mortgages reflected a fall in demand.

5 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 8 shows how private housing completions and the ratio of new house prices to average earnings rose

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.

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

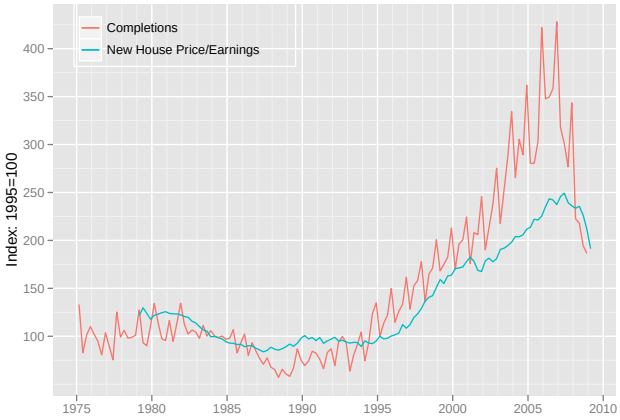

Figure 8: Quarterly housing completions and new house prices relative to earnings. 1995=100.

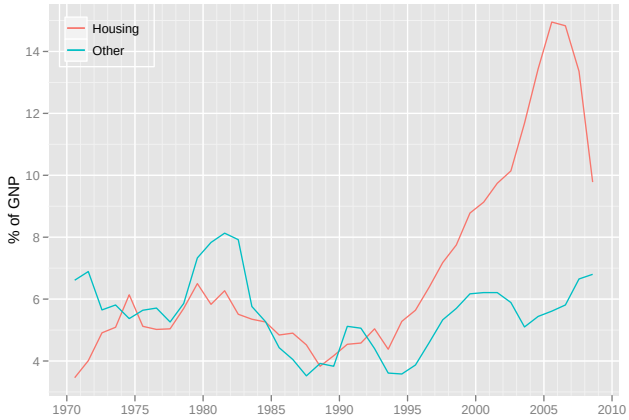

Figure 9: Share of construction in GNP, 1970–2008.

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 house completions per quarter, and P/Y is the ratio of new house prices to average earnings. In other words, a 10 per cent rise in house prices relative to earnings is associated with a 16 per cent rise in completions.

Figure 9 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 15 per cent. For comparison, in the better known Spanish building boom, housing investment peaked at 9 per cent of GDP. Adding other construction (excluding roads), building was directly accounting for one fifth of Irish national income at the peak of the bubble in 2007.[16] 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

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

trading partners rose 40 per cent.[17] 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.

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 eighteen 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, 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.

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.

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. However, the European Commission dictated that the Irish government could pay only 70 per

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

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, a 30 per cent haircut on transferred loans would reduce the book value of their equity by approximately half.

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, and the first tranche of loans transferred in April 2009 had haircuts of around 50 per cent.

On top of the €40–50 Bn to be spent by NAMA, the Irish government has injected €3.5 Bn each into the two main retail banks, and plans to inject a total of €22 Bn into the nationalised Anglo-Irish; a total already equal to half of GNP. To understand if this expenditure will be effective, 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 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 4 showed, the rapid 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 to borrow unsecured in wholesale markets at almost central bank rates, and to lend at low rates in the Irish property market.

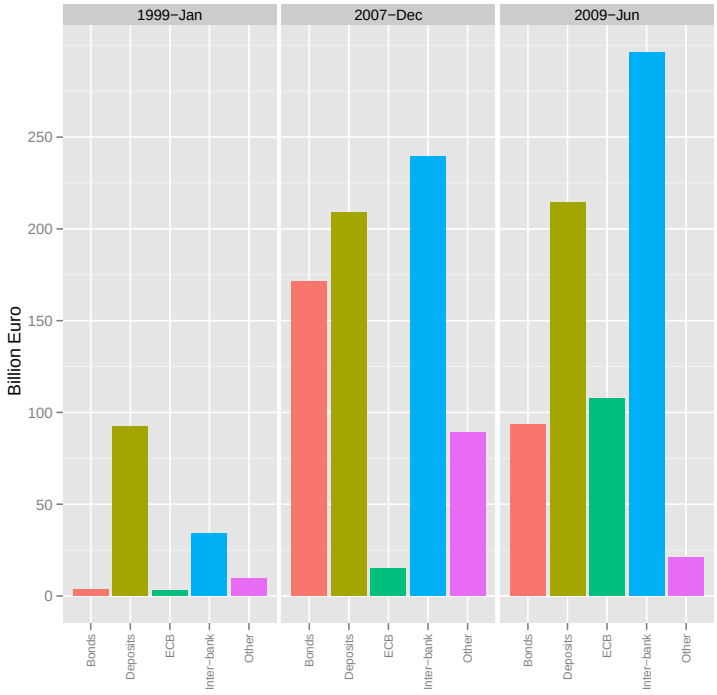

Figure 10: Non-capital liabilities of the Irish banks.

Figure 10 shows the evolution of the non-capital liabilities of Irish banks.[18] 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. 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. 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. There has also been a marked decline in "Other liabilities" corresponding to swap and repo contracts.

The funding of the two large retail banks appears difficult. In August 2009 they had outstanding bonds of €69 Bn (plus €13 Bn subordinated debt) and ECB borrowings of €51 Bn. By comparison, even if valuations go as they hope, they will receive only €28 Bn from the NAMA bad bank.

[18]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.

The problem of the size of bank debt is compounded by its short maturity. Between them, AIB, Bank of Ireland and the nationalised Anglo Irish bank have €31.2 Bn of bonds maturing in 2010. 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 €40–50 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. The announced withdrawal of ECB emergency lending will complicate things further.

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.

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 around half these mortgages is either fixed or 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), and face the risk of increased defaults if they increase rates on variable rate loans.

This contraction in the supply of credit is likely to coincide with a sharp fall in demand. Irish firms and households have accumulated large debts to fund purchases of property which has fallen sharply in value. Just like Japan in the 1990s (Koo, 2008, 1–37), their 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 Figure 7 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 new lending 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 does make it inevitable that the Irish banking system, and by extension the Irish state, will suffer large losses on its heavy property lending.

6.2 Mortgages.

As well as problems of wholesale debt on the liability side, Irish banks face the prospect of further loans losses, particularly on mortgages. As we saw in Figure 5, 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 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 (Foote et al., 2009, Table 5).

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 possibility 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 schooling, suggests that transitions 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 over 13 per cent (compared with 10 per cent in the US) suggests that US rates of default are a strong possibility.[19] In addition to unemployment, Ireland has a large source of default risk in emigration. Emigration is one circumstance where strategic default becomes compellingly easy, and the possibility of walking away from deeply underwater property loans is likely to join unemployment as a compelling reason to make a new life overseas.

[19] Irish job losses show no sign of levelling off: redundancies been steady at 6,000 per month since summer (http://www.entemp.ie/employment/redundancy/statistics.htm) while corporate insolvencies are running about 10 per cent higher than in 2009, and three times the rate of 2008 (http://www.insolvencyjournal.ie/industrial_stats/10-03-01/Total_Insolvencies_Comparison_from_2008_to_2010.aspx)

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.

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 largest banks. Again, substantial losses are possible here. With construction accounting for one fifth of national income in 2006–07, many Irish firms were heavily reliant on supplying the building sector and have had this market disappear.

The property related borrowings of the owners of smaller Irish companies are a particular concern. By self-selection, people who establish and run small enterprises are more motivated than average to make money, and the surest way to make money in Ireland during the last 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 destructive 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, while Dell'Ariccia and Marquez (2006) show how reduced adverse selection during booms causes lending standards to be relaxed. 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 dubious 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 Irish 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 keep rising or, at worst, stabilise. This optimism was shared by bank auditors and rating agencies. The financial accelerator was amplified in Ireland by the narrowness of markets, especially for commercial property, where expansion of credit by a single bank could have a large impact on prices.

The mis-management of Irish financial institutions was aggravated by the presence of a genuinely rogue bank, Anglo Irish, currently under police investigation in Britain and Ireland. 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 pressure from analysts to match the profits and growth of Anglo Irish, and responded with ultimately suicidal consequences.

Banks tend to get carried away during booms, which is why central banks exist to moderate their enthusiasm. The Irish Central Bank has not had a history of independence from government. After joining the Euro-zone, it 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 such as occurred in the Nordic economies prior to their credit boom in the late 1980s (Englund, 1999), the mind-set of Irish Central Bank— that Ireland was a small regional economy facing exogenous prices and interest rates which made local policy irrelevant—did lead to the disappearance of the tight regulation that had been maintained when Ireland had an independent currency.

While the Irish Central Bank lost power to set interest rates after joining the Euro, we saw above that interest rates actually had a limited impact on property prices: the decisive effect came from the increased size of loans. Had the Irish Central Bank restricted mortgages to traditional levels of 80 per cent loan to value and three 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 most cases, collateral was dispensed with, and Irish banks lent against so-called "personal guarantees" that the bank would have recourse to the borrower's personal assets in the event of default. Individual developers were able to borrow hundreds of millions (in a few cases over a billion) from different banks 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 saw a 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 drink in the same bars and are inevitably well known to each other: it is easy to succumb to groupthink and for bankers to become "too connected to fail."

Secondly, the unusual magnitude of the Irish credit bubble made the apparent bounty of bank activities appear larger there than elsewhere. In particular, the rise in employment caused by the construction boom—particularly among low skilled workers in rural areas that had been bypassed by the growth of the 1990s—generated a natural alliance of interests among politicians, developers and banks.

The Irish government was therefore poorly equipped to understand the crisis when it finally broke 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 losing face by admitting that it had been mistaken 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.

8 Conclusions.

From export driven growth in the 1990s, the Irish economy segued imperceptibly into a credit fuelled construction bubble where competitiveness no longer appeared to matter and it seemed to Irish people that they could become rich by selling houses to each other. By 2006–07, construction accounted for 20 per cent of Irish GNP.

Underlying this building boom was an unusually large credit bubble. Lending as a fraction of GNP increased from 60 per cent in 1997, to over 200 per cent in 2008, twice the level of other industrialized economies.

The end of the bubble leaves Ireland with deeply indebted firms and households; uncompetitive wage levels; and large government deficits. Most immediate however are the problems of its banking system which has lost heavily on lending to property developers, has large debts in wholesale markets and to the European Central Bank, and faces the prospect of further large losses on mortgage and business lending.

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 reaction of the Irish government has been to attempt to absorb all of these losses itself without moving to share them with senior bondholders. It remains to be seen whether these losses are of sufficient magnitude for a banking crisis to become a sovereign debt crisis.

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