



## The Impact of the Financial Crisis on Banks' Net Interest Margins

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### Abstract

The financial crisis has seen Irish banks' profitability undermined and net interest margins fall to historic lows of 1 per cent and less, extending a pre-crisis trend of falling margins. Low margins raise concerns as to the ability of banks to generate recurring, long-term revenues. This *Economic Letter* traces the evolution of Irish banks' net interest margins from 1999 through to 2012 and identifies the key challenges facing banks in order to rebuild margins.

## 1 Introduction

By the end of 2011, the Irish Government had spent €62.8 billion recapitalising the Irish banks.<sup>2</sup> Arising from the recapitalisation, the State acquired substantial equity stakes and holdings of preference shares and Contingent Capital Notes in the banks.<sup>3</sup> A return on, or of, the funds invested will ultimately depend on the ability of the banks to generate profits.

In the short-term, banks' profits are being heavily weighed down by loan loss provisions, in particular in relation to mortgage arrears. However, the trend in another important indicator of bank profitability, namely the Net Interest Margin, is also poor. Net interest income is the difference between interest earned on loans and other assets and inter-

est paid on funding and other liabilities. It excludes income from fees, commissions, trading activities and one-off gains classified as non-interest income in the annual reports. The net interest margin is defined as the ratio of net interest income to average interest earning assets. It captures the profitability of a bank's core intermediation function.

This *Economic Letter* traces the evolution of Irish banks' margins over the last decade and identifies the factors likely to influence them in the future.

## 2 Net Interest Margin Trends

The net interest margin forms part of a standard set of bank performance indicators which also in-

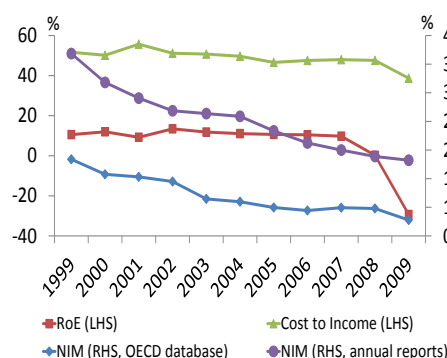
<sup>1</sup>Corresponding author: jane.kelly@centralbank.ie. The authors wish to thank colleagues at the central bank for comments. The views expressed in this paper are those of the authors only and do not necessarily reflect the views of the Central Bank of Ireland. This *Economic Letter* summarises the output from an ongoing research project in the Economics Directorate, which aims to use a combination of bank-level data and micro data to analyse bank profitability. All of the underlying data in this *Economic Letter* comes from individual banks' annual reports.

<sup>2</sup>NTMA Annual Report 2011. Approximately half of this money has been spent on IBRC (formally Anglo Irish Bank and Irish Nationwide), a bank now in liquidation. The other banks were Allied Irish Bank, Bank of Ireland, EBS Limited and permanent tsb.

<sup>3</sup>Contingent Capital notes are debt that convert into equity when certain triggers are met.

cludes the return on equity (RoE), return on assets (RoA) and the cost to income ratio. The net interest margin is generally seen as a better measure of banks' long-term revenue structure since, in the Irish case, while RoE was a steady 10 per cent until the crisis and cost to income ratios looked reasonable, net interest margins had been on a downward trajectory for over a decade (Figure 1<sup>4</sup>).

Figure 1: Measures of Irish Bank Profitability



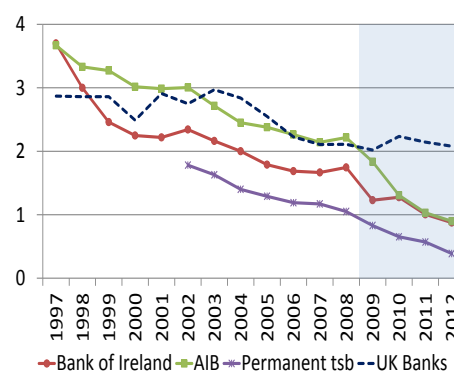
Source: OECD Bank Profitability Database, annual reports.

Figure 2 shows the net interest margins for each of the main domestic lenders (Allied Irish Bank, Bank of Ireland and permanent tsb) since 1999 as well as the median for UK banks. Irish banks' margins fell by around 1 percentage point between 1999 and 2008. The financial crisis brought with it a further decline in margins to around 1 per cent for AIB and Bank of Ireland, and 0.4 per cent for permanent tsb as the gap between loan rates and funding costs narrowed further as discussed below. UK margins also declined pre-crisis but held up since as UK banks raised loan margins.

The pre-crisis compression of net interest margins was also common elsewhere but not to the same extent as in Ireland (Figure 3). Having stood in the middle of the range in 1999, by 2009 Irish banks' margins were amongst the lowest in the OECD database, well below the likes of Spain, Italy and Canada at around 2 per cent or the US at 3

per cent.<sup>5</sup>

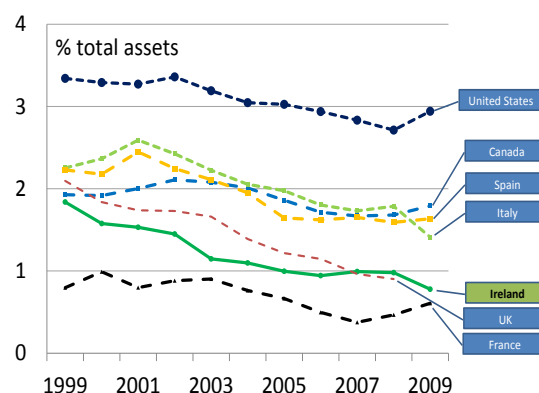
Figure 2: Net Interest Margins by bank (%)



Source: Annual averages based on banks' Annual Reports.

Notes: The net interest margin is inclusive of ELG costs in 2010-12. The permanent tsb margin is for banking operations only. UK data per Bank of England.

Figure 3: Banks' Net Interest Income in the OECD



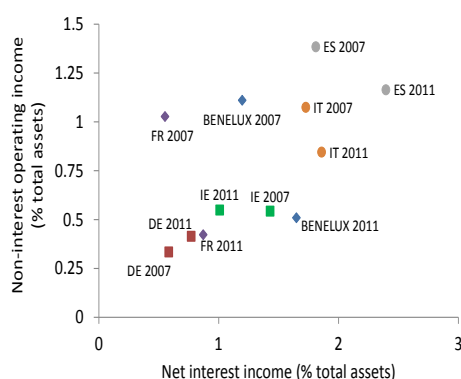
Source: OECD Bank Profitability Database. All licensed banks and building societies within country.

<sup>4</sup>Return on Equity (RoE) is calculated as profit after tax as a percentage of capital and reserves. The cost to income ratio is given by the ratio of operating expenses to the sum of net interest plus net non-interest income. The net interest margin in the OECD database is as a percentage of *total* assets, plus it is for all licensed banks and building societies. This explains the almost level difference with the series based on annual reports, which is net interest income as a percentage of interest earning assets and for AIB, BoI and permanent tsb only.

<sup>5</sup>US banks have large amounts of off-balance sheet assets relative to European banks which may understate the denominator for their margin calculation.

Net interest income accounts for the bulk of Irish banks' operating income. This reflects their focus on traditional lending unlike some banking systems where non-interest income and investment banking activities are more substantial. Annual report data indicates that customer loans account for almost 80 per cent of Irish banks' interest income.<sup>6</sup> Figure 4 plots the average net interest income margin against the average non-interest operating income margin for a sample of countries in 2007 and 2011. Irish non-interest margins are also at the lower end of the spectrum.

Figure 4: Net Interest Income and Non-Interest Income (% Total Assets)



Source: Bankscope, average of banks within country.

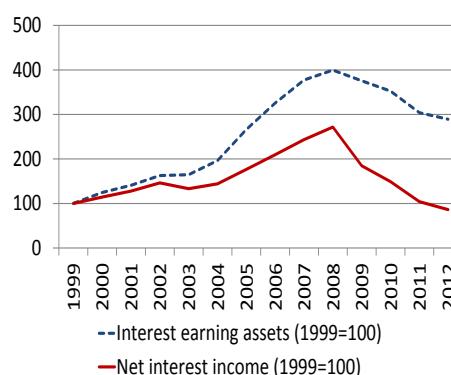
### 3 Determinants of the Net Interest Margin

Ho and Saunders (1981) shows that banks' margins are primarily driven by two factors: the degree of banking industry competition and the interest rate risk to which banks are exposed.<sup>7</sup>

Increased competition in the Irish retail banking industry was a major driver of falling net interest margins prior to the financial market crisis. Figure 5, shows that asset growth significantly exceeded net interest income growth as banks reduced margins to increase lending volumes.

The pressures of higher competition are also evident from the Irish component of the euro area Bank Lending Survey. Irish responses to the survey indicated that competition from other banks contributed to an easing of credit standards for lending to enterprises, for example, during 13 of the 20 quarters between 2003 and 2007 (inclusive).<sup>8</sup>

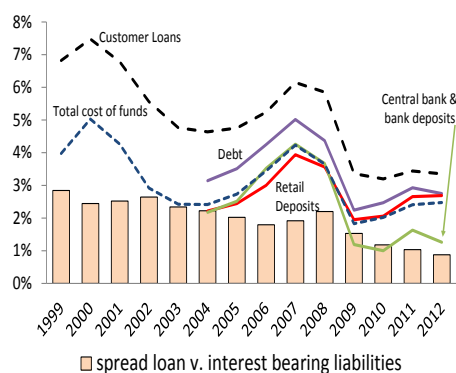
Figure 5: Growth in net interest income and assets



Source: AIB, BOI, EBS and PTSB Annual Reports.

The "spread compression" between loan rates and funding costs is illustrated in Figure 6.<sup>9</sup>

Figure 6: Average interest rates on customer loans and funding costs



Source: AIB, BOI and PTSB Annual Reports. Notes: Rates aggregated using interest earning assets as weights.

<sup>6</sup>AIB and Bank of Ireland (1999 - 2012), permanent tsb and EBS (2002 - 2012).

<sup>7</sup>Subsequent literature has extended the Ho and Saunders' approach to take account of factors such as credit risk (Allen, 1988) and other forms of interest rate risk (Angbazo, 1997). See Tan (2012) for an extensive review.

<sup>8</sup>For more on the Bank Lending Survey, see <http://www.centralbank.ie/mpolbo/mpolicy/Pages/lendingsurvey.aspx>.

<sup>9</sup>Permanent tsb is included from 2002. Pre-2006, permanent tsb interest paid on bank deposits is included with customer deposit expense as no breakdown was provided. Debt includes sub-debt for permanent tsb in 2008-09.

Irish banks were able to access increasing amounts of wholesale bank (green line) and debt (purple line) funding pre-crisis, enabling them to rapidly expand their lending. For example, the share of longer-term debt interest costs (including subordinated liabilities) in interest expense more than doubled between 1999 and 2008, but this came at a higher cost than traditional customer deposits (red line).

Since the crisis, the reduction in balance sheet size agreed with the EU/ECB/IMF as part of the Financial Measures Programme (FMP) increased concentration on lower margin retail activities.<sup>10</sup>

The large proportion of tracker mortgages (around 50 per cent of the FMP banks' customer loans) which, are priced at a low, fixed spread over the ECB's main refinancing rate added to the downward pressure on margins, as the banks' market funding became expensive relative to industry norms. This contrasts with UK banks, for example, who were able to increase loan rates to help offset the increase in funding costs (see Bank of England Financial Stability Reports for more details).

For Irish banks, increased reliance on Eurosystem borrowings, mainly to replace lack of access to wholesale and corporate funding, helped offset the rise in funding costs. Figure 6 shows the reduction in the bank deposit costs from around 2008 onwards as central bank funding becomes more important within the bank funding category and as policy rates fell. The figure does not include the fees paid for the Irish Government's ELG scheme<sup>11</sup> which added to the cost base, although outflows and interest rates may have been higher in its absence. Retail deposit rates also rose due to increased competition and the initial inclusion of loan-deposit ratio targets in the EU-IMF programme.<sup>12</sup> The reduction in interest income on impaired loans compressed margins further.

<sup>10</sup>The FMP report by the Central Bank of Ireland (March 2011) provides an overview of the programme, including bank deleveraging.

<sup>11</sup>The initial Guarantee scheme was in place from 29 September 2008 to 29 September 2010. The scheme covered all existing and new liabilities within certain categories for a period of two years and was recorded in non-interest income. The second scheme, the Eligible Liabilities Guarantee (ELG) scheme, was introduced at the end of the first scheme but covered a narrower range of liabilities.

<sup>12</sup>The Irish authorities have since agreed with external programme partners to discontinue the use of loan-to-deposit ratios as a guide to progress on the downsizing of bank balance sheets.

<sup>13</sup>McCarthy and Lydon (2011) present a range of evidence which suggests a strong role for interest rates in influencing mortgage arrears trends.

## 4 Outlook for Bank Profits

The profitability challenge facing Irish banks is considerable and will remain sensitive to provisioning levels and the interest rate environment. It will take some time to rebuild interest margins and there may be trade-offs between short-term gains and longer-term sustainability. For example, raising loan rates may aggravate arrears. Likewise replacing Eurosystem borrowings with deposits and long-term debt entails a short term cost, but represents a more sustainable business model which may enhance credit ratings and create longer term savings. The remainder of this section discusses recent initiatives to increase both interest and non-interest income.

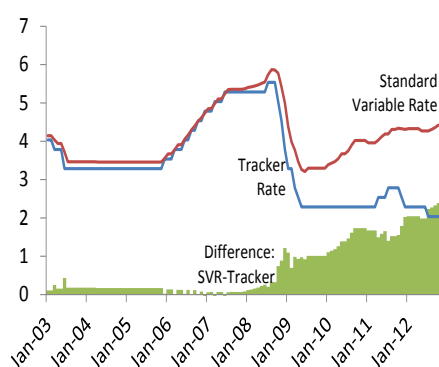
### 4.1 Net interest income

Irish banks' significant holdings of tracker mortgages limit their ability to increase interest income on their outstanding loan stock or "back book". However, there is scope to adjust interest rates on other types of variable rate loans.

The financial crisis led to an increase in banks' pricing of variable rate loans relative to the ECB's policy rate. Their ability to do so has been, in part, facilitated by the significant reduction in competitive pressures as foreign retail banks exited the market, as well as the increasing prevalence of negative equity which restricts customers' ability to switch mortgage provider. Goggin et al. (2012) show how interest rates on Standard Variable Rate mortgages (SVRs) have risen significantly in recent years (Figure 7). The average SVR mortgage is now over 2 percentage points higher than the average tracker mortgage, whereas prior to 2009 there was no substantial difference. However, the higher payment burden and likely impact on mortgage arrears could constrain banks from further significant interest rate increases.<sup>13</sup> Given that SVR mortgages account for just five to ten per cent of total customer loans by value in Bank of Ireland and AIB respectively, the overall impact on margins is

currently small. However, this is expected to increase over time as the share of tracker mortgages in banks' loan books declines.

Figure 7: Divergence of variable mortgage rates



Source: Goggin et al. (2012).

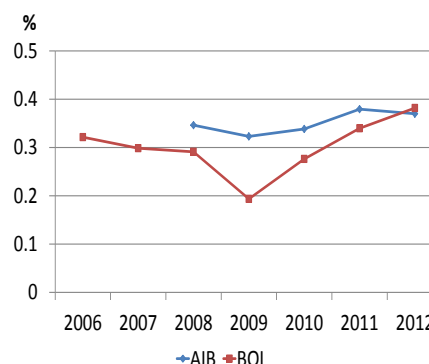
Banks' net interest margins should also benefit from the removal of the ELG scheme from 29 March 2013 onwards. This scheme reduced bank margins by between 30 and 40 basis points in 2010/11. In terms of the impact on margins, the major unknown arising from the phasing-out of the scheme is to what extent, if any, banks will need to offer higher interest rates in order to attract deposits and market funding.

## 4.2 Non-interest income

Banks can increase their non-interest income by increasing fees for banking services. Some research shows that banks' response to a financial crisis can be to either increase or decrease banking fees. Banks seeking to grow deposits in response to a crisis may reduce fees in order to attract business. Conversely, banks might increase fees in other areas, for example for products where the ability of customers to switch is limited.

Both AIB and Bank of Ireland have increased fees and charges in recent years.<sup>14</sup> Figure 8, which shows trends in retail banking customer fees as a percentage of customer loans, indicates that the banks have generally increased their fee income since 2010.

Figure 8: Retail banking customer fees (% customer loans)



Source: Annual Reports.

Banks can also adjust their fee structure to incentivise existing customers to redistribute deposits from interest-bearing to low- or non-interest bearing accounts, effectively lowering banks' cost of funds. For example, both AIB and Bank of Ireland waive substantial transaction and "maintenance" fees for customers who satisfy criteria, such as maintaining a minimum daily credit in a current account of €2,500 to €3,000 per quarter. While such strategies may increase non-interest income in the short run, longer run sustainability must always be considered. For example, the latter could reduce the average maturity of deposit funding over time and increase the maturity mismatch on banks' balance sheets.

Another point to consider is that banks' divestment of business lines such as insurance operations as part of the downsizing agreed under the FMP may also impact ability to create non-interest income.

## 5 Conclusion

This *Economic Letter* charts the deterioration in banks' net interest margins over the period 1999 to 2012. It shows that even prior to the financial crisis, competition to grow asset bases drove down Irish banks' net interest margins to levels that compare unfavourably to many other European banking systems. The financial crisis affected

<sup>14</sup>See, for example, [Bank of Ireland's](#) and [AIB's](#) 2012 Fee Structure, which employs both fixed quarterly charges and per-transaction fees.

Irish banks' funding costs and interest income in different ways. This led to a realisation of the substantial risk which some banks had exposed themselves to via their loan pricing throughout the property boom.

Since the onset of the crisis, banks have taken several steps to rebuild their margins, notably by increasing interest income where they can. They

have also re-introduced fees and charges to compensate for the loss of interest income. Despite these changes, the large proportion of very long-term, low margin loans on the banks' balance sheets (i.e., tracker mortgages) and the difficulties posed by mortgage arrears means that rebuilding net interest margins and overall profitability is likely to be a long and drawn-out process.

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