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## Ireland's retail banking crisis: lessons to learn and policy implications

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Ireland's Retail Banking Crisis:  
Lessons to Learn and Policy Implications

by

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## **Abstract**

Lessons have been learned since the Irish banking crisis, and important regulatory and supervisory actions have been taken both domestically and internationally. While, there exists an extensive body of research investigating the Irish banking crisis, a number of important questions remain unanswered in relation to whether the latent distress in the Irish retail banking system could have been recognised contemporaneously. To address these gaps, this thesis builds upon the existing literature in two ways. First, the main Irish banks are compared to a European sample of peers across a unique database of financial indicators using econometric analyses to see if the severe financial distress in which they found themselves could have been identified earlier. Secondly, using a case study approach, this thesis presents an original and detailed comparative analysis of the Canadian and Spanish retail banking systems to investigate whether any regulatory and supervisory lessons can be identified. These countries' commercial retail banks provide a useful benchmark given their relative resilience during the Global Financial Crisis.

The main findings from this research can be summarised as follows: (1) Statistical evidence is presented which shows structural differences in the lead up to the crisis between those banks that had to be bailed out and those that did not. In particular, funding structure was the most robust predictor of performance – banks with more depository funding experienced a lower probability of being bailed out. (2) In addition, robust funding models and vigorous liquidity management were identified as important determinants of banking performance. The Spanish case study found that Spanish banks were far more internationally diversified than their Irish peers – their balance sheets thus provided greater access to capital to cushion the problems they faced when the Spanish real estate sector collapsed. The Spanish banks' unique use of countercyclical provisioning was also found to be a key differentiating factor. The Canadian case study showed that Canadian banks had higher capital levels, relied more heavily on equity and used more deposit-based funding structures compared to their Irish peers.

## **Declaration**

The work presented in this thesis is the sole work of the author except where duly recognised and referenced. It has not been submitted to any other university or higher education institution or for any other academic award.

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Julie Kennedy Fogarty

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## **List of Abbreviations**

|          |  |
|----------|--|
| AIB      | Allied Irish Bank  |
| AMECO    | Annual macro-economic database                               |
| ANGLO    | Anglo Irish Bank   |
| AQR      | Asset Quality Review   |
| BIS      | Bank of International Settlements                            |
| BOI      | Bank of Ireland  |
| BOSI     | Bank of Scotland Ireland                                     |
| CBI      | Central Bank of Ireland                                      |
| CBFSAI   | Central Bank & Financial Services Authority of Ireland       |
| CCB      | Canadian Commercial Bank                                     |
| CRD      | Capital Requirements Directive                               |
| CRR      | Capital Requirements Regulation                              |
| CGT      | Capital Gains Tax  |
| CIFS     | Credit Institutions Financial Support Scheme                 |
| CMHC     | Canadian Mortgage and Housing Corporation                    |
| CR       | Composite Risk Rating  |
| CRD      | Capital Requirements Directive                               |
| CSO      | Central Statistics Office                                    |
| DG ECFIN | Directorate General for Economic and Financial Affairs       |
| DOF      | Department of Finance  |
| DOI      | Department of Insurance                                      |
| DP       | Dynamic Provisioning   |
| EBA      | European Banking Authority                                   |
| ECB      | European Central Bank  |
| ECOFIN   | Economic and Financial Affairs Council of the European Union |
| ELG      | Extended Liability Guarantee                                 |
| EMH      | Efficient Market Hypothesis                                  |
| EMU      | European Monetary Union                                      |
| ESRB     | European Systemic Risk Board                                 |
| EU       | European Union   |
| FCAG     | Financial Crisis Advisory Group                              |
| FDI      | Foreign Direct Investment                                    |
| FISC     | Financial Institutions Supervisory Committee                 |
| FR       | Financial Regulator  |
| FROB     | Fund for Orderly Bank Restructuring                          |
| FSA      | Financial Services Authority                                 |
| GDP      | Gross Domestic Product                                       |
| GFC      | Global Financial Crisis                                      |
| GNP      | Gross National Product                                       |
| GST      | Goods and Services Tax                                       |
| HBOS     | Halifax Bank of Scotland                                     |
| HBP      | Home Buyers' Plan  |
| IASB     | International Accounting Standard Board                      |
| IBOA     | Irish Bank Officials Association                             |

|         |  |
|---------|--|
| IFSRA   | Irish Financial Services Regulatory Authority          |
| IFRS    | International Financial Reporting Standard`            |
| IMF     | International Monetary Fund                            |
| IMH     | Institutional Memory Hypothesis                        |
| IMPP    | Insured Mortgage Purchase Program                      |
| INBS    | Irish Nationwide Building Society                      |
| LTI     | Loan to Income   |
| LTRO    | Long term refinancing operations                       |
| LTV     | Loan to Value  |
| MI      | Mortgage Insurance                                     |
| MTO     | Medium Term Objective                                  |
| NAMA    | National Asset Management Agency                       |
| NPL     | Non Performing Loans                                   |
| OECD    | Organisation for Economic Cooperation and Development  |
| OIGB    | Office of the Inspector General of Banks               |
| OMT     | Outright monetary transactions                         |
| OSFI    | Office of the Superintendent of Financial Institutions |
| PBD     | Principal Dwelling Houses                              |
| PBR     | Principles Based Regulation                            |
| PhD     | Doctor of Philosophy                                   |
| PITH    | Principal Interest Taxes and Heating                   |
| PRISIM  | Probability Risk and Impact System                     |
| PTSB    | Permanent TSB  |
| PwC     | Pricewaterhouse Coopers                                |
| RBS     | Royal Bank of Scotland                                 |
| RRSP    | Registered Retirement Saving Plans                     |
| SITC    | Standard International Trade Classification            |
| SSM     | Single Supervisory Mechanism                           |
| TD Bank | Toronto Domain Bank                                    |
| UB      | Ulster Bank  |
| UK      | United Kingdom   |
| US      | United States  |
| VAT     | Value Added Tax  |

## **Chapter One: Introduction**

### **1.1 Introduction**

The aim of this chapter is to present the focus of the thesis, the rationale for the research, the research questions and objectives, and the contribution to knowledge. As liquidity dried up in the global financial crisis (GFC) environment of 2007, countries such as Ireland with overstretched credit environments, overpriced asset markets, lax mortgage lending standards, and weak regulatory systems were particularly vulnerable (Centonze, 2014). September 2018 marked ten years since the Irish Government was forced to undertake a controversial guarantee of the Irish banks, which would lead to the €64bn bailout of the banks. This bailout was followed by an unprecedented collapse in property prices, the loss of sovereignty in the form of the 2010 bailout of Ireland by the IMF/ECB/EU ‘Troika’, and deep and prolonged economic recession. Faced with an illiquid and insolvent banking sector, the State would eventually take ownership of the majority of the banking system.

Lessons have been learned since the Irish banking crisis and important regulatory and supervisory actions have been taken at both the international and national level to help ensure more stable growth for Ireland’s retail banking sector. However, more work is required to prevent mistakes being repeated. The extended fallout of the Irish banking crisis continues to affect Ireland’s economic and financial landscape and 10 years on, the country’s two largest domestic banks remain partially state owned. The most recent IMF report on Ireland (June 2018) noted that lingering crisis legacies persist in the banking system, as elevated non-performing loan (NPL) levels continue to pose challenges for the domestic banks balance sheets. While there exists an extensive body of research investigating the Irish banking crisis, a number of lacunae remain. To address these gaps, this thesis builds upon the existing literature in two ways. First, developing a unique database and employing PROBIT analysis, it systematically analyses a range of financial indicators for the main Irish banks in the lead-up to the GFC, and compares them to a European sample of peer banks to see if bank management could have foretold, in a timelier manner, the potential distress in which the Irish banks found themselves. This unique empirical analysis offers important

learnings for future banking policy formulation. Secondly, using a case study approach and empirical analysis, it presents an original and detailed comparative analysis of the Canadian and Spanish retail banking systems as a source of regulatory and supervisory lessons. These countries' commercial retail banks, while confronted with volatile markets and a subpar economic environment, proved resilient through the GFC.

## **Background**

Few retail banking systems were as poorly positioned as Ireland's upon entering the GFC of 2007. Apart from the experience of Iceland, Ireland's retail banks turned out to have the poorest performance of any banking system during the global downturn (Honohan 2010a). Yet Irish banks had not indulged in the financing of US securitised mortgages, nor were they involved in aggressive international acquisitions – flaws that characterised weakened banks elsewhere (Honohan 2010a). The economic fault-line of the liquidity and solvency crisis in which Ireland's banks found themselves ran from (delinquent) bank lending practices feeding an unsustainable property bubble, resulting in a banking crisis that required extraordinary intervention by the state and resulted in the enormous private debt of the Irish banking system being loaded on the taxpayer.

The recent GFC and Irish financial crisis have highlighted the importance of understanding the procyclicality of lending patterns in the financial sector. Understanding procyclicality is important, because it has the ability to transform banks into engines of change in economic activity, potentially affecting financial stability and economic growth. Bikker and Hu (2002) argue that banks, as suppliers of credit, play a significant role in the business cycle, maintaining that if during a cyclical downswing the lending policy of banks becomes less liberal, it will reinforce trends in the real world and therefore be procyclical in effect (see also ECB 2005). This effect is stronger in countries such as Ireland, where banks dominate credit lending (Lawless and McCann 2013). The focus of this thesis is largely guided by the need to pay particular attention to what drove the pattern of bank lending in the lead-up to the Irish banking crisis.

The Irish government has commissioned a number of reports analysing various aspects of the Irish banking and financial crisis (mainly Honohan 2010; Regling and Watson

2010; Nyberg 2011; Wright 2011; and the report of the Joint Committee of Inquiry into the Banking Crisis (Oireachtas 2016)). These reports document Ireland's banks' rise and reversal from the late 1990s. All five reports indicate a myriad of managerial failures and widespread over-optimism (Nyberg 2011), spurred on by short-term incentives (Honohan 2010) which created an environment in which excessive risk-taking and poor decision-making behaviour became normalised. All reports highlighted how Irish retail banks began to experience a divergence between domestic deposit growth and credit growth beginning in 2000. The composition of assets and liabilities of Irish banks changed during the ten years that preceded the GFC, in that they began to source funds from international financial markets and increasingly substituted deposits for wholesale funding to finance their activity, becoming increasingly dependent on foreign wholesale markets. This new funding source was used to finance exponential growth in their lending activity, especially real-estate loans.

To provide context at the level of concentration by the Irish banks in real estate: public and private investment in construction peaked at 20.6% of GDP in 2006, compared to 12% across the EU. In GNP terms (which are more accurate given the level of foreign direct investment), the numbers are even starker: construction activity grew from 16% of GNP in 2000 to 25.6% in 2006, and the total value of Irish construction activity in 2000–2008 came to an incredible €254bn. This meant that the pattern of net international debt flows was closely aligned to domestic credit growth, with high external borrowing marking the domestic credit booms. The combination of lower interest rates from 1998 onwards, higher income and increased household formation meant a sizeable increase in housing demand. Residential property price inflation increased dramatically, as did home building levels. The report of the Joint Committee of Inquiry into the Banking Crisis, published in January 2016, concluded:

The crisis in the banks was directly caused by decisions of bank boards, managers and advisors to pursue risky business practices, either to protect their market share or to grow their business and profits. Exposures resulting from poor lending to the property sector not only threatened the viability of individual financial institutions but also the financial system itself. (Oireachtas 2016, p.5)

All five reports have concentrated on identifying failure in specific institutions, primarily the Central Bank (CB), the Financial Regulator (FR), the Department of Finance (DOF) and the banks. Although comprehensive and detailed, they have certain limitations. First, the scope of these reports, partly due to their terms of reference, is broad and lacks any in-depth systematic review or discussion of the performance of the key risk indicators of the Irish banks in the lead-up to the GFC. Outside the official government reports, the causes of the Irish financial crisis have been exhaustively examined. This examination has come predominantly from academic and media commentators. Media commentators have typically focused on the personalities and main figures (both political and industry) at the centre of the crisis – developers, bankers and regulators – without critically exploring the structural issues that led to the crisis (see for example Murphy and Devlin 2009; O’Toole 2009; Ross 2009; Carswell 2011; Cooper 2011). Domestic and international academic commentary has provided useful insight on the collapse of the Celtic Tiger, and many authors have dealt with the causal elements of the Irish financial crisis (see Kelly 2007a, 2007b, 2009a, 2009b; Honohan 2008a, 2008b, 2009a, 2009b; 2009c, 2009d, 2009e, 2010b, 2010c; Whelan 2009, 2013; Kinsella and Leddin 2010; Barth, Caprio and Levine 2012; Clarke and Hardiman 2012; Beck 2014; Donovan and Murphy 2013; Lucey 2014; and Ó Riain 2014).

However, the above-mentioned studies lack any review of bank-specific financial indicators of the main Irish retail banks, under a coherent framework of systematic analysis, to establish if analysis could have foretold of bank distress. Similarly, none of these studies attempts to compare the Irish retail banks’ performance in the lead-up to the GFC to better-performing international retail banking peers, such as the Canadian retail banking system or the Spanish commercial banks. Given the above context, it is important that future bank policies continue to focus on guarding against a re-emergence of boom–bust dynamics in bank lending patterns, and foster sustainable growth. This thesis concentrates on the period leading up to the GFC by considering the years 2001–2008. For context, Chapter 3 provides analysis of the period 1991–2007, a time of rapid economic growth in Ireland. The so-called Celtic Tiger period consisted of two growth phases with different drivers – an export-led growth phase, 1991–2000, and

a credit-led domestic-demand-driven growth phase, 2001–2007. The two growth phases and drivers of growth are discussed in detail in Chapter 3. In Chapter 4, the main period of focus is 2001–2008. In Chapters 5 and 6, the main focus for the empirical analysis is on key bank-specific financial ratios at the end of 2006 to capture conditions prior to the start of the GFC in mid-2007.

The remainder of this chapter is structured as follows: Section 1.2 outlines the background and rationale. Section 1.3 specifies the research objectives and research questions in the thesis. Section 1.4 explains how this thesis develops and analyses a comprehensive database of financial ratios for a set of systemically important banks across Europe. Section 1.5 outlines the overall contributions of the thesis. Section 1.6 details the structure of the remaining chapters.

## **1.2 Rationale**

This section presents the rationale for the study, the following section outlines the research questions, associated hypotheses and related objectives. Despite the government commissioned reports mentioned above, these reports fail to establish if review of a comprehensive panel of bank-specific financial indicators may have forewarned of the distress in which Irish banks found themselves. Second, the reports lack an international dimension and provide no comparison of the performance of the Irish retail banks against their international peers in the lead-up to the GFC. For example, there is no detailed comparative case study of the Irish retail banking system against the better performing Canadian retail banking system. This gap is an important one in the literature because from 2008 onwards, as financial crisis engulfed the banking systems of Ireland and many large European economies, Canada was a notable international exception. In Ireland, the crisis was characterised by bank failures and government bank bailouts (nationalisations/equity injections) and was the precursor to a recession. In Canada, there were no bank failures or government bank bailouts, and the recession was short-lived and less severe. Naturally, this encourages an analysis to establish the source of Canadian stability compared to the Irish retail banking system for the same period. A variety of factors are proposed in this thesis.

There has also been no detailed comparative case study of the main Irish retail banks against the main Spanish commercial banks in the lead-up to the GFC. No study has explored why the Spanish commercial banks performed better than the main Irish retail banks in certain areas during the GFC. Again, this gap is an important one in the literature because from 2008 onwards, as instability engulfed the banks of Ireland and many large European economies, the Spanish commercial banks were a notable exception. In summary: Despite extensive coverage of the Irish banking crisis, some important features underlying it deserve more emphasis than they have received, including the following:

- There has been limited focus on the procyclical drivers of fluctuations in Irish banks' credit policy in the lead-up to the Irish banking crisis, reflecting an overall weakness in recognising the various cyclical drivers and their implications for evolving regulation and regulatory function.
- No Irish study to date has taken the key financial indicators of the main Irish banks to establish if an analysis of bank-specific financial indicators could have foretold of the distress in which Irish banks found themselves in the lead-up to the GFC.
- There have been no detailed comparative case studies of the Irish commercial banks against better-performing European or international retail banks:
  - Spain is a suitable comparative country that experienced a similar growth trajectory and banking cycle to Ireland in the lead-up to the GFC, yet whose commercial banks evidently performed better when faced with volatile markets and a subpar economic environment. Spain, like Ireland, experienced remarkable macroeconomic growth in the decade and a half prior to the GFC, partly a result of significant reductions in interest rates from EMU membership, by prompting housing and construction bubbles and the overexposure of domestic banks to lending to the property and real estate sector. Further, financial regulation in both countries was fundamentally ill-equipped to deal with risks stemming from unsustainable credit extension increases from the late 1990s. However, Spain's main commercial banks were considerably healthier in the time period this

dissertation addresses, and never required recapitalisation or government intervention.

- Canada proves an even more instructive case. While Ireland and Canada both had highly concentrated, retail-bank-dominated banking sectors and a principles-based regulatory regime, and both experienced significant growth in mortgage credit just prior to the GFC credit crisis of late 2008 onwards, the two systems experienced radically different outcomes. Unlike the Irish banking system, Canada's never required recapitalisation or government intervention. This thesis evaluates the Canadian banking system's success in order to determine which elements may be applicable to the Irish case study. Canada's success during the GFC is attributed to more effective regulation and conservative banking practices, including (self-)imposed stricter limits on bank leverage.

### **1.3 Research Questions and Objectives**

Given the above context, the thesis addresses three principal research questions which inform the research objectives, as outlined below:

1. Could analysis of a comprehensive set of bank-specific financial indicators of the main Irish retail banks, in the lead-up to the GFC, have foretold bank management of the distress in which Irish banks found themselves?

This question gives rise to the following key research objectives:

- Using a systematic framework, such as the CAMEL<sup>1</sup> framework, focus on the key bank-specific financial ratios in the dominant Irish commercial banks in the lead up to the Irish banking crisis (i.e. 2001 to 2008), to establish if there was statistical evidence to identify, before the crisis, structural differences between those banks that had to be bailed out (such as the Irish banks) and those that did not.

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<sup>1</sup> To analyse the key risk indicators of the banks, this study reviews a selection of bank-specific ratios based on financial performance in five key areas: capital adequacy (C), asset quality (A), management competence (M), earnings performance (E), and liquidity risk (L). Collectively these bank-specific areas are known under the acronym CAMEL. An overview of the CAMEL framework is provided in section 1.4 and a detailed discussion is provided in section 4.1.1.

- Employ a PROBIT model to identify the most significant variables that will indicate to potential bank distress, and determine whether the relationships between variables and bank failure relate to the hypotheses outlined below.
- Compare the main Irish retail banks to their European peers over the same period to provide a useful point of comparison.

Following on from a detailed review of the relevant CAMEL literature, the hypotheses emanating from these research objectives are presented in Chapter 4, while empirical testing of the hypotheses is also undertaken in Chapter 4. In summary, this study proposes the following hypotheses:

- H1: There is a negative association between high capital levels and bank distress.
  - H2: There is a positive association between a risky asset portfolio and bank distress.
  - H3: There is a negative relationship between banks' efficiency and bank distress.
  - H4: There is a negative relationship between increasing levels of profitability and earnings and bank distress.
  - H5: There is a positive relationship between banks relying more heavily on short-term sources of funding and bank distress.
2. Why did the Spanish commercial banks perform better than the main Irish commercial banks during and after the GFC?

This question gives rise to the following key research objectives:

- Use a systematic framework, such as the CAMEL framework, to establish differences between the main Spanish and Irish commercial banks' performance during the GFC.
- Establish what lessons can be derived from the Spanish example.

The hypothesis emanating from these research objectives are presented in Chapter 5, while empirical testing of the hypothesis is also undertaken in Chapter 5. In summary, this study proposes the following hypothesis:

- H6: The Spanish commercial banks were far more internationally diversified and their balance sheets thus provided greater access to capital to cushion the problems they faced when the Spanish real estate sector collapsed.
- H7: The unique loan loss provisioning regime undertaken by Spanish commercial banks meant that by the start of the GFC, Spanish banks were better positioned than their European peers to weather the crisis.
3. What discrete elements of the Canadian banking system informed its sound performance before the GFC, and are there transferable lessons for Ireland?

This question gives rise to the following key research objective:

- Use the CAMEL framework to employ a wide set of comparative financial indicators to establish if the Canadian banks were outliers when compared to their international peers before the GFC.
- Establish if there are transferable lessons to the Irish example that will help to reduce the exposure of its banks to systemic risk in the future.

The hypotheses emanating from these research objectives are presented in Chapter 6, while empirical testing of the hypotheses is also undertaken in Chapter 6. In summary, this study proposes the following hypotheses:

- H8: The Canadian retail banking system had sufficient and effective prudential regulation and supervision in the lead up to the GFC.
- H9: The Canadian retail banking system had stricter limits on bank leverage and capital quality.

#### **1.4 An Overview of the CAMEL Framework and the Datasets**

The main focus of this section is to briefly discuss the research approach adopted in this thesis to investigate bank performance. The following subsection presents a brief overview of the datasets used in the study. To analyse the key risk indicators of the banks, this study reviews a selection of bank-specific ratios based on performance in five key areas: capital adequacy (C), asset quality (A), management competence (M),

earnings performance (E), and liquidity risk (L). Collectively these bank-specific areas are known under the acronym CAMEL and are considered to reflect the overall safety and soundness of a financial institution (King et al 2006). The motivation for examining bank performance by reviewing a selection of bank-specific financial ratios based on performance in five key areas was predicated on the fact that the literature on predicting bank distress draws heavily on the Uniform Financial Rating System, informally known as the CAMEL framework, introduced by the US regulators in 1979. By focusing on the five key areas of CAMEL, the ranking framework was designed to allow regulators to identify ailing banks before failure happened; banks, in turn, were forced to take corrective action.

Capital adequacy is a measure of the level and quality of a bank's capital base. Asset quality measures the level of risk of a bank's assets. This reflects the quality and diversity of loan borrowers and their ability to repay the loans. Management quality is a measure of the efficiency of its management structure, and earnings potential is a measure of the performance and the stability of a bank's earnings stream. Liquidity measures a bank's ability to meet unforeseen deposit outflow in a short time. Each of these general characteristics, in theory, could affect a bank's financial stability. Losses on bank assets are a direct cause of its failure, and the other ratios provide measures of the ability of the bank to remain operational in the event of losses (Zhao et al. 2009, p.2636). More detailed discussion of the framework is provided in section 4.1.1.

#### ***1.4.1 Datasets***

The empirical analysis of the factors governing banks' performance is based on financial ratios sourced primarily from Bloomberg. A brief overview of the datasets used in Chapters 4, 5 and 6 is presented in this subsection:

- Chapter 4 develops and analyses a comprehensive database of financial ratios for a sample of major commercial European banks. All banks were identified by the IMF as systemically important in Europe in a 2010 study (see Ötoker-Robe and Podpiera 2010). All are commercial banks and are either large in their domestic markets (local market interconnections represent a high local systemic risk, with

assets as a percent of domestic claims exceeding 10 percent), and/or they have large cross-border exposures (the share of foreign revenues in the bank's total revenues exceeds 30 percent). These criteria and data availability limitations lead to a sample of 28 financial institutions in 12 European countries. The sample of banks all have publicly available financial data. Bank-level financial data through out the thesis was obtained from Bloomberg, which provides data in a standardised format, adjusted for differences in accounting and reporting standards across countries. Consolidated statements are used as much as possible to reflect the overall capital, liquidity leverage, and funding positions of the individual banks. The data coverage of banks' financial statements and ratios by Bloomberg for 2001–2008 is about 80 percent of the needed data. The missing data has been filled directly from banks' publicly available statements. The financial indicators used to analyse performance and their sources are laid out in Appendix D.1. The empirical analysis assesses the impact of these financial indicators on bank performance by using a binary indicator of bank performance during the GFC. The indicator takes the value of 1 if a bank was “bailed out”, and a value of 0 if a bank was “not bailed out”.

- Chapter 5 uses the database developed in chapter 4, but narrows its time focus to financial ratios at the end of 2006 to capture conditions prior to the start of the GFC in mid-2007. It compares the main Irish banks with the Spanish commercial banks and compares them to a selection of banks elsewhere in Europe. The empirical analysis assesses the impact of these ex-ante fundamentals on bank performance during the crisis by establishing share price decline from January 2007 to January 2009. As Ratnotvsky and Huang (2009) note, share price decline is appropriate as it is a summary measure of value destruction resulting from credit losses, write-down on securities, and dilution from new equity issuances, including government capital injections. In this respect the share price declines of the various banks from January 2007 to January 2009 are included in the sample.
- Chapter 6 compares the performance of the top three retail banks by asset size in Canada against the top three banks in Ireland, the UK, the US and Spain for the end of 2006 to capture conditions prior to the start of the GFC in mid-2007 (see

Chapter 6, Table 6.1 for a list of the relevant banks). The focus on lessons for Ireland justifies the sample selection: The UK is a major trade and financial partner for Ireland and has been one of the major financial centres at the centre of the turmoil. The Spanish banking system, as outlined in Chapter 5, shares remarkable similarities with the Irish banking system: beginning in 1990, both had fast-growth economies, credit booms with large increases in mortgage lending, and rapid housing price increases (in real and nominal terms, and relative to income per person). The US is included as one of the countries at the epicentre of the GFC and as Canada's most important trade and financial partner; it bears directly on this discussion. As in chapter 5, the empirical analysis assesses the impact of the selected financial ratios on bank performance during the crisis by establishing share price decline from January 2007 to January 2009.

### **1.5 Contribution to Knowledge**

In addressing the research questions outlined in Section 1.3, this thesis will make a number of contributions to the literature on the Irish banking crisis:

- This thesis will provide discussion on the key theoretical perspectives that can help explain the pattern of excessive procyclical lending patterns over the bank lending cycle and place them in the context of the Irish banking crisis.
- Empirically this thesis will systematically analyse a range of bank-specific financial indicators for the main Irish commercial banks, under the CAMEL framework, and compare them to an European sample of peer banks to see if they could have foretold potential distress in which the Irish banks found themselves.
- This thesis will provide a detailed comparative analysis to highlight differences between the Irish and Spanish commercial banks in the lead-up to the GFC and derive lessons and policy implications.
- This thesis will provide a detailed comparative analysis to highlight differences between the Irish and Canadian retail banking systems in the lead-up to the GFC and derive lessons and policy implications.

- This thesis will synthesise key studies and data to provide detailed discussion on the evolution of Ireland’s macroeconomic and financial landscape from 1991 to 2007.
- This thesis will identify implications for future bank policy to help ensure stable growth for Ireland’s retail banking sector.

## **1.6 Thesis Structure**

This paper has thus far identified the background, rationale, research questions, and research objectives for the study. The remainder of this thesis is organised as follows:

Chapter 2, the literature review, will provide the background to the study and highlight the main ideas emerging from research to date by considering (Section 2.2) the key theoretical perspectives that can help explain the pattern of excessive procyclical lending patterns over the bank lending cycle, with particular focus on the expansionary period. Section 2.3 then highlights the more recent discussions in the literature on the evolution of the capital and provisioning regulatory landscape in the lead up to and during the GFC. Section 2.4 explores the existing general research on the Irish financial crisis, with specific focus on the banking crisis, highlighting the narratives from the emerging research to date and the implications of these findings for regulations and regulatory function. Section 2.5 highlights the position and function of the different institutions involved in the Spanish lending environment. The motivation for including this section is based on the fact that Spain is one of the countries of comparison in this PhD. Finally, Section 2.6 concludes by highlighting the gaps in the literature that form the basis of this thesis.

Chapter 3 provides a historical background. It discusses the economic transformation of Ireland since 1990 and the implications of that transformation, with specific focus on the retail banking sector. The chapter begins with a discussion of Ireland’s economic transformation and growth convergence in the 1990s. Section 3.2 addresses the shift from growth driven by export and employment to growth driven by a property bubble. Section 3.3 addresses how the property boom was unsustainable, accompanied by a volatile fiscal position and benign banking operating culture. Section 3.4 discusses the regulatory failures of the crisis, while Section 3.5 highlights measures taken to tackle

Ireland's economic crisis in 2008. Section 3.6 discusses the cost of the crisis, and Section 3.7 concludes.

Chapter 4 attempts to establish could analysis of bank specific financial indicators have foretold of distress that Irish banks found themselves in. Section 4.1 introduces the chapter and provides a brief review of the literature. Section 4.2 justifies the choice of financial variables analysed and outlines the hypotheses for reviewing bank performance. Section 4.3 discusses the methodology and provides information on the sample of banks. Section 4.4 discusses empirical results while Section 4.5 discusses the lessons and policy implications. These in turn are placed in the context of relevant banking and financial reforms in Ireland and the EU since the GFC to date, as well as forthcoming Basel III and European Banking Union reforms in Section 4.6. The chapter concludes with Section 4.7.

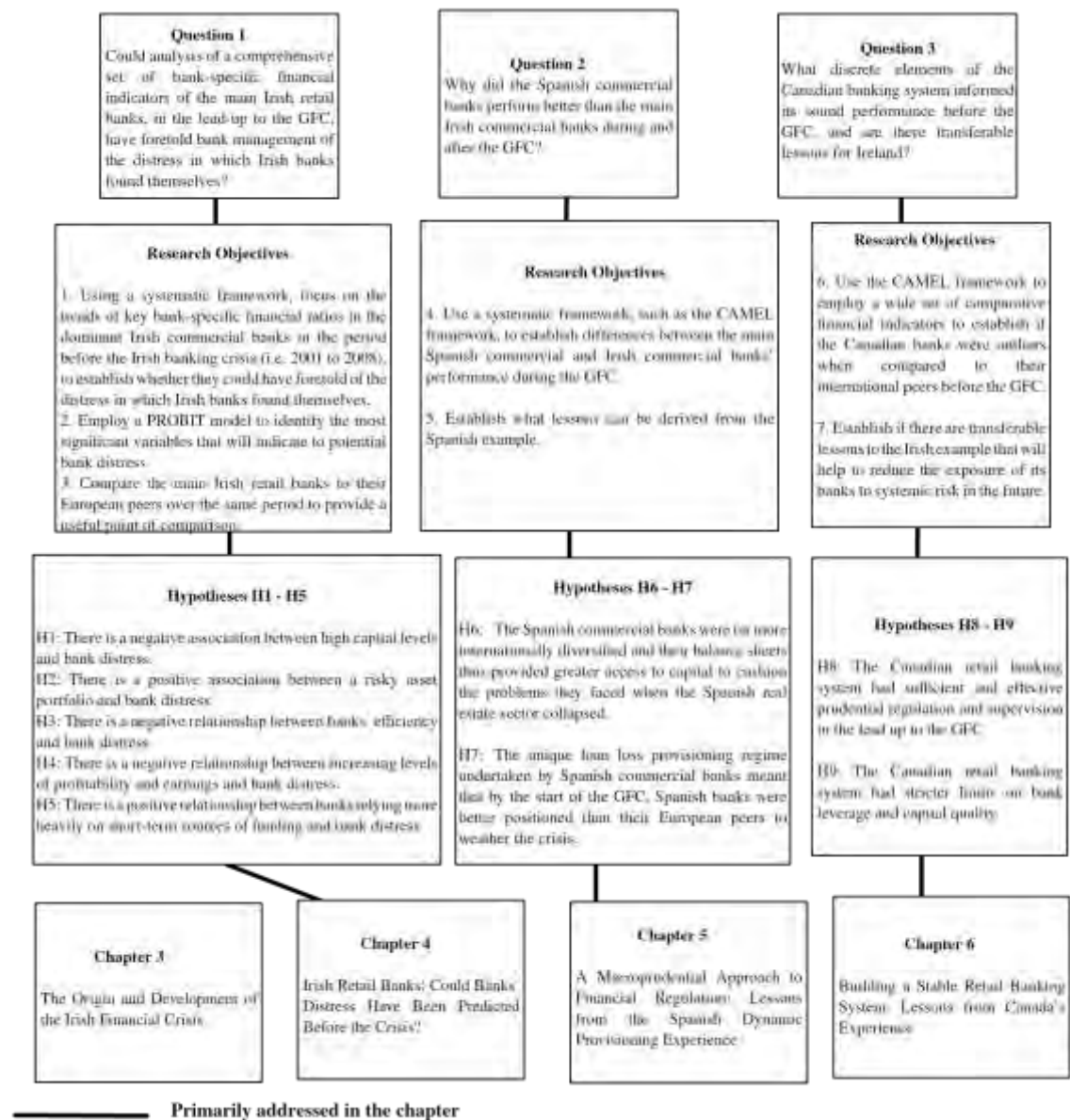
The focus of Chapter 5 is to investigate why the main commercial banks of Spain performed better compared to the Irish banks during the GFC, with a view to drawing useful lessons for both Irish and international financial regulatory reform in the post-crisis environment. Chapter 5 is structured as follows: Section 5.1 introduces the chapter while Section 5.2 compares macroeconomic and housing market experiences in Ireland and Spain, before and during the GFC. Section 5.3 presents a framework for analysing significant differences between the Irish and Spanish retail banking systems in the build-up to and during the GFC, with the aim of establishing lessons that can be learned from the better-performing Spanish commercial banks. Section 5.4 explores whether there were other areas of the Spanish commercial banks' balance sheets, other than its provisioning levels, that marked them out as different from their Irish peers and that ultimately gave the Spanish commercial banks more resilience at the onset of the GFC. Section 5.5 discusses the policy implications arising from the Spanish experience in the context of relevant financial and banking reforms in Ireland, as well as forthcoming Basel III and European Union reforms. Section 5.6 concludes.

Chapter 6 explores the lessons to be learned from why the retail banking systems of Canada and Ireland, which share many commonalities, fared so differently during the GFC. Section 6.2

compares macroeconomic, retail banking sector and housing market experiences in Ireland and Canada, before and during the GFC. Section 6.3 presents an analytical framework to explain differences in the Irish and Canadian retail banking system experiences during the financial crisis. Two key areas of difference are examined that highlight factors that likely influenced the positive Canadian outcome: (i) banking regulation, and (ii) rules or absence of incentives guarding against the occurrence of a construction bubble. Section 6.4 tracks the pre-crisis balance sheet fundamentals of Canadian banks and compares them to a subset of their peers, establishing which fundamentals contributed to the resilience of Canadian banks during the crisis, with particular reference to Ireland. The results are discussed with specific reference to the main Canadian banks. Section 6.5 discusses the lessons and policy implications arising from the Canadian bank performance and regulatory experience. These transferable regulatory reform and other lessons are in turn placed in the context of relevant banking and financial reforms in Ireland and the EU since the GFC to date, as well as forthcoming Basel III and European Banking Union reforms. Section 6 concludes.

Finally, Chapter 7 summarises the key research findings that underpin this thesis, and makes recommendations based on the findings and discussions. Section 7.2 reiterates the research questions and their objectives. Section 7.3 outlines key findings from this study and outlines policy recommendations. Both the Irish and global crises of 2007 have prompted fundamental reconsideration of how regulatory authorities approach financial regulation and supervision. As such, Section 7.4 compares some of the main actions that policymakers have taken at an international and domestic level, with policy recommendations outlined in the thesis. Section 7.5 makes recommendations for future research. The final section provides a concluding statement to the study.

**Figure 1.1: Conceptual map of the thesis**



## **Chapter Two: Literature Review**

How could traditionally conservative banks – some of them with a 200-year history – have been so careless as to leave themselves exposed in such a conspicuous and obvious property bubble? (Honohan 2009c, p. 2)

### **2.1 Introduction**

The focus of this literature review is largely guided by the need to pay particular attention to what drove the pattern of bank lending in the lead-up to the Irish banking crisis. As such, this chapter presents a review of the more general literature on the bank lending cycle, with particular focus on the expansionary period of a lending cycle. It also reviews the extant international and Irish literature on the Irish banking crisis to date. Despite the vast number of studies on the Irish financial crisis, there has been limited focus on the procyclical drivers of fluctuations in Irish banks' credit policy in the lead-up to the Irish banking crisis, reflecting an overall weakness in recognising their implications for evolving regulation and regulatory function. There has also been limited discussion on the evolution of the capital and provisioning regulatory landscape in the lead-up to the Irish banking crisis. This is important as both types of regulation exacerbated the procyclicality of the Irish banking system in this period.

In the context of the above, this chapter begins (Section 2.2) by considering the key theoretical perspectives that explain procyclical lending by banks. This chapter then moves (Section 2.3) to highlight the more recent discussions in the literature on the evolution of the capital and provisioning regulatory landscape in the lead-up to and during the Irish banking crisis. This chapter then discusses (Section 2.4) the existing general research on the Irish financial crisis. Section 2.5 highlights the position and function of the different institutions involved in the Spanish lending environment. The final section (Section 2.6) concludes.

### **2.2 Procyclical Bank Lending Behaviour**

As Bouvatier and Lepetit (2007) note, central banks, as well as banking regulators are concerned with fluctuations in bank lending since such factors could exacerbate the business cycle, cause financial instability and misallocate lending resources. In an Irish context, all three government-commissioned reports highlighted the presence of highly procyclical lending behaviour, and deficiencies in regulatory enforcement by failure to implement countercyclical capital adequacy and loan-loss provision regimes over the

time period. What is interesting in a review of the literature is that the drivers of the highly procyclical lending standards also appear to have existed in one form or another among not just regulatory agencies but also the State and financial institutions (e.g. Honohan 2010b, p.6; Regling and Watson 2010, p.4).

The financial crisis has brought into stark reality the negative impact procyclical lending behaviour can have on multiple actors across multiple institutions. As Longbrake and Rossi (2011) note, many rules, policies and mechanisms that govern financial institutions and their activities unintentionally contributed to the highly procyclical lending behaviour exhibited in the lead-up to the recent GFC. The GFC and Irish financial crisis have highlighted the importance of procyclicality of the financial sector and its ability to transform banks into engines of change in economic activity, potentially affecting financial stability and economic growth (ECB 2005, 2009b; Reinhart and Rogoff 2010; Borio et al. 2001; Lawless and McCann 2013; Panetta et al. 2009). It is perhaps this recognition that aided Reinhart and Roghoff (2010) to conclude that excessive procyclicality of the banking system may activate powerful macro-financial linkages that amplify the business cycle and increased financial instability can have large negative spillover effects on the real sector. In the post-crisis environment, reducing the procyclicality of the banking sector by way of macroprudential policy instruments has become a policy priority (Wezel, Chan-Lau and Columba, 2012).

Over the past two decades research has sought a greater understanding of the affects that procyclicality may have on the efficient functioning of banks, their profitability and capital adequacy ratios, which in turn can affect the solvency of a bank and therefore financial stability. Despite the diverse range of research foci, a common theme that has emerged is that procyclicality can prevent the efficient functioning of banks in several areas. Jimenez and Saurina (2006), for example, argue that much of the research and writing on cycles in bank lending activity has been driven by the observation that expansions in credit risk exposure tend to be concentrated in a particular type of lending (Weinberg 1995); lending for commercial real estate development in Ireland during the 2000s is a typical example. From the point of view of an individual bank, loan concentration implies a loan portfolio that is not as well diversified as it might be and is therefore at high risk, as concentration could present a problem to banks in the event of a downturn in that sector (Weinberg 1995). Berger and Udell (2004) note how most theories of procyclical bank lending behaviour tend to focus on two stylised facts:

firstly, that bank lending increases significantly during economic expansion and falls during the subsequent economic downfall. Problem loans will emerge, but with a lag. This change in bank lending tends to be proportionally larger than the change in economic activity, accentuating the business cycle (Berger and Udell 2004).

Secondly, loan losses tend to follow a distinct pattern over the business cycle. Essentially, provisioning for bad loans tends to be low during the expansionary stage of the business cycle and then increases significantly during the economic downturn. Procyclicality thus disturbs the efficient functioning of markets. Laeven and Majnoni (2003) find that the deterioration of the quality of bank loan portfolios during economic downturns inevitably increases banks' risk exposure – and therefore the level of capital requirements – exactly when capital becomes more expensive or simply unavailable to weaker institutions, and forces a tightening on lending standards due to requirements to hold higher capital requirements during economic downturns. Lending mistakes are more prevalent during upturns; most tend to be made at the height of strong economic growth. Athanasoglou and Daniilidis (2011) note that due to softening of lending standards, increased competition and the underestimation of risk, loans granted at the height of economic booms are often to marginally positive or negative net present values – aiding the improper allocation of resources.

Empirical studies, such as Cavallo and Majnoni (2002) add further weight to the argument that financial systems tend to be highly procyclical. Cavallo and Majnoni (2002) highlighted how procyclicality can be a driver of the underestimation of credit risk, concluding that banks tend to undervalue risk in good times and systematically underprovision. Further, losses emerge during economic downturns, increasing provisioning and affecting profit. As Goodhart and Persaud (2012) posit, economic upturns are the most appropriate times for banks to make provisions for future bad loans. However, studies by Laeven and Majnoni (2003) confirm that in the vast majority of cases banks tend to delay provisioning for bad loans until too late, when cyclical downturns have already set in, possibly magnifying the impact of the economic cycle on banks' income and capital.

Despite vigorous rebuttals that there was little or no evidence of regulatory forbearance (Honohan 2010b, p. 17) among regulators and their agents in the lead-up to the Irish crisis, sufficient evidence exists to suggest that powerful institutional conformism

developed to ensure that compliance with prudential and countercyclical risk-taking was ineffective during the time period. This is contextually important in respect of how many of the main procyclical theories describe or explain changes in banks' lending strategies or practices during the expansionary part of a business cycle. Despite clear indications in 2004 of potential threats posed by the over-concentration of banks' loan books on construction or property and the subsequent risk of systemic banking sector failure (CBI 2004, p.12), banks' management continued to aggressively expand their balance sheets by legitimising an aggressive, highly procyclical lending culture. Anecdotal evidence would suggest that there was insufficient understanding of the risks posed by the high procyclical strategy assumed by banks. However, to date this aspect of Ireland's banking crisis has received limited critique in the literature. As is clear from the review of the literature, addressing the outcomes of the highly procyclical lending behaviour is not the same as addressing the antecedents. In other words addressing the symptoms of the procyclical lending behaviour [e.g. improper allocation of resources, underestimation of risk, solvency issues, undercapitalised or under-provisioned balance sheets, increased NPLs high household debt etc.] is not the same as addressing the root causes [what drives procyclical lending behaviour], which almost certainly have the potential to result in banking sector crisis. The following sections explore the concept of procyclical lending behaviour further.

### ***2.2.1 Understanding Procyclical Lending Behaviour***

Saurina (2009 p.30) notes that nothing is more procyclical than a badly managed bank. His observations are built on research by Caruana (2005), who found that when the economy is growing, even badly managed banks with inadequate levels of capital and provisioning can expand their business. But when the economy moves into a downturn, banks that have inadequately provisioned must implement change to their lending policies. This concept of fluctuations in credit behaviour is not a contemporary phenomenon and the amplification of the economic and lending cycle has been analysed and examined from multiple perspectives over the decades. There is wide acceptance that the banking credit system is inherently procyclical (see Rajan 1994; Berger and Udell 2003; Caprio 2009; Goodhart et al. 2004; Guttentag and Herring 1984; Minsky 1992). There exists a considerable literature base, both theoretical and empirical, explaining the cyclical behaviour of the banking sector. See for example Gambera (2000) for American banks, Salas and Saurina (2002) for Spanish banks and Pain (2003)

for British banks, where empirical research has shown that banks' lending patterns inevitably respond to changes in economic activity and are highly cyclical.

As Donovan and Murphy (2013) note, there has been a tendency in the literature to consider the lending patterns and behaviour in the years leading up to the financial crisis as unique to Ireland. While the scale of the Irish financial crisis may well have been unprecedented, the lending patterns displayed by Irish retail institutions during the time period are not new. Indeed it is widely accepted that banking and financial institutions are predisposed to excessive risk-taking behaviour at certain points in the business cycle (see for example Rubini and Mihm 2011; Stein 2011; Krugman 2012). Gerlach (2014) found that a salient driver of procyclical lending is the lowering of credit standards by banks (Honohan 2009d).<sup>2</sup> Interestingly, research by Jorda, Schularick and Taylor (2014), which considers a historical overview spanning 140 years, finds that the link between highly procyclical lending behaviour (driven by loose monetary conditions and booms in mortgage lending) has become stronger post World War Two. One of the most relevant implications of their study is that central banks must be mindful of the side effects of procyclical lending and address them, possibly through the greater use of macro-prudential tools.

In a similar vein, Rötheli (2010) argues that the most important common element of the current financial crisis, and indeed earlier crises, lies in the nature of the credit cycle (Kindleberger, 1978). As FSA (2010) explains, the term "credit cycle" describes the tendency of banks to excessively increase their credit supply during the upswing and to strongly cut down lending during recessions (when risk appetite is low or non-existent). The longer the boom lasts, the more banks drive each other into excessive risk taking, lending at lower interest rates and on easier terms. This phase of over-optimism regularly ends when the object of investment (and speculation) hits the market in large quantities. As this happens the price bubble bursts and euphoric expectations of future capital gains are frustrated. This marks the beginning of the crisis and banks make large losses on defaulting loans. They now realise that their lending during the boom was made at rates that turned out to have been too low to cover the default risks. The typical reaction to this wake-up call is a strongly reduced inclination to bear risks, and as a

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<sup>2</sup> High loan-to-value (LTV) ratios indicated loose credit standards. While in 2005, only half of first time buyers had LTV rates above 90 per cent, with very few above 100 per cent, these numbers went up in 2005 and 2006. By then, two-thirds of mortgages to first time buyers had LTV rates over 90 per cent and one third over 100 per cent.

result a decline in aggregate lending. Several authors (e.g., Lindsey, 2007; Silvia, 2007; Gieve, 2008) have documented the similarities of the recent procyclical lending patterns to earlier episodes.

### ***2.2.2 Procyclical Bank Lending – Defining the Concept***

Procyclicality takes several definitions within the literature:

- The Bank of International Settlements (BIS) (2010) defines procyclicality as the amplifying feedback effects between the financial system and the real economy leading to unsustainable economic growth during economic upturns and deep recession in economic downturns. BIS contends that the main feature of procyclicality is an underestimation or overestimation of the risks to which the banking sector is exposed, which leads to relatively high credit extension during the upward phase of the cycle. Downturns are characterised by strong risk aversion, which constrains the supply of loans due to banks' concerns about loan portfolio quality and the probability of default. As the economy booms, lending tends to become easier to access and is inexpensive. Banks have extensive funds and capital, borrowers are more creditworthy, and collateral is more valuable. In a downturn, these conditions are reversed. Banks are forced to absorb unexpected losses, which makes them less well capitalised. Increased unexpected losses may force banks to hoard capital (and banks will be forced to cut back on lending). Borrowers become less creditworthy and collateral values fall.
- Basset et al. (2014) define procyclicality as the propensity of banks to significantly ease their lending standards over the course of an expansionary economic cycle and to tighten lending standards over the course of an economic contraction. Bikker and Hu (2002) argue that banks, as suppliers of credit, play a significant role in the business cycle, maintaining that if during a cyclical downswing the lending policy of banks becomes less liberal, it will reinforce trends in the real world and therefore be procyclical in effect (see also ECB 2005). This effect is stronger in countries such as Ireland, where banks dominate credit lending (Lawless and McCann 2013). In a study of 48 countries, Beck et al. (2008) found that banks are thought to be the chief provider of external finance to SMEs. The importance of banks in supplying finance to the real economy in the Irish market was not empirically assessed until a recent CBI paper by Lawless and McCann (2013) found that Irish SMEs are among the most reliant on banks for the supply of external credit in Europe. Thus the reinforcing effect of bank credit policy on the Irish market (where banks dominate credit lending) and its potential procyclical effect are of particular interest to the Irish case study.

- Nijathaworn (2009, p.1) states that in its simplest form, procyclicality refers to the interactions between the financial system and the real economy which are mutually reinforcing. Such interactions tend to increase the amplitude of the business cycle, thereby heightening the risk to financial stability. This description of procyclicality presumes the presence of two cycles, namely the business cycle and the financial cycles that interrelate and underpin each other. However, economic and financial decisions underlying the two cycles are not independent. They are inherently linked by the risk-taking behaviour of economic agents: behaviour which is prone to change in response to incentive, perception of risk, regulation, and new information.
- The Financial Stability Forum report (2009) defines procyclicality as the dynamic interactions (positive feedback mechanisms) between the financial and the real sectors of the economy. These mutually reinforcing interactions tend to amplify business cycle fluctuations and cause or exacerbate financial instability.

### ***2.2.3 Key Theoretical Perspectives on Procyclical Bank Lending Behaviour***

A review of the literature identifies a number of theoretical perspectives that help to explain banks' inherently procyclical lending patterns. This section directs consideration to some of the main theoretical explanations for fluctuations in credit policy (both behavioural and rules-based) for financial institutions. These theories are also placed in an Irish context (See also Appendix B.1 for a summary table of the theories that are discussed in turn in the remainder of this section).

#### **Information Asymmetry**

Athanasoglou and Daniilidis (2011) argue that in its simplest form, information asymmetry is based on the fact that borrowers have more knowledge than lenders about a potential investment project. The ECB (2005) defined information asymmetry as the "adverse selection problem" inherent in banking, which states that the lender is unable to verify one or more of the project's key characteristics. Interestingly, the same 2005 paper highlighted information asymmetry as one of the main causes of procyclicality as it directly affects banks' lending behaviour: banks tend to grant more loans during an economic upturn when borrowers are perceived to be less risky and less information is required, and are more reluctant during the downward phase. Information asymmetry between banks and borrowers means that economic upturns lead to higher valued collateral; this makes access to finance easier and encourages banks to lend, in turn influencing their lending behaviour.

As Minsky (1982) has argued, information asymmetry can take many forms and is an inherent problem in the functioning of financial markets. This hypothesis is empirically supported by De Lis et al. (2009) who found that bank lending has traditionally been strongly procyclical in Spain. There is a tendency for loose bank credit conditions in an upturn. Banks exacerbate demand expansions by funding negative net present value (NPV) projects during boom times, and accentuate contractions by not funding positive NPV projects in downturns. Minsky (1986) argues that expectations, loose credit standards and excessive optimism, combined with information asymmetry, play a role in inefficient markets. Research by Gorton and Ordonez (2014) finds that investors are willing to lend short term against collateral without producing costly information about the collateral backing the debt. When the economy relies on such informationally insensitive debt, firms or households with low-quality collateral can borrow, generating a credit boom. Financial fragility builds up over time as information about counterparties deteriorates. A crisis occurs when a (possibly small) shock causes investors to suddenly have incentives to produce information. The presence of information asymmetry between the bank and borrower will dictate that even suitable customers will be declined loans by lending officers, driving procyclicality in bank lending.

### **Disaster Myopia**

Guttentag and Herring's (1984) disaster myopia hypothesis contends that with the passing of time, the subjective probability of a disaster falls, and institutional factors can reinforce this cognitive bias. A disaster could be, for example, a change in an economic regime or a financial crisis. Institutional factors that may reinforce disaster myopia include the performance of lending managers, which are usually evaluated over short periods of time without adjustments for the uncertainty of future revenues (Guttentag and Herring 1984). During periods of economic growth, it becomes impossible to assign a level of probability to future events that fundamentally results in creditors lending to borrowers in a lower capital position.

The Government-commissioned Nyberg report (2011) detected and inferred signs of widespread "disaster myopia" in Irish banks in the lead-up to the banking crisis, where there was a general tendency over time to underestimate the probability of low-frequency shocks (Nyberg 2011, p.48).

The Commission both detected and inferred signs of widespread herding and groupthink (including “disaster myopia”) in Irish banks during the Period.

### **Misplaced Optimism**

During the expansionary period of a bank lending cycle, one of the main driving forces of the credit market is the tendency of banks to succumb to unrealistic optimism (Shiller 2005). Shiller (2005) further posits that financial boom-and-bust cycles are normally based on misplaced optimism, while Rajan (2005) notes that banks by their very nature are predisposed to over-optimism. This was certainly evident in the run-up to the GFC (see Ferguson and Johnson 2009) with the House of Commons Treasury Committee (2009, p. 38) arguing that “misplaced faith in financial innovation gave rise to over-confidence and over-optimism.” This observation gives further legitimacy to Honohan (2008a) who argued that over-optimism can be encouraged and indeed embodied by a misplaced belief in risk management systems. Specifically, over-optimism and over-reliance on risk management models can minimise perceptions of downside risk and encourage bank management to discount the potential for extreme outcomes, such as a systemic banking crisis. Honohan (2010 p.20) further reinforces this view when he states that banks “are naturally prone to over-optimism and even (later) denial.” A sense of unquestionable belief in the accuracy of risk management models can result in what Taleb (2010, p.8) refers to as the illusion of understanding the complexity of the environment in which banks operate. There is a natural tendency for periods of expansion to result in over-optimism, and in turn a lowering of lending standards (Weinberg 1995). In a herding situation, where a spontaneous wave of optimism hits the same community, collective over-optimism can be persuasive, meaning that even historical evidence of past banking and financial crises may do little to reign in continued and unsustainable economic expansion despite irrefutable evidence that an indefinite expansionary period is inevitable (Reinhart and Rogoff 2009).

Honohan (2010) referred to over-optimism as a proclivity to look at upside risk without considering the potential for any downside risk. In particular this was evident in the inexpensive risk pricing reflected in historically low risk prima (Caprio and Honohan 2008, p.2). However, despite the identified similarities with other banking crises, it has also been noted that the Irish banking crisis has been remarkable, not only in terms of exhibiting a number of features well-known from previous bank crises worldwide (Honohan and Klingebiel 2000; Caprio and Honohan 2008; Reinhart and Rogoff 2008)

but also in terms of how multiple players in the Irish market shared misplaced optimism on the continued asset growth of the property market.

In a similar vein, at a January 2015 CBI conference, Schoenmaker (2015) suggested that:

As a boom leads to euphoria, banks extend credit to ever more dubious borrowers, often creating new financial instruments to do the job. Then, at the top of the market, some smart traders start to cash in their profits. The onset of panic is usually heralded by a dramatic event, such as a bank not being able to meet its obligations. Losses on loans begin to mount, and the value of the loans falls relative to liabilities, driving down the capital of financial institutions. With less capital, financial institutions cut back on their lending (deleveraging). (2015, p.3)

This insight is at the heart of Minsky's Financial Fragility Hypothesis and highlights the procyclicality of the financial system and how this procyclicality can be driven by a euphoria or over-optimism. The relaxation of financial restraint fuels the expansion and rising asset prices increase the tolerance of risk among investors, and in turn their optimism (Minsky, 1992: 7-8). In a similar vein, Turner (2014, p.1) notes, over several decades prior to the crisis, private sector credit grew faster than GDP in most advanced economies, and leverage therefore grew. That growth in private leverage was a major cause of the crash of 2007 to 2008, and the predominant reason why the post-crisis recession was so deep and the recovery so weak and slow. Interestingly, Turner (2014) noted that this level of leverage was driven by the misplaced optimism of investors.

### **Herding**

A fundamental observation about human society is that institutions that communicate regularly with one another think similarly (Schiller 2005). Herding is inherent in banking environments and ensues when banks develop common rules of behaviour in interaction with one another (Haiss 2010). Importantly, herding also provides insight into the cyclical pattern of bank lending behaviour (Rajan 1994). Haiss (2010 p.33) defines herding as "... mutual imitation leading to a convergence in action space." The herding behaviour argument has witnessed somewhat of a resurgence since the initial impacts of the financial crisis (see Taleb 2010; Tett 2010; Reinhart and Rogoff 2009). However, it is the article by Haiss (2010) that has provided perhaps the most compelling argument to consider herding as a possible cause of the risk-taking and decision-making failures in many banking institutions across the globe. Haiss (2010) suggested that risk,

or the propensity to engage in excessively risky strategies, among banking institutions was driven by both rational and behavioural herding.<sup>3</sup> Rational or “utility maximizing” (Haiss 2010, p. 37) herding may help explain the risk propensity of certain groups when faced with incomplete information or loss in investor confidence (reputation) due to not performing as well as peers. This chapter focuses on rational herding. There are several reasons for rational herd behaviour in banking and financial markets. The most important of these identified in the literature are (imperfect) information cascades, principal or agent concern for reputation, and compensation structures.

Reputation herding can arise when managers mimic the actions of other managers, ignoring private information (Scharfstein and Stein 1990). These actions are based on the assumption that the market is more tolerant of a bank’s poor performance if it knows the entire borrowing sector is in turmoil, and managers have strong incentive to behave like their peers, as often their evaluation is done in relative and not absolute terms (De Lis and Herrero 2009). In such cases, other banks also experience poor performance, and an individual bank’s reputation is less sensitive to poor earnings (Rajan 1994, p.402). This concept assumes that bank managers are concerned about the market’s perception of their personal abilities, and as they do not want to appear less capable than their peers, they will follow the herd. In such cases, adopting irresponsible lending policies may be seen as a survival tactic.

Rajan (2006) argues that investment managers are usually compensated relative to the return performance of other competing managers who follow broadly similar investment strategies, rather than exclusively on their own performance. Studies undertaken by Uchida and Nakagawa (2007) found that herding behaviour can often be observed around asset bubble periods. Haiss (2010) notes that a combination of certain regulatory and governance issues (such as tight capital regulation on banks as opposed to other institutions), inconsistent decision rules, stakeholder-focused incentive structures within banks and unquestioning adoption of innovations may collectively force banks into decisions that are micro-functional, but macro-dysfunctional. Importantly, he also noted that environmental shifts (like the move from bank-driven or originate-and-hold to capital market-driven or originate-and-distribute financial systems in Europe) force banks into herding behaviour (Haiss 2010, p.31). The Nyberg report contained an

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<sup>3</sup> Rational herding resonates with many of the factors identified in the various banking inquiry reports (e.g. Honohan 2010b; Nyberg 2011) such as: information cascades, reputation, and compensation. As such, this chapter focuses on rational herding.

indication of how groupthink and herding mechanisms were central to the imprudent lending behaviour of Irish banks.

This Report explores what the Commission considers to be the most important policies, practices and linkages that contributed to the financial crisis in Ireland. A very large amount of documentation was analysed and many relevant people were interviewed. In explaining the simultaneity of the failures in Irish institutions, the Commission frequently found behaviour exhibiting bandwagon effects both between institutions (“herding”) and within them (“groupthink”), reinforced by a widespread international belief in the efficiency of financial markets.

### **Group Think and the Collective Mind**

Weick and Roberts’ (1993) concept of the collective mind provides a useful account of how organisational members (such as financial institutions) can act in a tightly coupled way. Tight coupling refers to the ability of the group or organisation to think and act collectively as one unit to manage highly interactive and risky environments, rather than as multiple organisations (Danneels, 2003: 560). A developed collective mind can mitigate risk through careful interconnecting; however, the converse is also true. Systems are said to be tightly coupled when groups or organisations think or act collectively, when delays are not possible and the environment does not allow for redundancy (Danneels 2003: 560; Guillen and Suarez 2010: 262). Within this environment, previous organisational successes can legitimise excess risk taking and frame potential future outcomes in a more positive light than would ordinarily be expected. Patterns will resemble previous successes and insufficient consideration will be given to the probability of alternative scenarios (Shiller 2005). The existence of tight coupling in banking institutions can lead to supposed rational advances that result in flawed assumptions. Ignoring warning signs that highlighted the fragility of a banking system illustrates just how tightly coupled the financial industry can become.

It was this pervasive pressure that prompted Nyberg’s (2011) Groupthink hypothesis in explaining the behaviour in Irish banking institutions. Groupthink, coined by Janis (1982) can be defined as a:

mode of thinking that people engage in when they are deeply involved in a cohesive ‘in-group’, when the members’ striving for unanimity overrides their motivation to realistically appraise alternative courses of action (Janis 1982).

Nyberg’s (2011: iv) report on the Irish banking crisis noted that “pervasive pressure for consensus and a willingness to adopt policies and practices that later proved unsound”

had contributed to a convergence of risk-taking dispositions and decision-making practices within Irish banking institutions. Similarly, Regling and Watson's (2010: 6) preliminary report on the Irish banking crisis argued that "internal procedures were overridden, sometimes systematically" and the tendency to engage in risky behaviour became legitimised. Groupthink represents what Weick and Roberts (1993: 375) refer to as careless interrelating. Under careless interrelating, the group (more often senior management) or organisation engages in careless representations and false assumptions, comprehension declines as members mistakenly think that the environment is more understandable, predictable and explainable than it actually is and disaster results. Within such a group, there is as Janis (1982: 174) put it, an overestimation of the group's power, morality, and invulnerability. Additionally, members may maintain the false assumption that silence means consent (Janis, 1982: 175).

Groupthink (Janis 1982) was evident in the Irish example as Irish financial institutions adapted similar practices and behaviours without any real consideration to their outcomes (i.e. heedless interconnections). Irish financial institutions had developed flawed and highly leveraged business models under the collective belief that "this time it was different" (Reinhart and Rogoff 2009). Indeed the ignorance of the pace of the highly visible warning signs of the rapid credit expansion of the industry, coupled with historically high house prices highlighted how tightly knit the industry had become. What is interesting in the Irish case was that these behaviours appear to have existed on a scale rarely seen before, at financial institution, regulatory and academic levels. It would appear that the banks viewed their surrounding environment in the same way, as they operated within the highly concentrated and defined Irish banking system. There was, as Honohan (2010, p.95) notes, "a collective triumph of hope over reality."

Since strategic decisions have to be implemented for Groupthink to pass over to herding, institutions' management teams had to follow and not question decisions that were being made. Shiller (2005, p.163) argues that in tightly coupled environments, there is a willingness to free-ride information and to suppose that the perceived "experts" have thoroughly thought through the apparent risks associated with a decision. Actions that in "normal" times may seem highly questionable, in the presence of Groupthink will ensure staff and follower co-operation. Much of the decision making undertaken will ignore alternative evidence as a result of the industries' desire to reach consensus. Nyberg (2011, p.86) notes that within the Irish banking system in the lead-

up to 2007 there “was pressure for ‘groupthink’ within the institutions and, possibly, between them as well.”

The Commission considers that this pervasive pressure for consensus may explain why so many different parties in Ireland simultaneously were willing to adopt specific policies and accepted practices that later proved unsound. At the same time, the apparent consensus of banks and authorities around the view that markets remained sound and prospects remained positive gave further comfort to both. A number of banks essentially appear to have followed the example of peer banks in a “herding” fashion; there is little evidence of original critical analysis of the advantages and risks of the policies. (Nyberg 2011, p.iv)

This conformist environment supported an unquestioning environment at senior management level regarding the likely “soft-landing” of the property market (Nyberg 2011, p.87). This soft landing was called into question by Kelly (2006), who argued that a soft landing was something you could walk away from – a systemic failing of the financial system could hardly be described as a soft landing. However, the belief of a soft landing reflected a degree of over-optimism among key actors in the Irish banking sector.

### **Agency Theory**

Agency theory (Jensen and Meckling 1976) refers to a relationship in which one party (the principal) cedes responsibility for performing certain functions to another (the agent). Principal agency theory contends that bank managers must balance competing demands from shareholders and regulators (Harm 2002) and this in turn can feed into loan growth rates (Jiménez and Saurina 2005). Williamson (1963) suggests that managers operate the firm “as to attend to other than merely profitability goals” and says that managers may engage in excessive growth to increase the social presence of the bank and meet the demands of stakeholders. Problems arise when the desires or goals of the principal and agent conflict, when it is difficult for the principal to verify what the agent is actually doing, or when both factors are present simultaneously.

The agency problem between management and external stakeholders may intensify over time, as external stakeholders tend to have less information (information asymmetry) on loan officers and will then tend to rely on overall loan performance (i.e., on asset growth) to evaluate the position of the bank (Berger and Udell 2003). Honohan (2010, p. 28) hinted at agency pressures prevalent in the lead-up to the Irish banking crisis when he highlighted that the pressure of bank management to protect their market share

was driven especially by the unprecedented rapid expansion of foreign-controlled banks into the markets. The agency problem between management and external stakeholders may intensify over time, as external stakeholders tend to have less information on management and will then tend to rely on overall bank performance (i.e., on asset growth) to evaluate the position of the bank. Therefore, it may be value-maximising for external stakeholders to accommodate a decrease in lending standards as asset growth occurs, and to deal with positive and negative non-performing loans (NPLs) during the next economic downturn.

### **Changes in Bank Lending Standards as Drivers of Procyclical Lending**

Another problem inherent in the behaviour of banks, causing them to exhibit procyclicality, is changes in bank lending standards. Minsky (1992, p.9) observed that creditors become more lax about lending standards during times of stability:

In particular, over a protracted period of good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure in which there is large weight to units engaged in speculative and Ponzi finance.

Asea and Blomberg (1998) suggests that there is a systemic tendency for lending standards to vary over the business cycle. Scholars such as Schreft and Owens (1991) found that loan officers have a tendency to tighten lending standards following a cyclical pattern that tends to peak (i.e. the greatest tightening of lending standards) just prior to or during general economic downturns. Similarly, they find that peaks in loan growth, like those seen in Ireland, tend to occur in or around troughs or lower standards of lending.

Weinberg (1995) notes that there are at least two theories as to why lenders may tolerate a lowering of lending standards. One theory is that there is a fundamental imperfection in financial markets because the credit quality of borrowers is difficult and costly to observe. This falls under the heading of information asymmetry, where banks spend resources gathering information on borrower characteristics, but it is difficult for outside observers to verify the information obtained by the bank. Such limits to the flow of information form the basis of much of the recent work in the theory of banking. Limited information, however, does not necessarily imply a bias towards accepting greater risks. Indeed, if providers of funds feel that they are at an informational disadvantage, the cost of funds could be higher than in the case of perfect information. This could have the

effect of making banks less willing to accept risks than they otherwise might be. The second theory suggests that banks' management will make decisions based on the decisions of other leaders and not on independent market evaluations, an observation supported by Rajan (1994). Reduced supervisory toughness or lessened market discipline during an expansion offers another explanation of a decline in credit standards. Bank supervisors were found to soften their loan classification standards and their CAMELS ratings during an expansion (Berger, Kyle and Scalise 2001) and capital market participants were found to exercise less discipline over issues of subordinated debt during relatively good periods (Covitz, Hancock and Kwast 2001). As discussed above, the reduced discipline could come about because agency problems are exacerbated by the lack of data on loan performance problems during an expansion.

### **Bounded Rationality**

Observations by Rötheli (2010) on important determinants of the current financial crisis highlighted the bounded rationality<sup>4</sup> of banks as a key contributor to the credit cycle. Contemporary finance theories posit that the decision-making agent is rational. Rationality in the behavioural economics literature suggests that when agents receive information, they compare it against what is known, update that information if required and make decisions consistent with expected utility theory (Roubini and Mihm 2011; Shiller 2005; Simon 1997; Tversky and Kahneman 1986). However, what is now evident is that these behaviours were inconsistent with the rational perspective and reflected a fundamental failure in the decision-making processing. Patrick Honohan (2008: 3), Governor of the Irish Central Bank, suggested that in an effort to compete in the marketplace, loan to value (LTV) ratios were increased, lending standards and stress testing of loans were relaxed and the reckless lending practices became the *modus operandi du jour*. Honohan (2010a) described Irish bank lending practices as being neither safe nor sound during this time period, and constituting socially harmful risk-taking behaviour. This supported the position that organisations which emphasised risk-taking and advantage-taking behaviour do so even at a risk to stability and growth (Berson et al. 2008). The behavioural decisions literature is immense and an exhaustive summary of it is beyond the scope of this chapter. However, it is important to note that decision making with financial institutions takes place within a web of complex organisation-institution interactions (McNamara and Bromiley 1997; Scott 2008a). Risk

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<sup>4</sup> The psychological factors behind bounded rationality are outside the scope of this literature review, but see Koriati et al. (1980) and Nisbett and Ross (1980) for detailed analysis.

perception and propensity have the capacity to frame risk-taking and risk-seeking behaviour and pose a genuine risk to organisations and, in extreme cases, institutional stability by influencing the credit cycle.

### **Risk Perception as a Driver of Procyclical Lending Behaviour**

Risk perception is a subjective concept characterised by how an event is perceived (Holmes et al. 2011; Rottenstreich and Tversky 1997). A detailed discussion of risk perception is outside the scope of this literature review; please see March and Shapira (1987), Krugman (2009), Tett (2010) for detailed discussion on how risk perception can influence risk taking at both the individual and collective level. Honohan (2010) hinted at this phenomenon as a driver of procyclical lending when he observed that the views of outside bodies such as the IMF and OECD – especially in later years – were not sharply different to the overly optimistic risk perceptions of the banking system as assessed by the Irish Regulator and banks’ management, and suggests there was a reliance on the same database (or talent pool) of knowledge and cognitive ability that provided reassurance. Fitzgerald (2016, p.3) reiterated this view when he stated

The fact that the economy underwent a period of exceptional growth in the second half of the 1990s, when the increase in GNP averaged 9% a year, lulled policymakers into a false sense of security: after 2000 there was a growing feeling that Ireland had found the elixir of eternal growth.

### **Risk Propensity as a Driver of Procyclical Lending Behaviour**

Risk propensity, or a general “behavioural tendency to take or avoid risk in specific domains” (Bresser-Pereira 2010, p. 518), reflects individuals’ or organisations’ tendency to pursue risk-seeking or risk-avoidance strategies in line with the institutional logics of their field and/or profession (Gärting et al. 2009, p.4). Another factor that can influence risky behaviour is group composition (Peterson et al. 1998; Turner and Pratkanis 1998). This has been advanced as an influencer of risky behaviour at the organisational level (Meyer and Jepperson 2000, p.105; Scott 2008b, p.222), with some evidence that group composition, professional affiliation and social identity also influence risky behaviour (Sitkin and Pablo 1992, p.13). The group or professional affiliation approach to risk-taking and decision-making behaviour is evident in much of the herding literature (e.g. Beenen and Pinto 2009; Gärting et al. 2009; Haiss 2010; Raafat et al. 2009; Roszkowski and Davey 2010) that has emerged since the onset of the

financial crisis in 2008. Nyberg made specific reference to the affiliation approach to risk taking by stating:

[B]oard members would be likely to avoid opposing an already existing preferred strategy (for instance, one proposed by a chairman or managing director, particularly in the case of a dominant personality), where they feel a social bond with the rest of the board (for instance, through long and lucrative membership) (2011, p.8)

Over-reliance on technology and economic or financial theories may also result in quantitative models becoming “legitimised and glamorised” and may affect risk-taking propensity (Munir 2011, p.116). Honohan (2010, p.9) remarked that an over-reliance on assessment of systems, structures and models downplayed quantification of risks within Irish institutions, and allowed such systems to gain unquestionable traction, acceptance and legitimacy within the Irish banking environment.

### **Institutional Memory Hypothesis**

Berger and Udell’s (2004) IMH theory hypothesises that an “institutional memory problem” (2004, p.459) exacerbates the cyclical pattern of bank lending; lost institutional memory drives a lending pattern associated with a weakening of the ability of bank lending officers to recognise potential loan problems. This deterioration in loan officer skills results in an easing of credit standards over the bank’s lending cycle, as officers become less able to differentiate lower-quality borrowers from higher-quality borrowers (Berger and Udell 2004). This lost institutional memory can be further compounded by a simultaneous reduction in the capacity of the bank’s internal monitoring system to review loan applications correctly as time passes because there are fewer observed problem loans to use in evaluating loan officers (Berger and Udell 2004).

The main elements of IMH as defined by Berger and Udell are:

1. Bank-lending patterns tended to track the business cycle closely i.e. lending increased significantly during a business cycle expansion and then fell considerably during a downturn, as evidenced in the Irish context.
2. Loan officers’ skills deteriorating over time. This change reduced loan stress testing significantly during expansionary periods and reduced lending during economic contractions severely. This was a consistent theme throughout the three government-commissioned reports.

3. IMH is more applicable to retail bank lending that relies on soft-information intensive loans where the judgement of the loan officer is called into account. IMH illuminates why prudential risk management regimes develop into sales-driven cultures. This was the experience of the main retail banks in the lead-up to the Irish financial crisis (Honohan 2010; Nyberg 2011, Regling and Watson 2010).

IMH acknowledges the role of external stakeholders over the course of the bank's lending cycle. Stakeholders' (e.g. shareholders, regulators, supervisors etc.) ability to assess and regulate bank managers may also be significantly weakened as time moves on from the bank's last bust, due to the absence of observed loan performance problems. IMH may help explain bank lending behaviour over the aggregate cycle because banks tend to experience problem loans consecutively. Berger and Udell (2004) argue that the loss of institutional memory can have a number of adverse consequences. First, it can exacerbate the business cycle and increase systemic risk by fuelling procyclical lending. Second, procyclical lending behaviour can result in a substantial misallocation of resources if a significant number of negative net present value (NPV) loans are granted during an economic expansion period. This becomes an even bigger problem in instances where there is sector-concentrated lending, e.g. the construction industry. The implication for banks is that the performance (or non-performance) of the loans in its portfolio will tend to be highly correlated. In the face of negative economic conditions in a specific sector, the bank would face declining asset quality in a large share of its loan book (CBI 2007). Positive NPV loans are in turn denied during a downturn because early in a bank's lending cycle (i.e., immediately after an economic downturn) the lessons are still vivid in the memory of bank management as they experience the "post realisation of poor lending decisions" (Berger and Udell 2004, p. 461). And third, the cyclicity of problem loans may make it difficult for government regulators and supervisors, as well as other external stakeholders, to discipline banks because of the lagged nature of problem loans.

This insight is further reaffirmed by Rötheli (2010), who argued that the longer a boom lasts, the younger and less experienced are the individuals in management positions of banks who are responsible for lending decisions. Rötheli (2010) argues that loan officers will not yet have experienced a major setback during their career and tend to underestimate credit default risks. More experienced decision makers who warn of the

build-up of risks find themselves accused of failing to understand the signs of the time and of dragging their feet. Fearing that they will be pushed aside, they often simply follow the trend. The tendency toward excessive risk taking during a boom is further encouraged by the typical compensation scheme that links banker's incomes to current profits of the bank (see Rajan 1994; Kroszner 2008).

### **Banking Regulations and Practices as Drivers of Procyclical Lending**

The primary banking regulations and practices identified in the literature as drivers of procyclicality include capital regulation and loan-loss provisioning regulation and practices. (e.g. Berger and Udell 1994; Hancock and Wilcox 1994; Peek and Rosengren 1995; Hancock, Laing and Wilcox 1995; Shrieves and Dahl 1995; Furfine 2001; Goodhart et al. 2004; Bouvatier and Lepetit 2008).

### **Procyclical Capital Regulation**

Research has shown that bank capital regulation has a strong procyclical effect on lending behaviour, and the more sophisticated and risk-sensitive the regulation, the greater the probability of procyclicality becoming a problem (Suarina 2009b; Goodhart et al. 2004; Bouvatier and Lepetit 2008). There is an argument that linking capital charges to asset risk may exacerbate business cycle fluctuations (see Danielsson et al. 2001; Kashyap and Stein 2004; Repullo and Suarez 2012). The reduction of a bank's capital buffers below minimum capital requirements during recessionary periods can lead to a contraction of credit supply for the bank. Even when banks are meeting minimum capital requirements, near low-capitalised banks may constrict credit standards in order to reduce the risk of violating capital regulation. Several studies have researched the behaviour of banks' capital regulation and lending standards in order to explain credit fluctuations. Jokipii and Milne (2008) examine the relationship between European bank capital buffers and the business cycle. Their research compares behaviour in different sub-sample groups of countries and for different groups of banks. They find a significant negative relationship between bank buffers and the rate of GDP growth for German, Spanish and Norwegian banks respectively. Their findings, similar to previous literature (see Ayuso et al. 2004; Lindquist 2004; Stoltz and Wedow 2005), are further supported by studies undertaken by Bikker and Metzmakers (2004), who carried out a cross-country analysis of bank capital buffers for 29 OECD countries. Using the aggregate OECD database they find a negative relationship between capital buffers and the economic cycle.

Many empirical studies on Basel II have highlighted the significant swings in minimum capital over the course of a business cycle. Many of these studies evaluate the likely cyclical patterns of capital charges under Basel II by performing numerical simulations. Ervin and Wilde (2001), who assume a hypothetical portfolio of BBB-rated borrowers, conclude that a bank capitalised at 8 per cent in January 1990 would have experienced a fall in regulatory capital to 6.88 per cent under the IRB approaches in subsequent years. In a similar vein, Kashyap and Stein (2004) base their simulation on a portfolio of borrowers who at the time had a public rating from S&P or KMV, studying the period from December 1998 to December 2002, an interval that was marked by pronounced economic slowdowns in both the U.S. and Europe. Their results show that for an average portfolio, across both Europe and North America, increases in capital charges are generally in the range of 30 per cent to 45 per cent over this period. A different approach is taken by Carling et al. (2002), who directly estimate the quality distribution of a major Norwegian bank's credit portfolio. They show that macroeconomic conditions have a significant impact on borrowers' probability of default (PD) and on regulatory capital under the Basel II IRB approaches, enforcing a procyclical pattern of capital buffer management by the bank.

### **Procyclical Loan-Loss Provisioning Practices**

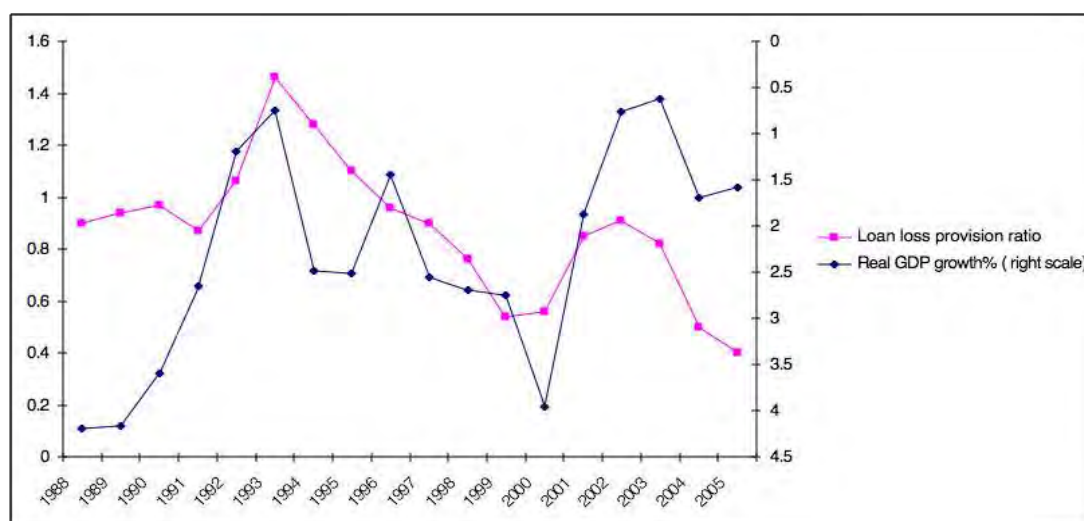
Ahmed et al. (1998) explain that the creation of provisions for impaired loans leads to a charge on a bank's current profits through its profit and loss account. In addition, it involves a write-down in the net asset value of the bank as a result of the reduction in the value of its loans – thus loan-loss provisions are a relatively large accrual for commercial banks. Loan-loss provisions also have a significant impact on banks' earnings and regulatory capital and play an important role in providing adequate buffers (see Borio and Lowe 2001; Bikker and Hu 2002; Laeven and Majnoni 2003, Goodhart et al. 2012). Ahmed et al. (1998) also stipulate that bank regulators will view adequate loan-loss provisioning as important: a shortfall in provisioning implies that a bank's capital adequacy ratios are overstating the ability of the bank to absorb unexpected losses.

Borio and Lowe (2001 p.39) note, in principle, that provisioning should lead to a more accurate picture of both a bank's earnings and its assets than would be the case if all loans were measured at their current value. Yet, empirical studies (see Laeven and Majnoni 2003; Bikker and Metzmakers 2005; Bouvatier and Lepetit 2008; Beatty and

Liao 2009; Ahmed, Takeda and Thomas, 1999; Kim and Kross, 1998) have shown that many banks around the world delayed provisioning for bad loans until after the cyclical downturns had already set in. At this point, the impact of the economic cycle on banks' income and capital is magnified. The consequent potential for loan-loss provisioning to have significant economic effects, including by contributing to procyclicality, has been documented in a number of studies Cavallo and Majnoni (2002) have shown with empirical evidence that banks tend to undervalue risk in good times and systematically under-provision. Further, losses emerge during economic downturns, increasing provisioning and affecting profit. As Goodhart and Persaud (2012) posit, economic upturns are the most appropriate times for banks to make provisions for future bad loans. However, the incentives are for the banks to respond to lowering margins of a maturing boom market by chasing after the marginal borrower – sometimes at the cost of lower lending standards and increased risk taking.

Borio and Lowe (2001) note that in many countries, banks' loan-loss accounting regimes are required to follow an “incurred loss” model to reflect the outcome of events that took place before the balance sheet date, and should not attempt to reflect events that have not yet occurred. The timing and measurement of losses are therefore based on estimating losses that have been incurred as of the reporting date. Borio and Lowe (2001) further stipulate that this makes loan-loss provisioning a difficult task and forces provisioning in general to be “backward” looking. Under the incurred loss model, provisions for loan-losses can only be established when a loss event has been identified. Lending mistakes are more prevalent during upturns; most tend to be made at the height of strong economic growth. This is also when the lowest level of provisions are set aside. The deterioration of the quality of bank loan portfolios during economic downturns inevitably increases banks' risk exposure. Loss events are more frequent during economic downturns, thus provisioning must increase at the same time as banks' revenues are declining. This in turn affects the level of capital requirements – exactly when capital becomes more expensive or simply unavailable to weaker institutions, and forces a tightening on lending standards due to requirements to hold higher capital requirements during economic downturns (Laeven and Majnoni 2011). Similar results were noted in a study undertaken by the European Central Bank for a sample of European banks (2001). Pronounced procyclicality is illustrated by the strong inverse relationship between GDP growth and bank provisioning (Figure 2.1). (see the De Larosiere report 2009 and Turner Review – (FSA 2009) for further discussion).

**Figure 2.1: Loan-loss provisioning tends to have procyclical effects** <sup>5</sup>



Source: OECD Economic Surveys: Euro Area 2009 Number 83, author's own calculations.

### **Supervisory and Regulatory Failures as Drivers of Procyclical Lending Behaviour**

As Berger, Kyle and Scalise (2001) observe, changes in supervisory and regulatory policy may have significant effects on economic health if banks respond by altering their lending behaviour. Schoenmaker (2015) notes that the Regling and Watson (2010), Honohan (2010) and the Nyberg (2011) reports all concluded that not only macro factors, but also weak supervisory and regulatory approaches played an important role in driving procyclical lending behaviour in the years leading up to the Irish banking crisis. Reduced or increased supervisory or regulatory toughness or lessened market discipline during an expansion or recession period offers another explanation of a change in lending practices by banks. Berger, Kyle and Scalise (2001) observed that bank supervisors were found to soften their loan classification standards and their CAMELS ratings during an expansion, and that capital market participants were found to exercise less discipline over issues of subordinated debt during relatively good periods (Covitz, Hancock and Kwast 2001). The reduced discipline could come about because agency problems are exacerbated by the lack of data on loan performance issues during an expansion. Some are also concerned that the new Basel capital regulations could introduce more procyclicality in lending to the extent that banks adopt the internal ratings-based (IRB) approach. This could occur because individual

<sup>5</sup> Weighted average for eight euro area countries, per cent. This is a weighted average based on 2000 GDP and purchasing power parity for Finland, France, Germany, Italy, Netherlands, Portugal and Spain.

borrower ratings may depend on assessed probability of default, which may be correlated with the business cycle (Altman and Saunders 2001, Zsomboki 2002).

### **Regulatory Capture**

Despite the diverse range of research foci, another common theme that emerges in the commissioned reports and wider literature is the dominant power that the banks had acquired over the time period. This power goes to the heart of why the Irish banking system was brought to the brink of collapse following the failure of Lehman Brothers on 15 September 2008. The literature on the financial crisis illustrates how banking institutions became powerful leaders in their own right (Pozner et al. 2010, p. 191), resulting in the emergence of *mirroring*<sup>6</sup> at the institutional level. Regulatory agencies and governments applauded the innovation and intellect of the industry (FCIC Report 2011) as well as the perceived financial contribution of that innovation to economic growth, further legitimising the sense of what Stein (2003) refers to as omnipotence (the view that banking institutions were all-powerful) and omniscience (the feeling that they had complete knowledge and understanding of their knowledge domain).

The perceived contribution that banking institutions were making to economic growth combined with their proximity to local corridors of power (Edelman and Suchman 1997) enhanced the legitimacy and the *mirroring* of their behaviour. Yet examining the impact of the crisis retrospectively, the argument that business activities were considered depoliticised seems inconsistent with the reality of what happened. The political power and influence of banking institutions was succinctly stated by Honohan (2010, p. 16): “regulatory authorities were extremely deferential and accommodating, insufficiently challenging and not persistent enough.”

Hardy (2006) suggests that in understanding the development of a financial regulatory and supervisory regime, an element to acknowledge is the possibility that regulated institutions may exercise excessive influence on the Regulator – what is known as regulatory capture. Regulatory capture, as defined by Stigler (1971 p.3), occurs when regulation is “acquired by the industry and is designed and operated primarily for its benefit.” Goodhart (2005, p.15) suggests that this pursuit of capturing a regulator will be further compounded by the fact that bankers are concerned for their own individual

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<sup>6</sup> Mirroring is defined as recognising and applauding exhibitionist behaviour and depicts how followers reinforce the need of the leader for continual recognition and admiration.

institutions and not for the welfare of the banking system as a whole. Makkai and Braithwaite (1992) note that capture is significant in discussions about why regulatory agencies fail to enforce law against business offenders and argue that there are three distinct forms of capture: (1) identifications with the industry, (2) sympathy with the industry and the problems they confront, and (3) absence of toughness. Baker (2010) builds on Bernstein's (1955) notion that regulatory agencies go through a life cycle that ultimately results in public interest being crowded out in the presence of the more powerful regulated industry. He argues that regulatory capture is not a sudden occurrence but evolves through "a life cycle that moved in parallel with the financial boom" (p. 648). Considering the similar fate of the Irish banking system in the financial crisis fallout, this may also be an argument that applies to Ireland.

Edelman and Suchman (1997, p.489) propose that the "ability of organisations to shape the legal environment does not end with the passage of legislation but rather continues on into the implementation phase as well." Hardy (2006) further contends that regulatory capture may not necessarily imply incompetent regulation, and indeed a 'captured' regulator may enforce tight regulation – if desired by the regulated institutions. Makkai and Braithwaite (1992) observe that when captured, the Regulator is effectively adapting its regime to suit the dominant regulated institutions and in sympathy with the industry. In a similar vein, Olson's (1965, p.1) theory of collective action argues that "groups of individuals with common interest are expected to act on behalf of their personal interests" (see also Laffont and Tirole 1991). Olson (1965) argues that members of a group, such as banks and their regulators within a banking sector, will seek to maximise their personal prosperity rather than that of the group or sector, unless there is "coercion" to do so, or there exists some incentive for individual members of the groups that will help them bear the costs of burdens involved in the achievement of the group objective (2003, p.2). Laeven and Majnoni (2003) contend that for a smaller group, like a highly concentrated industry, the smaller the group, the higher the per head capita stake and thus the greater the incentive for its members to affect the regulatory outcomes to their benefit. This argument is also supported by Becker who argues that highly concentrated groups have more power to exert and further argues "[t]he economic approach to political behaviour assumes that actual political choices are determined by the efforts of individuals and groups to further their own interests" (1983, p.371).

Connor et al. (2000) are adamant in their argument that the highly concentrated and close-knit Irish banking system from the late 1990s to mid-2000s provided an arena for self-interested activity and made for an environment that facilitated the close relationship between the banks the Regulator and the Government. Honohan (2010) notes the serious disincentives for politicians to take action in the political arena. Despite having the scope to alleviate the risks of a boom–bust cycle through prudent fiscal policy, official policy added fuel to the fire (Regling and Watson 2010). The high concentration level of the Irish banking system and the need to maintain confidence and remain legitimate amongst its peers suggests that Irish financial institutions had the ability to exert a dominant influence over the Irish Regulator. Indeed, the literature (Hardy 2006) has indicated that regulatory capture by financial institutions is in fact a significant phenomenon, even when regulators are not fully captured. Honohan (2010, p.17) argues that regulatory capture in the Irish context did not rely primarily on revolving door theory and/or “gifts or entertainment,” but on pressure applied to government officials, which was then focused on the Regulator taking a “light touch approach”.

### **2.3 Irish Banking Regulatory Landscape Pre Banking Crisis**

This section highlights some of the more recent discussions in the literature on the capital and provisioning regulatory landscape in the lead-up to and during the Irish banking crisis. Section 2.3.1 primarily focuses on the evolution of the capital framework, while section 2.2.2 discusses the evolution of the loan loss provisioning regulatory environment. In turn, section 2.3.3 highlights some of the work that has been undertaken in the aftermath of the GFC by policymakers to improve banks’ capability to absorb shocks and make financial regulatory administration less procyclical.

#### ***2.3.1 Evolution of Capital Regulation***

Nyberg (2011) made specific reference to the procyclical nature of some aspects of the regulatory framework under which Irish banks operated in the lead-up to the Irish banking crisis. One of those regulatory frameworks was the capital framework, in which he noted that as a result of the introduction of Basel II there developed (2011, p.45):

...an unwarranted sense of security among bank leadership, as a movement towards apparently more sophisticated systems led to neglect of the basics.

Since the late 1980s, the regulatory philosophy underpinning Europe's financial supervision regime had been driven by the Basel Capital Accord — minimum capital requirements became the main regulatory variables to limit the risk exposures of banks and to ensure a certain level of solvency (Salas and Saurina 2003). A brief look at the evolution of capital requirements in the Basel accords framework highlights the ways in which the changes in capital requirements have reflected developing perceptions among policymakers regarding the extent of financial stability risks. The underlying rationale for minimum capital requirements is a familiar story<sup>7</sup> and as Ennis and Price (2011) point out the development of the Basel accords was an acknowledgement that macroeconomic cycles had been changing in recent decades. Many scholars, such as Goodhart et al. 2004; Bouvatier and Lepetit 2008, have illuminated that bank capital regulation is inherently procyclical, and the more sophisticated and risk-sensitive the regulation, the greater the probability of procyclicality becoming a problem. In its critique of the regulatory failures of the financial crisis, the de Larosi re report, (2009, p.9) concluded that although it would be wrong to blame Basel II rules *per se* for being one of the major causes of the crisis, nevertheless it had significant contribution towards strengthening procyclicality of the financial system in the lead-up to the GFC and “led to too little capital being required” (p.16).

Importantly, from an Irish perspective Nyberg (2010) highlighted the procyclical nature of some aspects of the regulatory framework during the time period. Basel I, that is, the 1988 Basel Accord, was primarily focused on credit risk and appropriate risk weighting of assets. As the Bank of International Settlements (2014) indicates, the purpose of Basel I was to create an international standard that banks and banking regulators alike could use in determining the capital that banks needed to cover their financial and operational risks. As highlighted in Table 2.1 below, the Basel I accord was a simple framework based on a few risk areas identified in four broad asset categories: sovereigns, banks, mortgages, and corporations. Loll (2009) notes that the somewhat arbitrary risk weights required that a loan for a secure blue chip company was treated the same as a retail customer's overdraft facility. This regime placed a constraint on banks, as they were forced to hold capital in excess of what they would hold voluntarily (i.e. economic capital). This perceived regulatory constraint on bank operations incentivized banks to engage in arbitrage. Johnson (1999) shows that banks could do this in two ways; first, banks moved towards riskier assets within the same risk-

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<sup>7</sup> See, for example, Prescott (2001)

weighted category as they sought higher yields. Secondly, assets were moved off balance sheets and securitised, reducing some of the risk and creating the seed of the so-called originate and distribute model.

**Table 2.1: The Basel I accord**

| Accord             | Definition / Characteristics  |
|--------------------|---|
| The Basel I accord | <p><i>The 1988 accord set minimum capital requirements based on a ratio of capital to risk-weighted assets of 8%. Assets were risk-weighted according to the identity of the borrower.</i></p> <ul style="list-style-type: none"> <li>• <i>Consider a bank with €1bn in government bonds, €2bn secured by mortgages, and €3bn of commercial loans. Risk weighting adjusts the value of an asset for risk simply by multiplying it by a factor that reflects its risk. Low-risk assets are multiplied by a low number and high-risk assets by 100% (i.e., 1).</i></li> <li>• <i>The risk weightings used are 0% for the government bonds (a risk-free asset), 50% for mortgages, and 100% for corporate loans. The bank's risk-weighted assets are <math>0 \times \text{€}1\text{bn} + 0.5 \times \text{€}2\text{bn} + 1.0 \times \text{€}3\text{bn} = \text{€}4\text{bn}</math>.</i></li> </ul> <p><i>A 100% risk weighting meant that capital constituting the full 8% of the value of the loan must be held against it.</i></p> |

The Basel Committee indicated in 1998 that it was reviewing the Accord as it sought to develop more appropriate rules in response to increasing objections to Basel I, although the BIS (2014) notes that the Accord was always intended to evolve over time and the movement to Basel II was a natural progression. This observation is in line with suggestions from Honohan (2008a, p.9) who notes that the procyclical effects that rules-based regulation may induce and the rules of capital regimes, such as Basel, do not represent a sufficiently precise tool for risk management, and that addressing these features is an “effort with no end.” Thus, after much discussion, debate and research, in June 2004 a ‘revised framework’ known as the Basel II accord was introduced to keep pace with the increased sophistication of lenders' operations and risk management and to overcome some of the distortions caused by the lack of granularity in Basel I (see Table 2.2). As with Basel I, Basel II was a voluntary agreement between the banking authorities of the major developed countries. In Europe the provisions of Basel II were given legal effect via the EU Capital Requirements Directive (CRD). In the EU, all deposit-taking institutions (i.e., all retail banks) had to implement Basel II by no later than 1 January 2008.

Table 2.2: Basel II goals

| Accord   | Definition / Characteristics  |
|--|---|
| <b>When introduced, the key aims of Basel II were:</b> | <ol style="list-style-type: none"> <li>1) <i>To make regulatory capital more risk sensitive.(i.e. reduce the gap between regulatory and economic capital)</i></li> <li>2) <i>To improve the consistency of capital regulations internationally</i></li> <li>3) <i>To promote enhanced risk-management practices.</i></li> <li>4) <i>To build in rewards for stronger and more accurate risk measurement.</i></li> </ol> |

Source: adapted from Kelleher (2009)

The new regime sought to set minimum capital requirements, and to develop and expand the standardised rules set out in the 1988 Accord. While Basel I had required lenders to calculate a minimum level of capital based on a single risk weight for each of a limited number of asset classes, for example, mortgages, consumer lending, corporate loans, exposures to sovereign, Basel II attempted to move beyond this by allowing some lenders to use their own risk measurement models to calculate required regulatory capital. The Accord provided a choice of ways to calculate required capital, namely:

1. The Standardised Approach; and
2. The Internal Ratings Based Approach (IRB Approach).

As the ECB (2005) observed, the simplest method was the standardised approach, which provides set risk weights for some asset classes and requires the weight on others to be determined by the public credit rating assigned to the particular asset by the rating agencies. The standard approach was essentially a more advanced version of Basel I, which linked weights for each exposure according to ratings issued by external credit rating agencies. Those without the resources to operate in-house models adopted the “standardised approach”. As the ECB (2005) note, when capital requirements are calculated using the standardised approach, asset weightings are determined by rating agencies and therefore are procyclical.<sup>8</sup>

As Das and Sy (2012)<sup>9</sup> note, the IRB approach allowed banks to determine risk weights using their own internal ratings systems based on historical data, after supervisory

<sup>8</sup> Recent theoretical research on the ratings process suggests that rating agencies are incentivised to implement “procyclical rating policies” such that rating standards become stricter in recessions than in expansions (Bar-Isaac and Shapiro 2012; Bolton et al. 2012).

<sup>9</sup> In 2009 the UK’s Financial Services Authority (FSA) began testing the consistency of how banks calculate risk weightings. A hypothetical portfolio test was undertaken where a group of 13 banks were given a hypothetical loan book and asked to calculate the Probability of Default (PD). There was a vast

approval. The aim was to align regulatory capital more closely with underlying risk exposure and thereby to reduce the incentives for regulatory arbitrage. The IRB approach was built on three risk parameters: probability of default, expected loss given default, and exposure at default. As Table 2.3 highlights, estimates of these are fed into a formula which determines the amount of capital that should be held. Das and Sy (2012) suggest that the IRB approach allowed banks considerable discretion in reporting their own average probability of default, the exposure of default and the loss-given default.

**Table 2.3: Advanced internal rating approach**

| Accord                                   | Definition / Characteristics  |
|--|---|
| <b>Advanced Internal Rating Approach</b> | <p><i>The IRB approach was built on three risk parameters:</i></p> <ol style="list-style-type: none"> <li>1) <i>The probability of default (PD)</i></li> <li>2) <i>The exposure of default (EAD)</i></li> <li>3) <i>The loss-given default (LGD), which describes the loss rate on the exposure in the event of default.</i></li> </ol> <p><i>The level of regulatory capital required to be held by a bank is based on the amount of loss it is expected to exceed, which in turn is based on a small, pre-defined probability. Capital is set according to the bank's unexpected loss (UL), which is defined as the gap between the bank's expected loss (EL) and Value-at-Risk (VaR) at a certain confidence level, over a one-year horizon (Das and Sy 2012, p.7).</i></p> <p><i>EL = PD x EAD x LGD</i></p> <p><i>The capital requirement (K) is based on PD and LGD. Risk-weighted assets (RWA) are expressed as a function of the capital requirement and the minimum capital requirement of 8 per cent.</i></p> |

The calculation of capital requirements under the IRB approach involves banks using their own estimates of all three risk components – which are all affected by the economic cycle. As the ECB (2005) explains, an economic downturn may lead to an increase in banks' estimates of a borrower's probability of default. If banks use a short-term assessment horizon, such a "point-in-time" rating changes as a result of variation in the credit quality over the course of the business cycle, i.e. it is cyclical. By contrast, a "through-the-cycle" rating process requires a longer-term analysis of borrowers' default risk on the basis of a scenario which takes into account the effect of, for example, an economic slowdown; again it is affected by movement in the economic cycle. When calculating loss-given default, the losses that occur in the event of a default

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range of PDs supplied for the same exposures, indicating inconsistencies associated with the banks' rating approach (see FSA March 1, 2010).

may increase in an economic downturn, as it has historically been observed that recoveries from defaulted debt are lower in a recessionary environment. Third, the exposure at default of a loan may also increase, as borrowers might, during a downturn, make full use of their credit lines (Jimenez et al. 2012). The above-mentioned arguments indicate that in an economic downturn the higher risk sensitivity of banks' rating systems may lead to increases in regulatory capital requirements.

### **Procyclical concerns with Basel II**

During Basel II discussions, researchers voiced concerns about the potential procyclicality of the new capital framework (see for e.g. Taylor and Goodhart, 2006). Many observers (see for example Altman and Saunders 2001, Zsomboki 2002) highlighted concerns that the new Basel II capital regulations could introduce more procyclicality in lending as banks adopt the internal ratings-based (IRB) approach. This could occur because individual borrower ratings may depend on assessed probability of default, which may be correlated with the business cycle. Further research by Danielsson, et al, (2001); Goodhart, Hofmann and Segoviano (2004); Goodhart and Taylor (2006) reemphasised this point.

Blundell-Wignall et al. (2008) highlighted these fears further when noting that one of the factors that accelerated the phenomenal growth of mortgage-backed securities from 2004 onwards was a very tempting arbitrage opportunity as a result of the publication of the Basel II rules, which rational market participants anticipated. The UK Treasury (HM Treasury 2009) notes that the banks that failed in the UK did so by becoming overleveraged and inadequately capitalised. In particular, capital adequacy requirements on property-related lending were much too light and were shown to be inadequate when the riskiness of lending strategies became clear. A House of Lords report (2009) stated that Basel II rules treat favourably factors associated with credit growth, including inflated collateral values, positive ratings by ratings agencies and limited loan-loss provisions. The same report also notes that reliance on internal models for the measurement of capital can lead to banks underestimating risk. As a result, Basel capital requirements tend to fall in periods of credit growth as the economy expands, accentuating a boom. Similar sentiments are expressed in the de Larsoiére report (2009), which makes explicit reference to the tendency of Basel II to generate procyclical behaviour – suggesting that a “fundamental review” of the entire Basel framework was required.

A second key financial reporting standard change during the period identified by Nyberg (2011, p42) was the required adoption by all listed EU companies of new IFRS<sup>10</sup>[1] accounting rules applicable, inter alia, to loan-loss provisioning for accounting periods beginning in 2005. As Nyberg noted, these new accounting rules proved to be procyclical for Irish institutions and had important consequences for them. This concept is discussed further in the next section.

### ***2.3.2 Evolution of Provisioning Practices***

Prior to 2005 Irish banks loan loss provisioning practices were governed by Statement of Recommended Accounting Practices: Banks (SORPB). From 2005 EU banks adopted IFRS, under which loan-loss provisioning was to be regulated by international accounting standard<sup>11</sup> (IAS) 39. Under these new rules, Ireland's impairment loan-loss provisioning regime shifted to the 'incurred loss' approach to provisioning, specifically outlined in IAS 39 (Financial Regulator 2009, p.5). According to IAS 39, impaired losses are incurred if 'objective evidence of impairment exists' (Financial Regulator 2009, p.14). Impairment allowances must be raised for incurred losses that can be identified as existing at the reporting date. Expected losses as a result of future events, no matter how likely, may not be considered.

One of the most important differences between the two regimes for Irish banks was that the old regime permitted general provisioning for loan losses, whereas IAS 39 imposed a requirement that loan-loss provisioning be supported by objective evidence that a loss has been incurred. It explicitly stated that losses expected as a result of future events, no matter how likely, are not recognised and thereby effectively eliminated general loan-loss provisioning, as banks could no longer add to them. The ability of banks' managers to exercise discretion in determining general provisions became limited. As O Hanlon (2011) argues, while the change from the SORPB regime to the IAS 39 regime was not a strict change from an unrestricted general-provisioning regime to one that excluded the exercise of managerial judgment, it did mean that finding the data and establishing

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<sup>10</sup> International Financial Reporting Standards, IFRS or IAS, and in particular IAS 39; Financial Instruments: Recognition and Measurement.

<sup>11</sup> In March 2002, the European Parliament (in line with the EU goal to achieve capital market integration and convergence of financial reporting not only across EU, but also between Europe and the rest of the world) passed legislation requiring all firms listed on stock exchanges of European member states to apply IFRS when preparing their financial statements for fiscal years beginning on or after January 1, 2005.

the correlations could potentially prove challenging for management. In its critique of the regulatory failures of the incurred loss approach, the European Commission (2010 p.13) observed that provisioning under the new regime began to display a dangerous ‘time lag’ effect. This time lag was generated by banks not being able make provisions for possible losses in the absence of evidence that these losses were actually occurring.

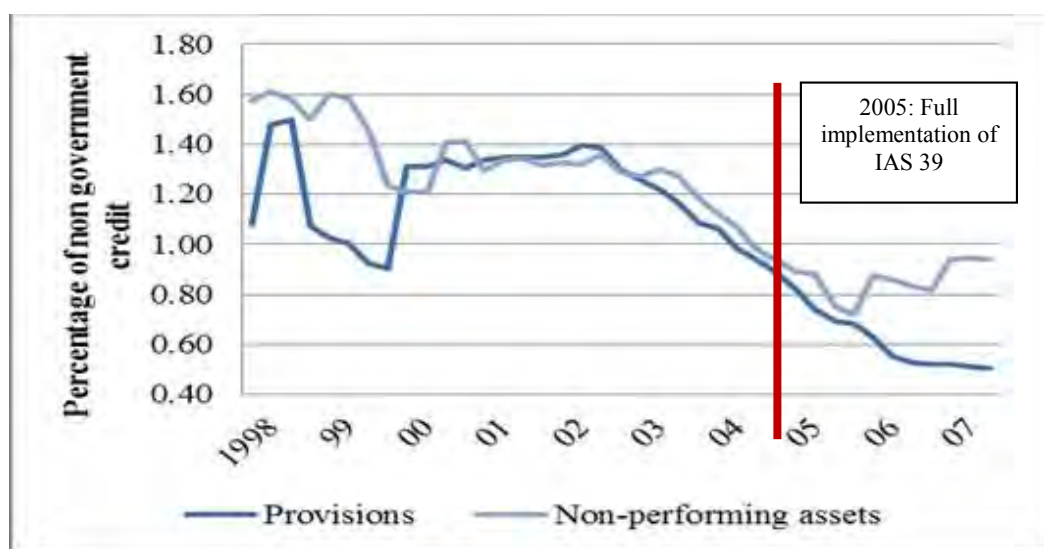
Further concerns about the delayed effect of the IAS 39 model were highlighted in the *Report of the Financial Crisis Advisory Group* (Financial Crisis Advisory Group, 2009), aimed at advising the IASB and the Financial Accounting Standards Board (FASB) on the implications of the financial and banking crisis of 2007 onwards. The report referred to the belief that the incurred-loss method of loan-loss provisioning had delayed the recognition of loan losses:

While the crisis may have led to some understatement of the value of mark-to-market assets, it is important to recognize that, in most countries, a majority of bank assets are still valued at historic cost using the amortized cost basis. Those assets are not marked to market and are not adjusted for market liquidity. By now it seems clear that the overall value of these assets has not been understated – but overstated. The incurred loss model for loan-loss provisioning and difficulties in applying the model – in particular, identifying appropriate trigger points for loss recognition – in many instances has delayed the recognition of losses on loan portfolios. (page 4)

As Kelleher (2009) notes, this highly procyclical accounting convention proved to be damaging in the Irish case, and instead of encouraging prudential provisioning regimes within a high credit environment, it encouraged banks to expand lending and introduced a dangerous time lag in the event of provision recognition. Looking to Figure 2.2 this ‘time lag’ is clear. Although non-performing assets began to pick up post 2005, provisions continued to fall, and did not accurately reflect the increase in NPLs that was about to occur. Both the Honohan (2010a) and Nyberg (2011) reports argued that, if it had been necessary, despite the IFRS constraints, banks could have been required by the Financial Regulator to increase provisioning. Honohan (2010a:106) notes that the changes to IFRS (IAS39) of 2005 were interpreted to limit the degree to which specific provisions could be taken in respect of loans where no impairment had occurred. But provisions could have been taken if there was any *objective evidence* of impairment. In later stages of the boom, when the relevant property markets had already begun to turn down, the Financial Regulator could have required more provisions to be taken. Instead, as the Nyberg report (2011:43) notes, in the benign economic environment before 2007,

the banks reduced their loan loss provisions, reported higher profits and gained additional lending capacity. Banks were restricted from making prudent through-the-cycle general provisions, or anticipating future losses in their loan books, particularly in relation to (secured) property lending in a rising property market. The report of the Joint Committee of Inquiry into the Banking Crisis (2016, p.8) bluntly noted that “IAS 39 delayed the recognition of loan loss provisions when the downturn came.”

**Figure 2.2: Bad debt provisions (as a percentage of P&L) all Irish banks 2000-2008**



Source: Adapted from Kelleher (2009), Central Bank of Ireland.

In summary, the above discussion provided a background to the main accounting changes that affected some of the key risk indicators of the main Irish retail banks in the late 1990s and mid-2000s, mainly Basel 1 (1988), Basel II (2004) and IAS 39 (2005). As Goodhart (2009, p.11) notes

Much analytical and empirical work was done to warn that the combined introduction of Basel II and the new IFRS ‘mark-to-market’ accounting system would have a significant, and potentially dangerous, impact on the procyclical variation of banks’ required capital adequacy ratios.

### 2.3.3 *Countercyclical Banking Regulation in the Post Crisis Environment*

This section highlights some of the work that has been undertaken in the aftermath of the GFC by policymakers to improve banks’ capability to absorb shocks and make financial regulatory administration less procyclical. The first subsection discusses the evolution of new capital regulation, known as the Basel III framework, which covers the

regulation, supervision and risk management of the banking sector and is the cornerstone of the G-20 regulatory reform agenda. The subsequent sub sections discuss existing discussions in the literature of countercyclical provisioning as a potential financial instrument. Although it has been written about in the literature extensively, the only concrete example of a countercyclical regulatory tool is the so-called “dynamic provisioning” (DP) adopted by Spain in 2000. This following sub sections highlight variations of DP’s use in Uruguay, Bolivia and Peru.

### **Capital Regulation**

In April 2009, the G-20 confirmed the consensus that had been emerging since the Washington Fall 2008 summit that a system of capital buffers should be instigated and that capital requirements should be countercyclical (Wezel, Chan-Lau, and Columba, 2012). The G-20 (2009) recommendations were based on the report by the Financial Stability Forum (2009) on addressing procyclicality in the financial system. Other sources of idea generation were the Turner Review of the Financial Services Authority (2009), which advocated in capital requirements – overt countercyclicality in order to offset the impact of unavoidable procyclicality elsewhere, and the Eleventh Geneva Report on the fundamentals of financial regulation (Brunnermeier et al.2009), which stated that the main problem with Basel II was that it ignored macroprudential risk and lacked a countercyclical element. The G-20 also asked the Basel Committee for Banking Supervision (BCBS) to produce guidelines to harmonise the definition of capital by the end of 2009 and to issue recommendations on minimum capital requirements by 2010.

The recommendations that the BCBS published in December 2010 became known as the Basel III framework, which covers the regulation, supervision and risk management of the banking sector and is the cornerstone of the G-20 regulatory reform agenda. Following a co-ordinated effort by 27 countries, the BCBS issued the final rules for the Basel III framework in 2011 (BIS 2011). This framework explicitly provides for measures with the macroprudential goal of mitigating credit cycles. These include the aforementioned countercyclical capital buffer and stressed inputs for internal models for counterparty credit risk. Basel III also backstops the capital requirements with a new leverage ratio and requires financial institutions to increase their ability to withstand liquidity shocks in downturn conditions (manifested in the Liquidity Coverage Ratio and Net Stable Funding Ratio). A comprehensive review of these new rules by the BIS

in 2012 found that Basel III was substantially more comprehensive in scope than its predecessor, Basel II, and it combines micro- and macroprudential reforms that address both institution- and system-level risks (BIS 2012, p.77). Some of the most important highlights of the report were:

- Basel III includes new elements to boost banks' capital base. First, it incorporates a significant expansion in risk coverage, which increases risk-weighted assets. Specifically, it targets the instruments and markets that were most problematic during the crisis, that is, trading book exposures, counterparty credit risk and securitised assets. Second, and critically, Basel III tightens the definition of eligible capital, with a stronger focus on common equity. This represents a move away from the complex hybrid of capital instruments that have proved to be incapable of absorbing losses in periods of stress.
- Moreover, the definition of common equity is more restrictive under Basel III than under Basel II. Specifically, Basel III calculates common equity after the bank's balance sheet has been adjusted to exclude assets that cannot be liquidated when the bank runs into trouble (for example goodwill and deferred tax assets). In effect, only an estimated 70 per cent of the common equity that banks currently hold and report under Basel II would qualify as common equity under Basel III.
- Finally, Basel III also sets restrictions on leverage (the ratio of equity to total assets), which serves as a backstop to the risk-based framework.

The BIS (2012) report raised discussion on a number of unique features of Basel III, in particular the introduction of capital buffers that banks can use without compromising their solvency, and surcharges, which counter individual banks' contribution to systemic risk. First, a conservation buffer is designed to help preserve a bank as a going concern by restricting discretionary distributions (such as dividends and bonus payments) when the bank's capital ratio deteriorates. Second, a countercyclical buffer – capital that accumulates in good times and that can be drawn down in periods of stress – will help protect banks against risks that evolve over the financial cycle. Finally, a capital surcharge will be applied to systemically important financial institutions (SIFIs), or banks with large, highly interconnected and complex operations, in order to discourage the concentration of risk. This conclusion is critically important in respect of the identified failures (Nyberg 2011) of Irish banks' lending strategies and practices during

the expansionary part of the business cycle where loan books became overly concentrated on construction and property. These international standards impose lower bounds on regulators: some countries may choose to implement higher standards to address particular risks in their national contexts. This has always been an option under Basel I and II, and it will remain the case under Basel III. The Basel III regulatory standards also lend support to forward-looking loan-loss provisioning. The next section explores this concept in more detail.

### **Loan-Loss Provisioning**

This section highlights while countercyclical provisioning as a potential financial instrument has been written about in the literature (Mann and Michael 2002; Borio and Lowe 2001) the only concrete example of a countercyclical regulatory tool is the so-called “dynamic provisioning” (DP) adopted by Spain in 2000. Variations of DP implemented to date include macroeconomic trigger rules for DP and basing DP rates explicitly on the probability of default. The various applications of the DP model in existence noted in the literature are discussed in the following sections, but first a review of what the literature defines as DP.

### **Dynamic Provisioning**

The concept of DP as a countercyclical provisioning approach that has been gaining popular support in recent times, highlighted by the Financial Stability Forum in 2009 as one of the alternative approaches to provisioning. Yet as, Goodhart (2009) highlights, there is almost no real experience as to how these policies may work alongside a business or lending cycle.

Under a DP regime, banks charge to their profit and loss account a “dynamic provision” with the sole function of covering the expected losses of non-impaired loans over the business cycle. The underlying impetus for DP is that provisions should be on an estimate of long-term (through the cycle) average losses from defaults. DP requires a bank to build up a buffer of funds from retained profits in good times that can be used to cover realised losses in bad times. This has the effect of countering the cyclical impact of specific provisions on a banks’ profit and loss account when NPLs begin to increase in economic downturns (De Lis et al.2000). Thus, during the expansionary part of the business cycle specific provisions are low and the DPs build up, generating a fund; during a contraction the growth in specific provisions can be met using the dynamic

fund instead of the profit and loss account (Banco de España 2004). By being drawn down, DPs fulfil their anticyclical purpose and reduce year-to-year fluctuations in a bank's profits, with the provisioning charge being driven by average loss experience, not current experience (Borio and Lowe 2001, p.41). Izquierdo et al.(2013, p.19) note that by requiring financial institutions to build a buffer (additional to the static buffer) during good times in anticipation of credit losses that occur during bad times, DP can potentially discourage excessive credit growth during the expansionary phase of the cycle. Similarly, allowing the usage of the accumulated dynamic loan-loss reserves in bad times (to meet increased provisioning requirements) when nonperforming loans increase sharply, can help to reduce credit contractions. Dynamic provisions are, therefore, fully consistent with the macroprudential approach to financial regulation.

Interestingly, despite calls for a more DP type approach to provisioning, the Federation of European Accountants (FEE 2009) notes that there is no single, agreed specification of how DP might be implemented in practice. Indeed, there is no clear or common understanding of what DP is (FEE 2009). However, Mann and Michael (2002) suggest the most common understanding of the DP model is based on expected losses — the main underlying principle being that provisions are set against outstanding loans as well as against an estimate of long-run expected losses. Mahapatra (2012) notes that DP can be generally expressed as:

$$DP = EP - SP$$

Or simply

$$DP = EP - \textit{Incurred loss provisions}$$

Where DP = Dynamic provisions; EP = Expected loss provision; SP = Specific loss provisions and correspond to realised or incurred losses.

Looking at this equation, it is clear that during economic upturns DPs are positive and add to loss provisions as realised or incurred losses, that is, specific provisions are lower than their through-the-cycle estimates. During bad times, the opposite takes place and negative DPs deplete the loss provision buffer. Therefore, provisioning, instead of becoming procyclical, becomes countercyclical. While DP as a potential provisioning instrument has been written about in the literature for some time see for example (Borio and Lowe 2001; Mann and Michael 2002), no country thus far has adopted a countercyclical loan-loss provisioning requirement policy, as recommended by

Brunnermeier et al.(2009) among others. As Izquierdo et al.(2013) note, DP rules differ not only in how cycles are identified (based on systemic or bank-specific factors), but also in the speed at which cyclical provisions are accumulated and used. Most discussions are theoretical and/or simulations (see Wezel et al.2012; Repullo et al.2010; Balla and McKenna 2009), except for the Spanish example of DP. There have also been other modified variations of DP adopted by Uruguay (2001), Colombia (2007) and Peru (2008), and Bolivia (2008). The following sections briefly review literature on the existing systems of DP and illustrate the specific properties of each of them.

## **Spain**

Dynamic provisioning was first implemented in Spain in 2000. As Frohn (2010) notes, the main difference between the theoretical view of provisioning outlined by Mahapatra (2012) and the Spanish regime discussed in this section, is that the Spanish regime is actually based on *historical data* and not on future estimations. Therefore it is not a true “forward-looking” provisioning regime. The Spanish dynamic provisioning formula was modified in 2005 to comply with international accounting standards. It used a “through the cycle” accumulating approach. This meant it was designed to build up general provisions that account for: (i) expected losses in new loans extended in a given period and (ii) the average provision over the cycle applied to the outstanding stock of loans at the end of that period after netting off specific provisions incurred during the period (Wezel, Chan-Lau and Columba 2012).

Prior to introduction of DP in Spain, the Spanish banks’ provisioning patterns was an incurred loss model (Mahapatra 2012). When introduced in 2000 the Bank of Spain first aimed to contain credit growth<sup>12</sup> by increasing the cost (in terms of provisioning effort) of the granting of new credit, and secondly to protect Spanish banking institutions from future losses as a consequence of the relaxation of lending standards typical of the boom phase (de Lis and Herrero 2010). Saurina (2009) notes that increased competition within the banking system had resulted in inadequate loan pricing; risk premiums were being priced too low. This rapid increase in credit combined with falling nonperforming loans meant that specific provisions were extremely low and by 1999 Spain had the lowest

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<sup>12</sup> Dynamic provisioning system was put in place in Spain by its Central Bank, Bank of Spain, in July 2000 to cope with a sharp increase in credit risk on Spanish banks’ balance sheets following a period of significant credit growth during the late 1990s.

ratio of loan-loss provisions to total loans among OECD countries.<sup>13</sup> The Bank of Spain (2010) states that it needed a tool to deal with an explosive increase in lending within the Spanish financial system. In 2000 they introduced a new category of provisions called statistical provisions (later this name was changed to dynamic provisions), which added to the existing generic and specific provisions regime already in place. Levich et al. (2002) posit that statistical provisioning was built on the principle that potential loan losses exist from the moment a loan is made and this should be taken into account when pricing credit and when calculating the expected future income stream from the onset. Under this provisioning method, banks charge to their profit and loss account a “statistical provision.” De Lis et al.(2000) explain that the aim of the additional statistical provisions was to cover the expected losses of non-impaired loans over the business cycle and counter the cyclical impact of specific provisions on the P&L account. The statistical provision was the difference between the latent risk (risk parameter dependent upon the credit growth) and the specific provision. The statistical provision was charged quarterly, which meant that for a given quarter it could be positive or negative, depending on credit growth and the actual level of impaired loans. When statistical provisions accumulated they generated a fund called the statistical provision fund. The fund had an upper and lower limit.

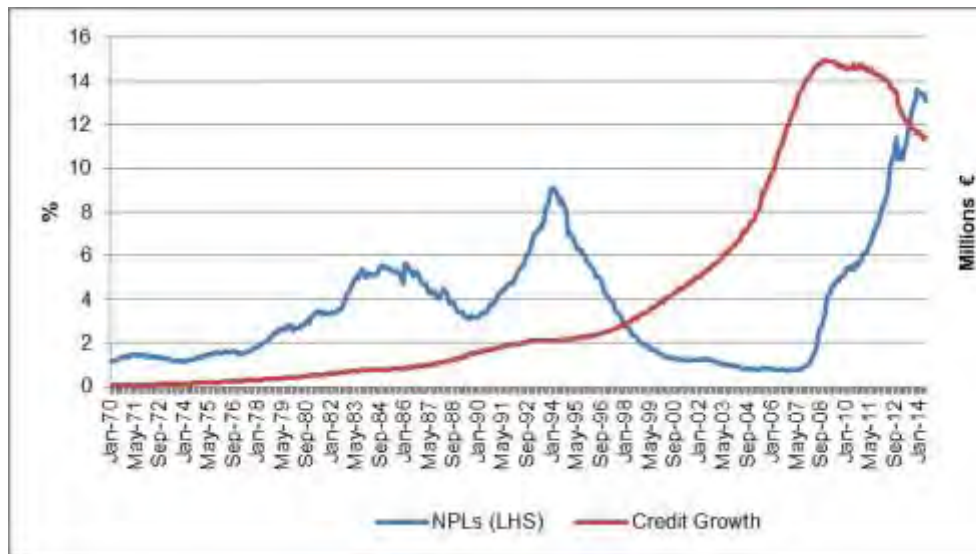
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<sup>13</sup> Studies have shown that Spain was experiencing sharp credit growth since the late 1960s (De Lis and Herrero 2009). Jimenez and Saurina also found evidence that from 1984 – 2002 credit standards declined during this boom period. This meant that loan-loss provisions were very procyclical in Spain: they were very low during periods of expansion and very high during recessions, while credit risk and underpricing of risk spread during the boom period (Jiménez *et al* 2012).

### Box 2.1: Spain's Banking crises

The below figure shows the monthly NPL ratio for Spanish banks starting in January 1970 and ending in January 2014. As per Santos (2014) this graph is an excellent summary of Spanish banking history over the last forty years or so. The three Spanish banking crises are easy to spot. The first one, from the mid 1970s to the early 1980s, followed a period of liberalisation and deregulation of the Spanish banking system, and was shaped by the economic crisis induced by the oil shocks during that period. The second was associated with the severe recession of the first half of the 1990s. As in the case of the current one, the banking crisis then followed another real estate boom. That crisis produced what was then the largest banking failure in Spanish banking, that of Banesto. As can be seen the NPL ratio has raced through the previous peak - highlighting the severity of the current crisis.

**Figure: NPL ratio of loan portfolio of credit institutions**



Source: Bank of Spain and author's calculations

De Lis and Herrero (2010) report how on introduction, the DP mechanism was criticised on several grounds. First, by international accounting bodies, which argued that it implied profit smoothing along the cycle, masking the banks' real situation. Secondly, Spanish financial institutions complained about being subject to higher provisioning requirements than their competitors, which was considered an important competitive disadvantage in the single European market for financial services. On its implementation, the Bank of Spain requested that all financial entities develop an internal methodology to estimate impairment in the loan portfolio based on inherent losses<sup>14</sup> (IASB 2009, p.2). The Bank of Spain (2010) describes how banks were allowed

<sup>14</sup> That is, losses that may already have been identified as relating to a specific transaction (giving rise to the appropriate specific provision), or losses which have already been incurred but which cannot be

to develop their own model, or adopt a model developed by the Bank of Spain. The Bank of Spain model used historical credit loss information from the Spanish Central Credit Register (CCR). This CCR contains information from 1968 onwards, and comparable information for a full economic cycle (i.e. since the late 80s). Without the CCR the Spanish model would not have been possible. Thus, the Spanish model uses historical loss data information for different asset classes using statistical models. It is a backward-looking model, not “forward looking”, and is not an expected loss model like that proposed in the new IASB exposure draft of March 2013. Given that historical data is used, DP does not cover all expected credit losses and is highly subject to the models and historical information available.

Saurina (2009a) notes that after the introduction of statistical provisioning, it became apparent that the level of provisions was excessive as the upswing in credit growth was much stronger and indeed longer than had been anticipated. By 2004, on the eve of the introduction of a new provisioning regime by the IASB and, in response to profit-smoothing criticisms, the Bank of Spain, changes were made to the regime. Interestingly, De Lis and Herrero (2010) argue that to a certain extent, the 2004 reform represented a certain “lack of faith” in the system. It was innovative, with no precedent or similar system in any other country and had been contested by the banks and the international accounting bodies. The Spanish authorities started wondering whether the system could be unsustainable and whether there would be limits in the accumulation process.

#### *The Statistical Provisioning Formula<sup>15</sup>*

As de Lis and Herrero (2009) explain, the 2004 changes involved reverting to only two types of loan-loss provisions – general and specific provisions.<sup>16</sup> General provision and statistical provisions were merged with general or generic provisions, becoming the sum of two components based on two parameters,  $\alpha$  and  $\beta$ , and set as:

$$\text{Generic provisions} = \alpha \Delta \text{ Credit} + \beta \text{ Credit} - \text{Specific provisions.}$$

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assigned to a specific transaction (once again the “collective assessment for impairment”) (ISAB 2009, p.2).

<sup>15</sup> This section is largely based on the ISAB 2009 paper - Spanish Provisions under IFRS (Agenda paper 7C).

<sup>16</sup> 4. See De Lis, Martínez, and Saurina (2000) for a detailed explanation of the statistical provisions as set up in 2000.

where  $\alpha$  was bounded by 0 and 2.5 and  $\beta$  by 0. De Lis and Herrero (2009) note that the main impetus for DPs in Spain was to build up general (also called generic) provisions that reflected historical average losses on the outstanding stock of loans at the end of that period, after netting off specific provisions incurred during the period.

Written out fully, general provisions were set according to the formula below:

$$gen_t = \alpha \Delta C_t + \left( \beta - \frac{\Delta espe_t}{C_t} \right) C_t$$

$C_t$  = is the stock of loans;  $\Delta C_t$  = Change in stock of loans;  $\alpha$  = Inherent loss;  $\beta$  = Historical average specific provisions;  $\Delta SP$  = Change in specific provisions.

The first part of this equation refers to regular general provisions, i.e. the small portion of all new loans set aside to cover losses. Banks must make provisions against the incremental credit growth according to  $\alpha$ , which is the average estimate of the credit loss. The parameter  $\alpha$  varies across homogeneous groups of loans (i.e. it is different for mortgages, 0.6 per cent, than for credit cards, 2.5 percent) based on historical information on credit losses. In total there are six different loan portfolios (See Table 2.4).

Credit risk or incurred losses not yet identified tend to transfer into specific loan losses at varying speeds, depending on the business cycle. The speed of conversion may be quite high in downturns and much slower during economic upswings. Therefore the  $\alpha$  is supplemented by a  $\beta$  parameter. It is the second component of this equation that refers to the “dynamic” aspect of the provisions. This  $\beta$  parameter is adjusted as the historical average specific provisions for each of the six groups of homogenous loans as shown in Table 2.4. By comparing the  $\beta$  with the actual level of specific provisions, the bank can infer the speed at which incurred losses not yet identified will transfer over to specific losses for individual assets. In economic upswings this distance will be large and provisions will be positive. In economic downturns this distance will be smaller and near non-existent and thus the  $\beta$  component of the general provision will be negative. By comparing  $\beta$ , which is the historical average specific provision, with the current level of specific provisions, banks can therefore assess the speed at which unspecific incurred losses evolve into specific losses for individual assets. As the  $\beta$  and  $\alpha$

parameters are based on historical experiences they are not forward looking but backward looking. In order to avoid excess provisioning in good times (avoid excess build-up of reserves on the Profit and Loss account) there is a cap on the amount of general provisions that can be built up on banks' balance sheets.

**Table 2.4: Parameters for  $\alpha$  and  $\beta$**

|  |
|--|
| <p><math>\alpha</math> and <math>\beta</math> are assigned according to the six risk buckets or six homogeneous risk categories.</p> <p>The parameter vectors are:<br/>         (0%; 0.6%; 1.5%; 1.8%; 2%; 2.5%) for <math>\alpha</math><br/>         (0%; 0.11%; 0.44%; 0.65%; 1.1% y 1.64%) for <math>\beta</math></p> <p>The six homogeneous groups are:</p> <ol style="list-style-type: none"> <li>1. Zero risk (cash, public sector debt)</li> <li>2. Home mortgages with LTV below 80%, corporates with rating a or above</li> <li>3. Loans with real guarantees and home mortgages with LTV above 80%</li> <li>4. Rest of loans, including corporates and SMES</li> <li>5. Consumer durables financing</li> <li>6. Credit cards and overdrafts</li> </ol> <p>Source: Adapted from IASB 2009</p> |
|--|

**Table 2.5: Simplified numerical example**

|   |
|---|
| $gen_t = \alpha \Delta C_t + \left( \beta - \frac{\Delta espe_t}{C_t} \right) C_t$ <p><math>\alpha</math> and <math>\beta</math> are assigned risk categories 2% and 1% respectively.</p> <p>Assume outstanding stock of loans in a bank Y to be €1000m and the previous year balance of loans to be €800m, thus assuming the incremental growth in credit to be €200m. Further, assume that <math>\alpha</math> and <math>\beta</math> component as given by the supervisor to be 2% and 1% respectively. Assume the specific provision required for the current year to be €8. For the first year, bank X would make a general provision equal to <math>\alpha</math> times incremental loans, i.e. 2% of €200, i.e., €4 plus difference between <math>\beta</math> times outstanding loans and specific provision, which in this case works out to 1% of €1000 – €8 = €2. Thus, a total general provision of €6 (4+2) would be made by the bank X during the year. Total provision made during the year would be the sum of general provision and specific provision, i.e. €6m + €8m = €14m.</p> |
|---|

## Evaluation of the Spanish use of DP

The IASB (2009) was complementary to the apparent success of the Spanish statistical regime. In a briefing report issued in 2009 it applauded the positive effect on the profit and loss accounts of Spanish banks, noting that by that year, provisions had amounted to ten per cent of net operating income of the banks. This high level reflected the rapid period of credit growth that occurred from the late 1990s onwards and the historically low levels of non-performing loans. IASB noted that from a macroeconomic viewpoint, DP limited the excess procyclicality of provisioning rules and helped banks to weather recessionary periods (IASB 2009, p.3). However, the IASB also cautioned that the model was highly sensitive to the accuracy of two parameters,  $\alpha$  and  $\beta$ . As both parameters are based on historical data they are potential sources of error in estimating the correct provisioning requirements if the specific provisioning rates in the past are different and have been changed significantly over the calibration period. Additional benefits of DP identified by the IASB are outlined in Table 2.6 below.

**Table 2.6: Benefits of the Spanish provisioning regime**

|                                 | <b>Definition / Characteristics</b>  |
|---------------------------------|--|
| The Spanish Provisioning Regime | <ul style="list-style-type: none"> <li>- It is a transparent rules-based system.</li> <li>- Gives investors supplementary information (i.e. the collective assessment is disclosed as a separate item in annual reports) and is comparable across banks.</li> <li>- It is designed to be consistent with the accumulation of credit risk and credit losses. It also signals the build-up of credit risk and credit losses in the banks (acting as an early-warning system to financial statement users). Provides a potential counterbalance to the highly cyclical loan-loss provisioning regime of existing practices.</li> <li>- By building up provisions early as credit losses accumulate in bank loan portfolios, in the process it helps avoid delayed credit loss recognition by banks.</li> <li>- Acknowledges the inherent and latent cost associated with extensions of credit.</li> </ul> |

Source: Adapted from IASB (2009).

However, the same 2009 IASB briefing acknowledged the large difference between the Spanish statistical provision practice and the “collective assessment for impairment” in other countries under the incurred loss model. The IASB argued that this distance was the result of, on one hand, the very low levels of collective assessment for impairment in other countries (stemming from a misinterpretation that gives rise to an extremely narrow interpretation of what IAS 39 really allows in the area of provisioning) and on

the other hand the high growth rate of Spanish banks' balance sheets (reflecting both a buoyant demand for loans and an absence of off-balance sheet financing vehicles such as SIVs) (IASB 2009, p.4). The IASB claimed that in more normalised times and with consistent application of "collective impairment" across all countries the difference would narrow considerably.

Other observations on the success of DP note that despite mandating additional provisions against new loans, DP cannot prevent credit booms in and of itself (Brunnermeier et al.2009). To be sure, DP gives incentives for banks to extend loans more carefully due to these mandatory provisions on performing loans. And as Shin (2009) notes, provisioning charges on new loans cause a decline in banks' capital, which for a given or desired leverage will restrain credit growth to a limited extent. However, attempting to contain a credit boom primarily through DP would require setting prohibitively high provisioning rates. Therefore, as provisions and capital assume complementary roles as buffers for expected and unexpected losses respectively, capital requirements also need to become more forward looking, if procyclicality is to be reduced significantly (Wezel, 2010).

### **Uruguay**

Wezel (2010) notes that in 2001, Uruguay adopted a slightly modified version of the Spanish DP system. Apart from a differing description of loan categories for DP, the formula maintained a different upper limit to the DP fund, specifically a limit of 3 per cent of total loans. The regulation specified that banks contribute to their individual DP funds by calculating the difference between the monthly statistical net losses on loans to the non-financial private sector (NFPS) and the realised net loan loss in that month. The DP's fund of each bank is bounded between 0 and 3 per cent of total loans to be provisioned.

Uruguay continued to maintain this level, even after Spain switched to a limit linked to latent loss in 2005. Wezel (2010) observes that the system in Uruguay led to a very substantial cushion of DPs (as high as five times non-performing loans) by 2009. The IMF (2012) notes that by 2011, the Uruguay Central Bank prompted an overhaul of the formula which introduced an alpha parameter and otherwise sought to align provisioning rates with expected loss (Wezel 2010). Currently, DPs are made only against performing loans, as is also the case in Peru and Spain.

## **Bolivia**

As illuminated in an interesting review of provisioning practices in Central America, Izquierdo by Loo-Kung, and Rojas-Suarez (2013), Bolivia introduced a type of DP in December 2008 – phased in over 27 months. This regime maintained a trigger-based approach where DPs are accumulated only during a boom (or bust) period linked to a macroeconomic or financial development. This DP regime only covered retail bank lending, and the Regulator required banks to maintain a DP fund that could be accessed during episodes in which loan quality experienced significant deterioration. (Izquierdo, Loo-Kung, and Rojas-Suarez 2013) Under this regime, banks should maintain cyclical provisions that range from 1.05 to 5.80 per cent, depending on the type of debtor and the currency denomination of the loan. Cyclical provisions can be used to cover additional, specific provisions when loan quality deteriorates significantly, provided that the DP has been phased in fully, and there are no objections by the Regulator. More specifically, banks need to experience deterioration in the quality of their loan portfolio (measured by the average of specific provisions for loans in each risk category weighted by their corresponding shares in the loan portfolio) for six consecutive months to gain access to the cyclical buffer. On the flip side, banks are required to replenish the cyclical buffer when loan quality improves (Izquierdo et al. 2013).

## **Peru**

The Peruvian DP system, originally introduced in 2000 and modified in 2008, was introduced by the Peruvian financial supervisor/regulator (IMF 2012).<sup>17</sup> This dynamic (or cyclical) provisioning regime required banks to accumulate additional generic provisions during the expansionary phase of the economic cycle to be used during downturns. Schlors (see Bank of India 2012) noted that the rationale behind using GDP instead of credit-based rules (as used in Spanish DP) is the assumption that GDP growth precedes credit growth and activation does not depend on a bank's behaviour, but on the system as a whole.

## **Summary**

This section has discussed the capital and provisioning regulatory landscape in the lead up to the GFC, with particular focus on Ireland. It has highlighted how since the

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<sup>17</sup> IMF (2012, p.9) notes that the fixed part of the generic provision is linked to the loan; that is, it cannot serve to offset rising specific provisions elsewhere in the loan portfolio but rather stays with the loan as it migrates to a delinquent classification category, reducing the required specific provision by the amount already provisioned under this fixed part of dynamic provisioning.

eruption of the GFC, emphasis has turned towards including an additional component in the design of capital and provision regulation, namely, the adoption of a more forward-looking regime, whose main objective is to reduce the procyclicality of the banking system's existing capital and provisioning regulatory regimes. The new Basel III framework explicitly provides for measures with the macroprudential goal of mitigating credit cycles. These measures include the introduction of a countercyclical capital buffer. This section also discussed how the concept of DP as a countercyclical provisioning approach has been gaining popular support in recent times, although the only concrete example of a countercyclical provisioning tool is the DP system adopted by Spain in 2000.

#### **2.4 Irish Banking Crisis – Previous Assessment**

This section explores the existing general research on the Irish financial crisis, with specific focus on the banking crisis, highlighting the narratives from the emerging research to date and the implications of these findings for regulations and regulatory function. Four official reports provide much of the framework and analysis required to understand the causes of the Irish financial and banking crisis: those of Honohan (2010a), Regling and Watson (2010), Wright (2011), and Nyberg (2011).<sup>18</sup> These reports have concentrated on the identification of failures present in the institutional apparatus, namely, the CBI, the Regulator, the Department of Finance, and the banks taken as a group. The first report involved an examination of the conduct of the banking sector in the run up to the crisis. Regling and Watson (2010) were commissioned by the Minister for Finance in February 2010 to “consider the international economic and financial environment, and indeed any broader social developments, which provided the context for the recent crisis in the banking sector” (Regling and Watson 2010 p.). In tandem with the Regling and Watson report (2010) was a second report commissioned from Patrick Honohan, who had been appointed to the position of Governor of the CBI. Honohan's brief was to investigate the performance of the respective functions of the CBI and the Regulator, from the establishment of the Regulator to the end of September 2008. In September 2010, the Commission of Investigation (Banking Sector) was established and the Commission mandated Peter Nyberg to provide answers to why a number of institutions, both private and public, acted in an imprudent or ineffective manner during the period 1 January 2003 to 15 January 2009. The report was published

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<sup>18</sup> A note containing bibliography on the authors is available at Commission of Investigation into the Banking Sector in Ireland, <http://www.bankinginquiry.gov.ie/Biographies.aspx>.

April 2011 (Nyberg 2011). The Wright report was commissioned by the Minister for Finance in September 2010, following his commitment that a review would be carried out to assess the Department of Finance's policy advice and performance between 2000 and 2010. The report was published December 2010 (Wright 2010). The Honohan (2010a), Regling and Watson (2010), Wright (2010) and Nyberg (2011) reports address the international developments that facilitated the crisis, but they are collectively unanimous in agreement that the Irish financial crisis was home grown:

In short, although international pressures contributed to the timing, intensity and depth of the Irish banking crisis, the essential characteristic of the problem was domestic and classic. (Honohan 2010a, p.22)

Ireland's banking crisis bears the clear imprint of global influences, yet it was in crucial ways "home-made." (Regling and Watson 2010, p.5)

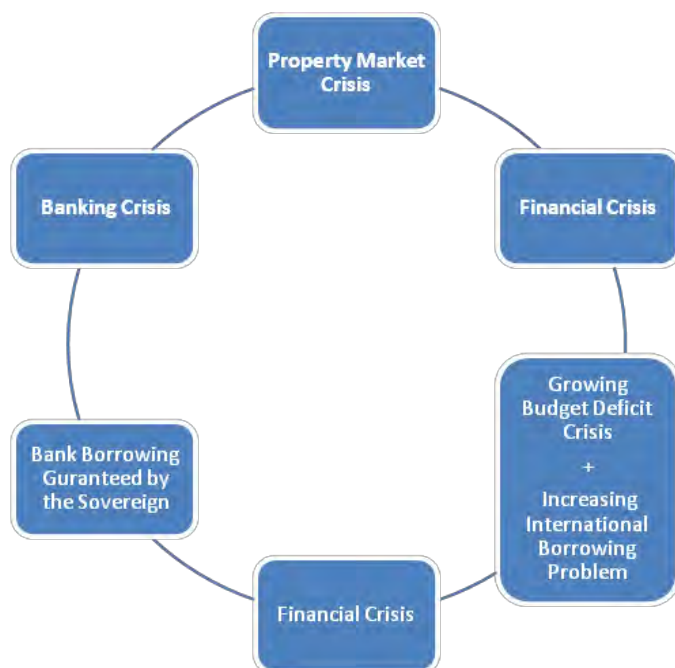
This was a plain vanilla property bubble, compounded by exceptional concentrations of lending for purposes related to property – and notably commercial property. (Regling and Watson 2010, p.6)

The problems causing the crisis as well as the scale of it were the result of domestic Irish decisions and actions, some of which were made more profitable or possible by international developments. Though eventually unsustainable financial risks were made attractive by outside factors, there simply was nobody abroad forcing Irish authorities, banks or investors to accept such risks. (Nyberg 2010, p.ii)

For most of the past twenty years, the Irish economy was regarded as a model. Very few questioned this general consensus and those that did were ignored. The move from one of the poorest countries in the EU to one of the richest, in terms of annual income, fuelled expectations for increased spending towards levels in the rest of Europe. The EU fiscal rules, the Stability and Growth Pact, were respected, debt fell and spending appeared to be well below EU levels. The underlying dangers were either missed or ignored. (Wright 2010, p.16)

All government-commissioned reports and subsequent analysis on the crisis (see for example Kinsella and Leddin 2010; Whelan 2010; Lucy 2014; Donovan and Murphy 2013; Lucey 2014) are unanimous in agreement that the 'home-grown' Irish financial crisis was a story of four interrelated crises. It was initiated first by the collapse of the property market, which precipitated a banking crisis and a fiscal crisis, and which then combined to cause the fourth element, the financial crisis (See Figure 2.3).

**Figure 2.3: The fall of the Celtic Tiger: A story of four crises**



Source: Adapted from Donovan and Murphy (2013, p.7).

#### **2.4.1 The Property Market Crisis**<sup>19</sup>

The literature is in firm consensus that the property market crisis resulted from the collapse of a classic asset bubble. The bubble involved significant overvaluation, driven by the view that property represented the fastest and easiest way towards wealth and that at worst a “soft landing” would materialise (Nyberg 2011, p.87; Wright 2010). It was financed by over-lending from a banking system that equated profits with the maximisation of loan sales (see Honohan 2010a; Regling and Watson 2010; Nyberg 2011; Wright 2010). Many commentators (see Connor *et al.* 2011; Carswell 2011; Lucey 2014) highlight how the collapse of the Irish property market brought into stark reality the negative impact a highly connected property market and banking system can have on multiple actors across multiple institutions. Campbell *et al.* (2011) note that many banking and financial institutions engaged in self-destructive patterns of behaviour in a race to the bottom during the property bubble. Although these behavioural arguments have merit, the numerous official government reports into the causes of the crisis also show that financial institutions were encouraged to become heavily exposed to investing in property-related assets, by favourable tax regimes and a complacent supervisory

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<sup>19</sup> More in-depth discussion of the property market crisis is covered in Chapter 3.

oversight, as they became even deeper involved in commercial property lending, and to a (in most cases) narrow, highly connected client base.

The literature on the Irish financial crisis reveals that the property bubble ultimately played a pervasive and destructive role, fuelled by the fiscal and banking crisis in equal measure. Honohan (2010a) affirms this view when he argues that the stark reality was that the difficulties of the Irish banks – whether in terms of liquidity or solvency – were directly attributable to their over-lending for land and property investment, much of it through heavy short-term wholesale foreign borrowing. Without such extensive investment, the banks would not have been as vulnerable to the worldwide liquidity crisis which intensified throughout 2008. Honohan (2010a p.22) further argues that if banks had been less heavily exposed to an overheated property market, the prospective loan-losses that began to spook investors would have been manageable. This was a view confirmed by the numerous official government reports into the causes of the crisis.

#### **2.4.2 *The Banking Crisis***

The collapse of the property bubble led to the banking crisis. The extensive over-reliance of the banks on external borrowing exposed them to growing liquidity difficulties from mid 2007 onwards, reaching a critical point after the collapse of Lehman brothers (Honohan 2010a; Regling and Watson 2010; Lucy 2011). Dineen *et al.*(2012) note that the property-related losses had been further compounded by a general change in risk aversion on international financial markets, which saw wholesale funding access dry up. Clarke and Hardiman (2012) observe that this triggered a crisis of confidence and a loss of access to private market funding.

In her critique of the Irish banking crisis McGowan (2011) notes that the unprecedented expansion of bank assets, in an environment of lax prudential supervision and easily accessed foreign wholesale funding, let the banking system grow to several times the size of the Irish economy. McHale (2012) writes that there was minimal policy response implemented to check the credit supply that sustained the joint property and fiscal bubbles. Kelly (2010a) further highlights that when the housing and the intrinsically linked financial market collapsed in 2007, the Irish economy found itself exposed to

extraordinarily large bank losses. The cost to the Irish taxpayer was eventually estimated at approximately €62bn (Minister for Finance 2011).<sup>20</sup>

Both Honohan (2010a) and Regling and Watson (2010) argue that the Regulator, in expecting a soft landing for the property market, did not take sufficient and effective action against the lending patterns of the banks early enough. As will be discussed in more detail in section 3.3.5, bank lending from 2001 onwards was heavily biased towards real estate. It was the lending of the ever-increasing large sums of credit to developers that would eventually contribute most significantly to the banks' losses; having lent so excessively to one sector to finance property development, the banks were exposed to the huge risk of loan losses when these developments faltered. Donovan and Murphy (2014) note that although there is a tendency on the part of some to think that the Irish banking crisis was a uniquely Irish phenomenon, the opposite is in fact true. Studies at the macroeconomic level show that rapid asset and credit growth concentration into one sector (such as property development) have in the past led to banking crises. Aware of the risk of a housing bubble in the Irish market, Honohan (2010a) notes that the Central Bank encouraged banks to be more prudent with respect to their LTV ratios to guard against the consequences of a fall in house prices in 2006. As a result of this action there was a slight increase of capital cover for high-LTV loans in 2006, but this was widely considered to be too little, too late. In retrospect, it appears that the dangers associated with a housing market collapse were underplayed and expectations of a soft landing dominated, despite the warnings that housing market indicators provided (Kelly 2010a).

If the banking crisis was predicated on fundamental intellectual errors, management and leadership failures (see for example Donovan and Murphy 2013; Whelan 2009; Kelly 2010; Whelan 2009) it seems surprising that the risk indicator frameworks used as a basis for decision making within banks have received little critical analysis in either the commissioned reports or extant Irish crisis literature. Exceptions to this include McGowan (2011, p.12), who notes that Irish financial supervisors relied heavily on financial risk indicators. Identifying why risk indicators did not deliver the right signals is important in understanding why policy failed and how the Irish financial system can

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<sup>20</sup> Ireland's total GDP in 2011 was €155bn (Central Bank of Ireland 2012).  
<http://debates.oireachtas.ie/dail/2011/12/15/00078.asp>.

be kept on a more sustainable path in the future.<sup>21</sup> Risk indicators measure the adequacy of capital, the quality of assets, management adequacy, the level of earnings and the amount of liquidity and the sensitivity to market risk (IMF 2000). They also assess the health of the non-financial sector and the overall macro economy, and aim to measure risk (IMF 2000). The failure of institutional apparatus to heed and/or interpret risk indicators is also touched upon in the commissioned reports; Honohan (2010a) and Regling and Watson (2010) acknowledge that many of these indicators failed to warn of the impending crisis in Ireland. In particular, Regling and Watson (2010, p.45) propose that

it would be valuable to establish the reasons for the absence of reaction, within banks... since this was a critical factor that contributed to the overall level of risk exposure in the system.

Scholars, for example McGowan (2011), note that traditional risk indicators such as capital and solvency ratios, non-performing loans and profitability failed to detect the problems in the Irish banking system. Aggregate capital ratios for the whole banking system and main individual banks showed adequate capital buffers in 2007 (Honohan 2010a; Regling and Watson 2010). Even the EU stress tests carried out in mid-2010, well into the crisis, suggested that the major financial institutions had adequate capital buffers. Irish banks were considered to be well capitalised, with solvency ratios in excess of the regulatory minimum (OECD 2011a). As McGowan (2011) points out, the average value of the Tier One capital ratio between 1997 and 2003 was 8.4 per cent, so even the subsequent decline was not enough to raise warning signals. Whelan (2009) further notes that in the case of the Irish banks, it appears that regulators and other monitors such as the IMF and ECB paid too much attention to capital adequacy. For example, the 2007 IMF Article 4 report has a heading summarising the position of the banking sector as “Banks have large exposures to property, but big cushions too,” which was consistent with the widespread belief that the highly profitable Irish banks were going to be safe even if the economy hit a serious downturn (Whelan 2009). Aggregate data on non-performing assets prior to the crisis also suggested that the Irish banking system was healthy. The CBI 2006 Financial Stability report (CBI, 2006) praised the downward trend in non-performing loans evident over the previous 5 years.

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<sup>21</sup> This concept is expanded upon in Chapter 5 of this thesis.

Donovan and Murphy (2013) found that the capital component of banks' liabilities evolved in two negative ways from the 2000s onwards. Firstly, in order to grow more capital, recourse was made to subordinated debt, rather than equity. Nyberg (2010) asserts that the aggregate capital resources (including shareholder funds and subordinated liabilities) of the covered banks grew from almost €18bn in 2000 to circa €47bn at the peak in 2007. Though the covered banks continued to meet their regulatory requirements in relation to capital ratios, the composition of this capital changed materially. Donovan and Murphy (2013) note that subordinate debt had the advantage of improving banks' earnings per share, unlike wholesale funding which had to be refinanced over short maturities, thereby weakening the banks' capital structure and accentuating their vulnerability. The second way in which capital became distorted was succinctly articulated by Nyberg (2010) when he suggested that the adoption of IFRS accounting rules in 2005 removed the use of general provisions or expected loss provisions and replaced them with an incurred-loss model. Nyberg (2010) notes that this allowed the banks in the economic upturn environment post-2007 to decrease loss provisions, increase profits and intensify their lending capacity. The provisioning level for the six main banks decreased from 1.2 per cent of loans in 2000 to around 0.4 per cent in 2007. The resulting improvement in accounting profits increased their lending capacity by over €30 billion (Nyberg 2011). The failure of banks to make more prudent capital cushions based on anticipated future losses left them with inadequate provisioning cushions when the crisis hit. Honohan (2010a) and Nyberg (2011) are staunch in their argument that DP for losses and countercyclical limitations on lending could have been used to address these vulnerabilities.

Interestingly, Honohan (2010a), Regling and Watson (2010) and McGowan (2011) note that some risk indicators did give forewarnings of a declining situation. These warnings included growth of assets and lending, concentration of lending in property-related loans; high LTV mortgages; household indebtedness; and dependence on wholesale funding. Honohan (2010a) is resolute in his argument that risk indicators of the underlying quality and variation of the banks' assets and the source of their funding proved to be far more indicative than measures such as capital adequacy and loan-loss provisions. At a macro level, Clarke and Hardiman (2012) note that risk indicators such as ratios to GDP of loans to non-financial corporations, real estate loans and private sector credit also signalled vulnerability on banks' balance sheets.

The financial crisis has provided an exceptional source of primary and secondary data with which to address the lacunae identified, yet to date there has been little interest in comparing the Irish case to other, better-performing countries where lessons can be learned. As Shiller (2005 p.164) points out, when trying to understand errors that people have made in the past, it is important to consider what it was that they were not paying attention to. It is also important to look at the issues and policy challenges that remain. The fundamental question is – what lessons can be learned from other, better-performing banking systems that did not display large swings in credit extension during the years leading up to the GFC? In other words, there is merit in establishing which tools and macro instruments may have been utilised by such economies.

An exception is the insightful research from Kluth and Lynggaard (2013), who explore the concept of differences in policy responses of the Irish and Danish Governments post crisis. The CB also undertook research that reviewed the Irish financial crisis of 2007/08 up to the summer of 2012. Specifically, this paper compares the Irish crisis with four systemic crises in advanced economies and looks at the various recovery scenarios of some ‘headline’ macroeconomic and financial variables to determine if appropriate parallels can be drawn to the Irish crisis and its longer-term consequences. Another notable exception is a paper by Confrey and Fitzgerald (2009) who highlighted that the advent of the EMU relaxed existing financial constraints in Ireland and Spain and allowed a more rapid expansion of the housing stock in those countries to meet their specific demographic circumstances. However, the failure to prevent these booms from turning into bubbles did lasting damage to the two economies, damage that could have been avoided by more appropriate fiscal policy action.

### ***2.4.3 The Fiscal Crisis***

Running concurrently to the banking crisis was a fiscal crisis. Whelan (2010) notes the long boom that preceded the Irish banking crisis had allowed successive Irish governments a freedom from normal fiscal constraints – there were sizable increases in public expenditure, income tax rates were cut and yet the debt-to-GDP ratio had gradually fallen to one of the lowest in Europe. However, by the later years of the boom, Kelly (2010b) argues that fiscal policy as well as the banking system had become distorted by the housing boom. Whelan (2009) shows how the Irish Government’s coffers remained buoyant due to revenue earned via huge tax revenues in the form of stamp duty, capital gains taxes and VAT. The perceived contribution that construction

and property-related taxes were making to the economy was underlined by a dangerous imbalance. As Whelan (2009) starkly highlights, income taxes (PAYE and PRSI) declined from 48 per cent of tax revenues in 1988 to 36 per cent in 2006, while revenues from stamp duty and capital gains rose from 2 per cent of tax revenues to 12 per cent over the corresponding period. A key observation from Regling and Watson (2010 p.5) emphasised the vulnerable state of fiscal policy throughout the time period.

Fiscal policy heightened the vulnerability of the economy. At the macroeconomic level, it should have done more to dampen the powerful monetary and liquidity impulses that were stimulating the economy. Budgets that were strongly countercyclical could have helped to moderate the boom, and would also have created fiscal space to cushion the recession when it came. But budgetary policy veered more toward spending money while revenues came in. In addition, the pattern of tax cuts left revenues increasingly fragile, since they were dependent on taxes driven by the property sector and by high consumer spending. Ireland was also unusual in having tax deductibility for mortgages, and significant and distortive subsidies for commercial real estate development, yet no property tax.

Similarly, Wright (2010 p.18) highlights how economic growth and a tax system geared to capture revenues from growth (primarily driven by the property sector from 2000 onwards) generated excesses in revenues over expenditure to 2007. From 2007 on, pressure on spending mounted, initially in the social welfare area as unemployment began to increase, and subsequently on debt interest. Despite the introduction of significant fiscal measures to curb spending and raise taxation, a large fiscal gap opened up. Fiscal measures introduced from 2007 onwards, while considerable, merely succeeded in stabilising the deficit at an elevated and unsustainable level (Regling and Watson 2010; Nyberg 2011).

#### ***2.4.4 The Bail Out***

As Donovan and Murphy (2013) note, when the first ripples of trouble in the international financial market started to appear, the inherent weakness of the banking system and vulnerable state of the budgetary finances had not yet been perceived by the Irish Government or Irish officials. It was the collapse of Northern Rock in September 2007 that raised the initial signal that danger was on the horizon for Ireland. The property, banking and fiscal crises that had been bubbling away during this time period had finally combined to lead to the financial crisis in late 2010. The financial crisis, as the literature agrees, was multi-faceted and involved many elements. First, the banks' inability to access liquidity from the interbank markets led to them becoming directly

dependent on funding from the ECB via the Central Bank of Ireland. Secondly, the huge fiscal costs associated with the recapitalisation of the banks became clearer from early-2010 onwards. Thirdly, despite various attempts by the Government, the underlying budget deficit, continued to exceed 10 per cent of GDP (Donovan and Murphy 2013; Lucey 2014; Honohan 2010a; Regling and Watson 2010; Nyberg 2011; Wright 2010). All of these elements were reflected in a sharp downgrading of the rating of Irish sovereign debt and the spread of Irish bonds soared.

Kelly (2010a) notes that when faced with an illiquid and insolvent banking sector, the Irish Government was forced to take far-reaching policy actions to steady the banking system. Clarke and Hardiman (2012) show how in the face of impending collapse of the banking system in September 2008, the Irish Government gave a blanket guarantee, not only to depositors but to all bond holders of the six main domestic financial institutions. This extensive guarantee of all bank liabilities was issued under the now-expired Credit Institutions Financial Support Scheme (CIFS) of €375 billion (240 per cent of GDP) (DoF 2013). The blanket guarantee by the Government proved one of the most controversial aspects of the financial crisis.<sup>22</sup> Opposition party leaders such as Eamonn Gilmore, leader of the Labour Party, described the guarantee as an “act of economic treason for which the country is now paying very dearly” (Gilmore, 2010, p. X). Schich and Prybylski (2009 p.8) note that the Irish guarantee was more comprehensive than that used in any other country, stating that the:

Irish Government took the very significant policy action of fully guaranteeing all bank deposits (as well as other liabilities) in the Republic of Ireland before any major international co-operative effort.

The “significant” element of the policy that Schich and Prybylski (2009) highlight refers to the fact that as a result of the guarantee, it was implied that a dishonouring of obligations to creditors covered by the guarantee by any of the six covered institutions would represent, in effect, a default by the sovereign Irish Government. All three Government-commissioned reports (Honohan 2010a; Regling and Watson 2010; and Nyberg 2011) noted that due to insufficient information, the Irish Government had mistakenly understood the banking crisis as a problem of liquidity rather than solvency. They guaranteed the main domestic banks while not having full line of sight of the

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<sup>22</sup> In a recent letter to the Irish Government the ECB cited the 2008 banking guarantee and other Irish decisions as two of the main reasons why Ireland was forced to apply for an EU-IMF adjustment programme (Beesley 2014).

actual state of the banks' balance sheets. There had been an acute misrepresentation by the banks as to the potential extent of their losses, reflective of the senseless and uncontrolled lending that had taken place in the years previously (Honohan 2010a; Nyberg 2011). The Department of Finance's main justification of the guarantee was the need to maintain financial stability for the benefit of depositors and businesses and in the best interests of the Irish economy (DOF 2008). This position was also strongly supported by the ECB – Whelan (2013) highlights how politicians from the Government that issued the September 2008 guarantee have suggested on various occasions that the decision was influenced by the ECB. Subsequently though in 2011, Joaquin Almunia, the then EU Economics Commissioner, affirmed his view that the guarantee was a "mistake" by the Irish Government in an interview with the Irish Times (2011)<sup>23</sup>; the unlimited guarantee had meant that taxpayers already suffering austerity measures to cover a budget deficit were also on the hook for bank debts. Both the Honohan (2010) and Nyberg (2011) reports argue that the blanket guarantee was not adopted without good reason, and given the lack of any real option presented at the time, there was no better alternative to the provision of some sort of comprehensive guarantee.

The Irish Government's decision to extend a comprehensive guarantee of banks' liabilities had both costs and benefits. As Baer and Klingebiel (1995) note, a guarantee on all financial institutions' deposits, both solvent and insolvent, can prevent a run from anxious depositors and avoid the loss of interbank funding. McGowan (2011) notes that this was the case for Irish institutions; given the perceived "suddenness" of the crisis and "unpreparedness of the authorities" (p. 8) and lack of correct information, it would have been impossible to distinguish solvent and insolvent institutions; a guarantee of some sort was inevitable. Lindgren et al. (1999) posit that a blanket guarantee, such as that applied by the Irish Government, generally aims to provide confidence in the banking system: stabilising the institutions' liability side; buying time while the restructuring work is being organised and carried out; and preserving the integrity of the payment system. However, the additional time that this guarantee allowed for the Government to complete an adequate restructuring plan for the banking system was not effectively utilised, largely due to the inability to comprehensively establish the total cost of the crisis (Regling and Watson 2010). Empirical work by Honohan and Klingebiel (2000) reveals that unlimited deposit guarantees and open-ended liquidity

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<sup>23</sup> The Irish Times, Friday 17 June 2011.

support add significantly and sizably to fiscal costs of a banking crisis, with minimal impact on economic recovery. Schich and Prybylski (2009) also note that even if guarantees do not generate significant upfront fiscal costs, they create contingent fiscal liabilities, along with other potential costs such as distortions to competition and incentives (moral hazard). As discussed by the ECB (2009), most of these guarantees were limited in nature, generally applying only to newly issued securities and often having specified limits.<sup>24</sup>

McGowan (2011) notes that after the initial containment through the imposition of the blanket guarantee, the second phase of the Irish Government's plan was resolution and deleveraging. This process began with the establishment of a "bad bank", National Asset Management Agency (NAMA), to acquire the assets in the form of property development related loans. This aimed to quickly deleverage the balance sheets of the banks from the larger loans and return a level of stability to the banking system. McGowan (2011) provides an indication of the level of exposure that the banks had by highlighting that NAMA acquired 115,000 loans from a total of 850 debtors, with a nominal value of €72.3 billion. Of those 850 debtors, 180 accounted for €62 billion (2011, p.9).

Wright (2010) shows that the lack of access to funding and the rapid withdrawal of deposits made the Irish banking system dependant on European Central Bank (ECB) financing facilities and on the CBI Emergency Liquidity Guarantee Assistance (ELG). By 2010, it was apparent that Ireland's banking system was suffering from an insolvency crisis and additional large capital injections were required. As bank losses mounted, the Government had little choice but to address the problem by injecting capital into the banks between 2010 and 2012. By the end of 2012, public funds to recapitalise the banks amounted to €64bn, equivalent to 40 per cent of 2012 GDP (Lucey 2014). The lack of confidence in the ability of the Irish Government to fund the increasing cost of the crisis pushed government borrowing sharply and rendered a domestically financed solution impossible. By early November 2010, Ireland was forced to apply for a bailout from the EU and IMF. A consistent theme throughout the prevalent literature is an attempt to understand why the Regulator did not deliver on its

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<sup>24</sup> European Central Bank (2009). National Rescue Measures in Response to the Current Financial Crisis, Legal Working Paper No. 8.

duty. The next section briefly considers some of the key international reports on the Irish economy in the lead-up to the banking crisis.

#### ***2.4.5 Summary of International Reports on the Irish Economy***

Honohan (2010a), Regling and Watson (2010), Nyber (2011) and Oireachtas (2016) collectively highlight the neglect of the Regulator to take action to alleviate potential danger in the event of a downturn, seemingly failing to note the extent of systemic risk, and instead placing emphasis on public and market perceptions (Lunn 2011, p. 3). This section briefly examines the perceptions of international organisations such as the IMF, EU, and OECD in the lead-up to the Irish banking crisis? Nyberg (2011, p.viii) noted:

Generally, international organisations (IMF, EU, and OECD) were, at most, modestly critical and often complimentary regarding Irish developments and institutions. This gave the authorities and the banks additional reason to assume that all really was well.

While there were occasional warnings, on the whole both domestic and international commentators took a benign attitude towards the risks that were building up. The general view was that housing would experience a soft landing and there was no expectation that problems in the banking sector would have serious implications for the Exchequer or the economy generally (Honohan 2010a; Nyberg 2011; Wright 2010; Burke and Hardiman 2012). The Oireachtas (2016) noted that between 2001 and 2007, no specific assessment of the Irish banking sector was required under the European Commission’s Irish Stability Programme updates. The European Commission focused instead on the key ratios of the Stability and Growth Pact. As these requirements were mainly adhered to until 2007, no further in-depth studies that could have identified additional risks to macroeconomic financial stability were carried out.

A review of international reports on the Irish economy from 2000 onwards finds that the first material warning from the European Commission was in 2001. The Commission concluded in a published opinion by ECOFIN that the Irish Government’s planned 2001-2003 Stability Programme was not consistent with the European Council’s Broad Economic Policy Guidelines. While the Council acknowledged that Ireland had “fully and comfortably” fulfilled its obligations in relation to Debt to GDP, it nonetheless warned about the procyclicality of planned cuts in indirect and direct taxes, describing them as “aggravating overheating and inflationary pressures” (Council of European

Union economic and financial questions 2001). A review by Wright (2010) on international assessments of the risks of procyclicality found that these institutions frequently pointed to the risk that overheating prices and wages in Ireland could decrease its international competitiveness. Signals of overheating were especially loud in the early 2000s, when the European Council gave an official warning to Ireland under article 99.4 of the Treaty; however these warnings became more subdued as the global (and Irish) economy recovered from the burst of the dot-com bubble. It can be argued that as these warnings from the European Council became more understated, powerful institutional conformism developed to ensure that compliance with prudential and counter-cyclical risk taking in Irish institutions was not encouraged.

Nevertheless throughout the time period, and especially from 2004 to 2008, these criticisms were counteracted by favourable comment and, more often than not, praise for Irish policy. With regard to the Irish banking crisis, this is contextually important in respect of how many of the main procyclical theories (discussed in Section 2.2.3) describe or explain changes in banks' lending standards. It would appear that a level of conformism was developing to ensure that compliance with countercyclical lending practices was not encouraged. A summary of commentary by the EC, OECD and IMF is at Appendix B.2. Within these reports, there are striking similarities in how each of these external agencies initially encouraged a countercyclical fiscal policy in a small open economy. They considered that the Irish authorities should take cognisance that after several years of rapid property price increases, housing demand might increasingly be driven by expectations of further price increases. Oireachtas (2016 p.108) noted that there was a high level of trust placed by external national and international economic forecasters, namely the IMF, OECD and ECOFIN/European Commission, that data and other input from both the regulatory authorities (i.e. the Central Bank or Financial Regulator) and the Department of Finance would be correct. Equally, national authorities and Government sources often quoted the views of the external forecasters as an important factor for their own economic views. Interestingly, the Joint Committee (Oireachtas 2016) noted that the Department of Finance stated that engagements with international bodies such as the European Commission, the IMF and the OECD covered the full range of macro-economic and fiscal issues. It was noted by the Department of Finance that external institutional commentators noted vulnerabilities in the public finances and suggested tighter fiscal policy in the lead-up to 2007, but simultaneously praised Irish economic performance. The report of the Joint Committee noted that

bodies such as the IMF warned of risks but “the narrative tended to soften” over time, in the lead-up to 2007.

## **2.5 The Spanish Commercial Banks**

This section highlights the position and function of the different institutions involved in the Spanish lending environment. The motivation for including this section is that Spain is one of the countries of comparison in this PhD (Chapter 5). The first sub-section provides an overview and brief history of the Spanish commercial banks, while the next subsection turns to the Cajas sector.

### **Spanish Commercial Banks**

By 1999, two types of institutions dominated the Spanish credit market:<sup>25</sup> retail banks and the savings and loans institutions, also known as the cajas (Table 2.7 clarifies the distinction between this and the Irish system). Santos (2014) highlights that the Spanish retail banks banking market undertook liberalisation in a period that spanned the early 1970s to the late 1980s. Prior to that the Spanish banking system had been highly regulated: interest rates had to fluctuate within fixed floors and ceilings, and banks had limited flexibility on how to allocate loans because they were required to direct investment to sectors officially targeted for development. Branch expansion was also restricted. By 1986, on Spain’s entry to the European Union, seven large banks (Banesto, Central, Popular, Hispano, Santander, Bilbao, and Vizcaya) dominated the Spanish credit market, while the cajas sector played a much smaller role. By 2000, a series of mergers and takeovers, had reduced the number of large international banks to two – BBVA and Santander.<sup>26</sup> Santander and BBVA grew through a strategy of international expansion during the late 1990s and 2000s. Santander acquired the UK based Abbey National in 2004, and in 2007 through a joint takeover of ABN AMRO Santander acquired the Brazilian subsidiary of the Dutch bank, Banco Real. The key international acquisition of BBVA occurred in 2000 when it took a majority stake in Bancomer to become a dominant player in the Mexican banking market (BBVA Bancomer). Santander and BBVA operated under similar regulations and governance norms as commercial banks in the Irish domestic market, with both being publicly

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<sup>25</sup> There was a third type of institution, credit co-operatives. These were similar to Ireland’s credit unions and had no significant role in the construction and property boom. They are ignored in this study.

<sup>26</sup> Banco de Bilbao and Banco de Vizcaya merged first, in 1988, to form BBV. The “A” of BBVA came afterwards, when BBV merged with Argentaria Bank. Banco Central and Hispano merged in 1991 to create the largest credit entity at the time, BCH. In 1993 the Bank of Spain put Banesto into receivership and sold it to Santander in 1994. Santander merged with BCH in 1999 and became Banco Santander.

traded. By 2006 Santander and BBVA were two of the world's largest banks and together they accounted for 30 per cent of the Spanish market (OECD 2009).

**Table 2.7: Banking market descriptions**

|  | <b>Ireland</b>   | <b>Spain</b>  |      |      |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
|--|--|---|------|------|-----|-----|------|------|------|------|------|---|-----|-----|-----|-----|-----|------|------|------|------|------|
| <b>Market Structure</b>  | Highly concentrated<br>(%) of total assets top 5 Irish Financial Institutions (“CR5”) held<br><br><table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">`03</td> <td style="text-align: center;">`04</td> <td style="text-align: center;">`05</td> <td style="text-align: center;">`06</td> <td style="text-align: center;">`07</td> </tr> <tr> <td style="text-align: center;">44.4</td> <td style="text-align: center;">43.9</td> <td style="text-align: center;">45.7</td> <td style="text-align: center;">44.8</td> <td style="text-align: center;">46.1</td> </tr> </table>  | `03   | `04  | `05  | `06 | `07 | 44.4 | 43.9 | 45.7 | 44.8 | 46.1 | Highly concentrated<br>(%) of total assets top 5 Spanish Financial Institutions (“CR5”) held<br><br><table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">`03</td> <td style="text-align: center;">`04</td> <td style="text-align: center;">`05</td> <td style="text-align: center;">`06</td> <td style="text-align: center;">`07</td> </tr> <tr> <td style="text-align: center;">43.1</td> <td style="text-align: center;">41.9</td> <td style="text-align: center;">42.0</td> <td style="text-align: center;">40.4</td> <td style="text-align: center;">41.0</td> </tr> </table> | `03 | `04 | `05 | `06 | `07 | 43.1 | 41.9 | 42.0 | 40.4 | 41.0 |
| `03  | `04  | `05   | `06  | `07  |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
| 44.4   | 43.9   | 45.7  | 44.8 | 46.1 |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
| `03  | `04  | `05   | `06  | `07  |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
| 43.1   | 41.9   | 42.0  | 40.4 | 41.0 |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
|  | Source: Table 3, EU Banking Structures, Oct 2008 (ECB)   | Source: Table 3, EU Banking Structures, Oct 2008 (ECB)  |      |      |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
| <b>Retail Banks</b><br><b>The Irish and Spanish banking system has three main types of banking institutions.</b> | <p><b>Commercial Banks:</b> The Department of Finance has estimated that around 30 institutions were involved in retail banking in Ireland prior to 2007, with 11 having a significant retail involvement through branch networks, six of which were predominantly involved in mortgage business. Traditionally the two largest banks (AIB and BOI) each accounted for around 30 per cent of banking services.</p> <p><b>Post Office:</b> Offers a range of customer services but does not provide mortgage lending services.</p> <p><b>Credit Unions:</b> With over 400 branches spread across Ireland, credit unions have a strong high street presence. They specialise in personal loans and savings and do not engage in mortgage/construction lending.</p> | <p><b>Commercial Banks:</b> Pre-2007 Spain had two main commercial banks (accounting for 47 per cent of the system Santander, and BBVA) and a small number of middle-sized banks (IMF 2012).</p> <p><b>Savings Banks:</b> Approximately 45 savings banks (accounting for 40 per cent of total sector assets) (IMF 2012).</p> <p><b>Credit Co-operatives:</b> Commercial banks and savings banks together control around 95 per cent of the Spanish retail banking market, whereas credit co-operatives had a far smaller role in the Spanish construction boom (Illueca et al. 2009).</p> |      |      |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |
| <b>Deregulation</b>  | During the 1980s Ireland introduced a major regulatory change through the Building Societies Act of 1989. The law allowed building societies to expand the scope of their lending beyond their traditional residential mortgage focus and fund construction and development projects for the first time. This act and subsequent amendments allowed building societies to raise wholesale funding, thus removing the limitations of deposit-based lending  | Traditionally the SSBs had been subject to tighter regulation than the commercial banks. One of the most influential deregulatory effects was the removal in 1989 of the restriction that prevented the SSBs from operating outside their territorial region. From this point onwards many savings banks adopted expansive strategies, increasing the number of branches outside what until then had been their geographic scope of operation. This encouraged  |      |      |     |     |      |      |      |      |      |   |     |     |     |     |     |      |      |      |      |      |

|  | <b>Ireland</b>   | <b>Spain</b>  |
|--|--|---|
|  | <p>(Nyberg 2011, p.23).</p> <p>The Credit Union Act of 1997 increased the size of loans credit unions could offer to their members, thus enabling them to provide a wider range of services to personal customers.</p> | <p>increased competition within the Spanish market.</p> |

**Table 2.8: Comparison of Spanish commercial to savings banks**

|                          | <b>Spanish Commercial Banks (SCBs)</b>  | <b>Spanish Saving Banks “cajas”</b>  |
|--------------------------|---|--|
| <b>Market Share</b>      | <p>The commercial banks were privately owned and have an extensive international presence. The two main SCBs accounted for c.30 per cent of Spanish banking assets by 2008.</p>   | <p>The cajas assumed a central role in the Spanish banking system from 2000, accounting for c.50 per cent of the domestic market by 2008.</p> <p>These commercial non-profit cajas had the form of a private foundation — a mix between mutual companies and public institutions — where multiple interest groups share control: local and regional governments, employees, depositors, their founding entities, and heavy political involvement characterised them (Cuñat and Garicano 2010).</p> |
| <b>Growth</b>            | <p>The main three commercial banks, BBVA, Santander, and Popular, were large, internationally active banks. They were well diversified in terms of their geographic footprints and business models, with only one-third of their net profits generated domestically (IMF 2012).</p> | <p>The regionally based cajas focused on residential property lending. Many became heavily exposed to real estate and construction-related lending. Banks based in coastal regions primarily supplied credit for those building second homes and holiday homes.</p>  |
| <b>Lending Behaviour</b> | <p>The main commercial banks are largely diversified and have a large, international span. Only one-third of their net profits are generated domestically.</p>  | <p>The cajas not only became focused on the Spanish residential housing market but many also became heavily exposed to real estate and construction-related lending.</p>   |

## **The Cajas**

The cajas had a peculiar governance structure and were unique institutions to Spain, with no full equivalent in Western Europe (Hernandez and de Lusia 2013). The cajas are private, deposit-taking institutions identical to banks, except for the fact that their profits revert to a foundation which funds community-focused projects. These projects range from cultural activities to social assistance programs. The two key differences between the cajas and the commercial banks in Spain was their governance structures and the fact that property rights were ill-defined for the cajas. While the Bank of Spain supervised them, the cajas' regional and municipal governments effectively controlled their day-to-day operation and they were not publicly traded. The origin of savings banks can be traced back to old thrift institutions from the 18th century, their main aim being to channel people's savings toward investments and to perform a social task in their respective territories (IMF 2012b). Over time the cajas evolved into financial institutions that did not distribute profits, with no formal owner. They had strong roots in the territories in which they operated, and could not freely expand their activities outside their principal territory. However, by 1975, national law had extended the geographic limits of these banks to the entire provinces in which they were operating. National legislation in 1985 specifically allocated control in terms of voting rights to four categories of stakeholders: depositors (44 per cent), local governments (40 per cent), founders (11 per cent), and employees (5 per cent). In the late 1980s, following a wave of European liberalisation, the cajas lobbied for branching deregulation in order to improve their competitiveness with commercial banks. As a result geographic barriers were further extended to the regional level and were completely removed in 1988. From that point onwards, the cajas were able to carry out the same functions as a commercial bank.

The cajas expanded rapidly across state boundaries from 1989 to 2007, strengthening their national presence by increasing the number of employees and branches, whereas commercial banks exhibited a decline in bank branches and lower growth in their lending volume for the same period (Bank of Spain 2014). The market share of cajas, measured in terms of total assets, steadily increased from c.20 per cent in the 1980s to c.50 per cent in 2010 (IMF 2012).<sup>27</sup> This aggressive expansion coincided with growing lending to construction companies and real estate developers, as well as growing

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<sup>27</sup> The number of cajas branches in new provinces increased by more than 300% during 1992-2004. The commercial banks during the same period decreased by 20%. The difference in loan growth during the same period was also substantial - 500% for the cajas versus 300% for the banks (Illueca et al 2014).

exposure to mortgages. Illueca *et al.* (2013) note that without the scrutiny received by the main commercial banks, the expanding cajas significantly increased their risk taking, lending to firms in markets that were more risky than those entered by the privately owned Spanish commercial banks. Collectively, by 2006 the commercial banks and cajas accounted for, c. 45, and c. 50 per cent of the market respectively (Illueca *et al.* 2009, p.122).

## **2.6 Conclusion**

Lessons have been learned since the Irish banking crisis and important regulatory and supervisory actions have been taken at both the international and national level to help ensure more stable growth for Ireland's retail banking sector. However, more work is required to prevent mistakes being repeated. Within this context, this chapter presented a review of the more general literature on the bank lending cycle, with particular focus on the expansionary period. It also briefly reviewed the extant international and Irish literature on the Irish banking crisis to date. This chapter began by considering the key theoretical perspectives that can help explain the pattern of procyclical lending patterns over the bank lending cycle and placed them in the context of the Irish banking crisis. This chapter then moved to illuminate the more recent discussions in the literature on the evolution of the capital and provisioning regulatory landscape in the lead-up to the GFC, highlighting how both types of regulation exacerbated the procyclicality of the Irish banking system. This chapter then explored the existing general research on the Irish financial crisis, with specific focus on the banking crisis, highlighting the narratives from the emerging research. The position and function of the different institutions involved in the Spanish lending environment were also discussed. The motivation for this discussion is based on the fact that Spain is one of the countries of comparison for this PhD (Chapter 5).

This chapter has highlighted a number of weaknesses in respect of the current approach of the Irish banking crisis literature. Firstly, there has been limited focus on the procyclical drivers that drove fluctuations in Irish bank's credit policy, reflecting an overall weakness in recognising the various cyclical drivers and the implications thereof for evolving regulation and regulatory function. In a similar vein, there is also a distinct gap in the literature that places the Irish financial crisis in a comparative context. The financial crisis has provided an exceptional source of primary and secondary data with which to address the lacunae identified above, yet to date there has been little interest in

comparing the Irish case to other, better-performing banking systems or countries from which lessons can be learned. As Schiller (2000 p.164) suggests, in understanding errors that people have made in the past, it is important to consider the things to which they were not paying attention. Collectively these gaps in the literature are critically important in respect of current and future research on the Irish banking crisis, and guide the direction of this thesis, where these research gaps are addressed. Following on from this, the research questions emerging from this analysis, which will be discussed and tested empirically in Chapters 4,5 and 6, can be restated as follows:

1. Could analysis of a comprehensive set of bank-specific financial indicators of the main Irish retail banks, in the lead-up to the GFC, have foretold bank management of the distress in which Irish banks found themselves?
2. Why did the Spanish commercial banks perform better than the main Irish commercial banks during and after the GFC?
3. What discrete elements of the Canadian banking system informed its sound performance before the GFC, and are there transferable lessons for Ireland?

## **Chapter Three: The Origin and Development of the Irish Financial Crisis**

### **3.1 Introduction**

This chapter provides an historical background to the Irish financial crisis. It discusses the economic transformation of Ireland since 1990 and the implications of that transformation, with specific focus on the retail banking sector. The two distinct phases of the Irish economic boom, each driven by different factors, are identified: an export-led boom (1991-2000) and a domestic demand-led boom driven by an unsustainable housing bubble fuelled by borrowing. The chapter begins with a discussion of Ireland's economic transformation and growth convergence in the 1990s. Section 3.2 addresses the shift from growth driven by export and employment to growth driven by a property bubble. Section 3.3 addresses how the property boom was unsustainable, accompanied by a volatile fiscal position and benign banking operating culture. Section 3.4 discusses the regulatory failures of the crisis, while Section 3.5 highlights measures taken to tackle Ireland's economic crisis in 2008. Section 3.6 discusses the cost of the crisis and Section 3.7 concludes.

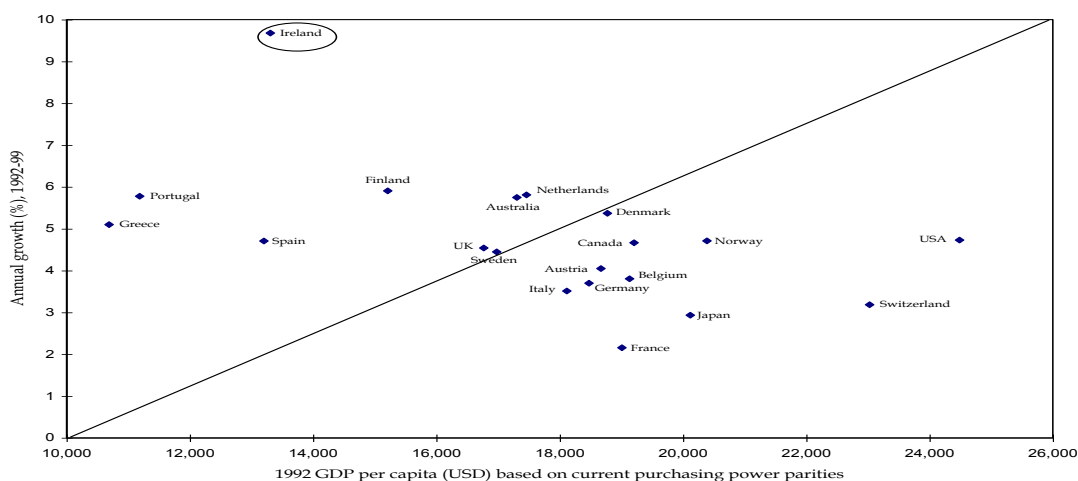
### **3.2 Ireland's Economic Transformation and Growth Convergence in the 1990s**

Before the onset of the current worldwide economic downturn, the turnaround in the performance of the Irish economy, especially during the 1990s, had received considerable international attention. The focus of this attention was generally concerned with how an economy with severe fiscal imbalances and endemic unemployment in the 1980s was transformed in the 1990s to exhibit remarkable economic growth and employment gains. During the 1990s, Ireland emerged from a lengthy period of economic stagnation marked by high unemployment, emigration, and crippling public debt, despite high tax levels (Ó Gráda and O'Rourke 1996; Honohan and Walsh 2002; Deegan and Dineen 2003).

Ireland's economic transformation during the 1990s constituted something of a macroeconomist's "vision of utopia", characterised as it was by high and sustained economic growth, low inflation, a current account balance of payments surplus, falling unemployment, net immigration and a growing budget surplus. It was during this time that Gardiner (1994) coined the phrase "Celtic Tiger" to describe the impressive growth of the economy. Donovan and Murphy (2013 p.16) note how many commentators were fascinated as to how the Irish economy had moved from a "bleak house" to a "shining

light” phase in such a short time. The books of Barry (1999), Gray (1997) and Sweeney (1998) were just some of those written about this remarkable growth period. An expanded flow of European Union structural funds amounting to as much as 3 per cent of GDP also helped fund sufficient public infrastructure in those years (Honohan 2009a, p. 2). As Fitzgerald (2016) pointedly noted, this convergence process, bringing the Irish relative standard of living to where it should have been, was delayed by very unwise budgetary policies adopted at the end of the 1970s, which resulted in a fiscal crisis that took much of the 1980s to address. Thus it was only in the 1990s that the Irish economy converged to the EU15 average standard of living (Crafts, 2014). When convergence happened, as shown in Figure 3.1, the convergence process was very rapid.

**Figure 3.1: Average annual growth rates, 1992–99, plotted against 1992 GDP per capita (PPS).**



Sources: ‘National Accounts of OECD Countries, Main Aggregates, Volume 1’, OECD 2000; ‘International Financial Statistics Yearbook’, IMF.

### 3.2.1 Ireland’s Economic Growth Convergence

Ireland’s upsurge in economic growth during the 1990s was outstanding not only in terms of its own historical experience but also in an international comparative context. However, Ireland had been a laggard in terms of its poor performance during the European economy’s "Golden Age", which spanned the period 1950-73. Hence, there were elements of delayed catch-up in Ireland’s economic transformation (Barry and Crafts 1999). The Irish growth performance in the 1990s was a clear outlier, in terms of GDP per capita based on purchasing power parities, relative to the group of OECD countries considered in Figure 3.1, which presents initial income levels and subsequent

growth. Ireland is located well above the trend line (not shown), illustrating the very robust annual average growth in income per capita experienced between 1992 and 1999. It is clear that Ireland's belated catching-up was a comparatively rapid phenomenon. At the beginning of the 1990s, Ireland was grouped with the other peripheral EU countries (Greece, Portugal and Spain) in having among the poorest living standards in the OECD.

### ***3.2.2 Exports During the 1990s Boom***

During Ireland's first growth period, the exceptionally large contribution of exports to GDP increased, and the vertical integration of much of Ireland's manufacturing sector into the global production chains of major multinational firms deepened. These were characteristics which, when combined with the sustained growth in world trade, contributed to a sustained output boom during the 1990s. Irish exports of goods and services amounted to the equivalent of 102 per cent of GNP in 1999, and the combined share of exports and imports in GNP was almost 190 per cent.<sup>28</sup> The volume of Irish goods exports grew at the phenomenal rate of 16.5 per cent per annum from 1993-2000 – a rate that would lead to a doubling of exports every 4.5 years (Kennedy 2001, p. 132). Ireland experienced a rapid increase in its share of export markets during the Celtic Tiger period, but in accounting for the overall surge in Irish export performance, this effect was secondary to the growth of the export markets themselves. There were two important external dynamics that made for a resurgence in trade:

- 1) In the 1990s, the United States returned to the rapid growth rates experienced during the "Golden Age" before the first oil crisis in 1973. High US economic growth translated into massive growth of US imports.
- 2) Despite continued low growth of European GDP, the import elasticity of demand with respect to GDP in the European Union was substantially higher in this period than in the preceding 30 years.

The buoyancy of the US economy helped Ireland on both the supply side and the demand side. On the supply side, Ireland secured an increased share of the flow of US Foreign Direct Investment (FDI) to Europe, while on the demand side the strong growth in US imports underpinned the buoyancy of world trade, as well as providing a rapidly

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<sup>28</sup> Source: CSO 'National Income and Expenditure'. (Note: Exports and imports of goods and services exclude factor income flows.)

expanding market for Irish goods. In 1992, the US was only the fourth most important market for Irish exports, corresponding to about one-third of Irish exports to the UK (Kennedy 2001). By 2000, the US was on the way to overtaking the UK as Ireland's most important export market. The growth in Irish exports to the US was heavily concentrated in high-productivity, labour-intensive industries. For example, by the year 2000, organic chemicals (SITC Division No 51) accounted for nearly half of all Irish exports to the US. Even without any consideration of transfer pricing, this category has very high value-added relative to its employment. The Irish growth rate would have been constrained without the major acceleration in the growth of the volume of goods imports in the EU – the area receiving two-thirds of Irish exports. A wider consideration concerns why other EU countries, apart from Ireland, did not derive more benefit in terms of higher exports and GDP growth. US FDI was critical in enabling Ireland to realise the potential offered by the Single European Market. Ireland during the 1990s was a case study of the effects on a small developing host economy of export-oriented foreign direct investment. The EU Single Market provided the primary source of demand for these exports. Inflows of FDI to Ireland increased from an annual average of US\$615 million during the period from 1987 to 1992 to US\$838 million in 1994, US\$2,618 million in 1996, and US\$6,820 million in 1998 (O'Sullivan 2000, p. 263).<sup>29</sup>

Increased investment by US enterprises accounted for more than 80 per cent of the overall flows into Ireland from 1994 to 1997, and the Irish share of US FDI stocks in Europe increased from 1.19 per cent to 2.94 per cent. Increased levels of direct investment by US firms in Ireland were especially important in chemicals and allied products and electric and electronic equipment. The output and exports of US enterprises operating in Ireland grew by annual average rates of 20.3 per cent and 20 per cent respectively from 1992 to 1997. US companies alone contributed nearly 47 per cent of manufacturing gross output and 61 per cent of manufacturing exports in the Irish economy in 1997, and provided about 25 per cent of manufacturing jobs by 1999.<sup>30</sup>

### ***3.2.3 Accounting for Ireland's Growth in the 1990s***

The most remarkable feature of the first Irish economic boom during the 1990s was the economy's previously undiscovered capacity for creating employment on a rapid and

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<sup>29</sup> Ireland's share of FDI among OECD nations increased from an average of 0.06 per cent for the period from 1986 to 1990 to 0.66 per cent for 1991-97.

<sup>30</sup> For a wider discussion on Irish industrial development during the 1990s, see Bradley (2000) and O'Sullivan (2000).

sustained basis. In a short period, the extraordinary growth in employment transformed the economy from a situation of chronic labour surplus to one with labour scarcity.

**Table 3.1: Average annual growth rates of real GDP, population and employment, various periods since 1926**

| Period    | Real GDP growth rate | Population growth rate | GDP / Cap growth rate | Employment growth rate | GDP /Worker growth rate | Employment-Population ratio growth rate |
|-----------|----------------------|------------------------|-----------------------|------------------------|-------------------------|---|
| 1926-1947 | 0.9                  | 0.0                    | 0.9                   | 0.0                    | 0.9                     | 0.0                                     |
| 1947-1960 | 2.3                  | -0.4                   | 2.7                   | -1.3                   | 3.6                     | -0.9                                    |
| 1960-1980 | 4.1                  | 0.9                    | 3.1                   | 0.5                    | 3.5                     | -0.4                                    |
| 1980-1993 | 3.3                  | 0.4                    | 2.9                   | 0.0                    | 3.3                     | -0.4                                    |
| 1993-2000 | 8.3                  | 0.8                    | 7.4                   | 4.7                    | 3.5                     | 3.8                                     |

Source: National Income and Expenditure, various issues; ESRI (2000).

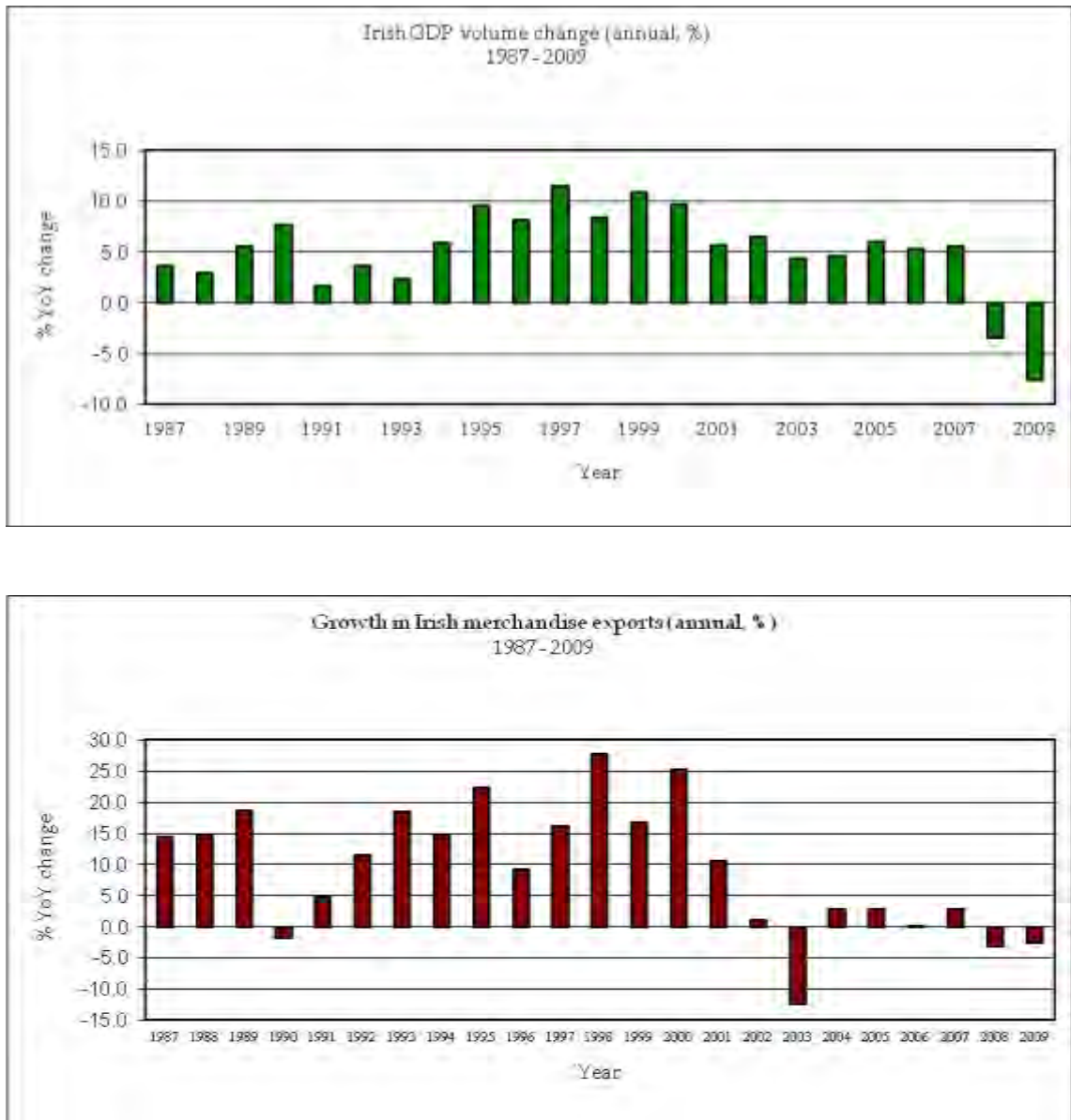
Table 3.1 shows the growth rates of output volume, population and employment in Ireland over various periods since 1926. The period 1993-2000 is taken as the “first boom” or so-called “Celtic Tiger” phase. The remarkable acceleration in the growth of output (measured here as the total volume of GDP at constant factor cost) and GDP per capita distinguishes the 1990s from all previous phases of Irish economic history. Of particular note, however, was the absence of any increase in the rate of growth of overall labour productivity, as measured by GDP per worker. All of the acceleration in the growth of output, therefore, is accounted for by the acceleration in the growth of employment to an average annual rate of 4.75 per cent per annum (Table 3.1).

### **3.3 The Second Growth Period – The Property Bubble**

Ireland recorded prolonged and rapid economic growth even after the 1990s had witnessed a belated convergence in living standards towards the highest in Europe. This growth had also endured beyond the cyclical downturn in Irish export performance after 2001 (see Figure 3.2). As the decade of the 2000s began and the success of the Celtic Tiger was at its height, there were a number of interrelated developments. First, exogenous external forces – especially the collapse of the dot-com bubble in 2000 and the downturn of the US economy in 2001-2002 – were at work that would switch the

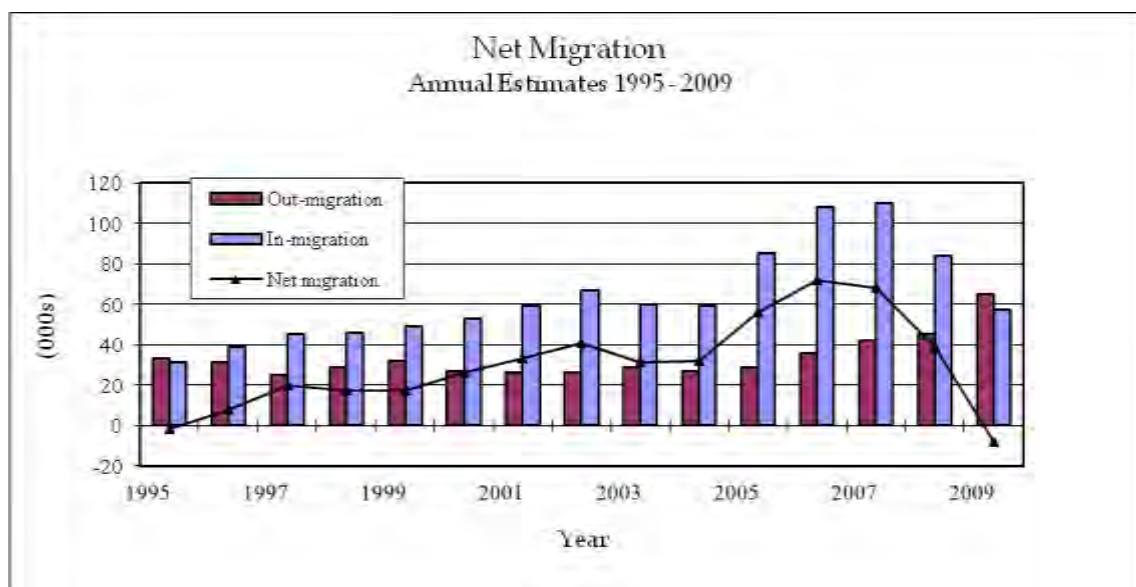
pattern of Irish growth from an export-led boom to one reliant on domestic demand. The result was that from 2001 onwards, the sources of growth shifted sharply as the growth emanating from Ireland's export-led boom, closely linked to US trade, had begun to stall (Honohan and Lane 2009; Honohan 2009a).

**Figure 3.2: Percentage year-on-year change in the volume of Irish GDP and goods exports**



Sources: CSO 'National Income and Expenditure'; CSO 'External Trade'.

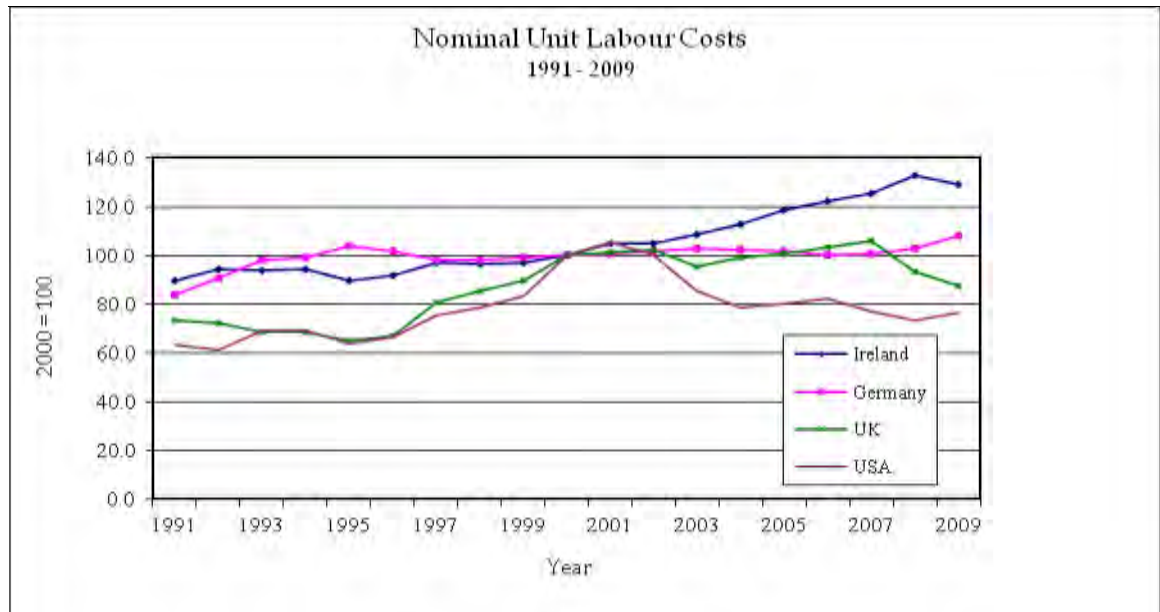
**Figure 3.3: Net migration – annual estimates 1995–2009**



Source: CSO 'Annual Population and Migration Estimates'. Numbers of persons in thousands.

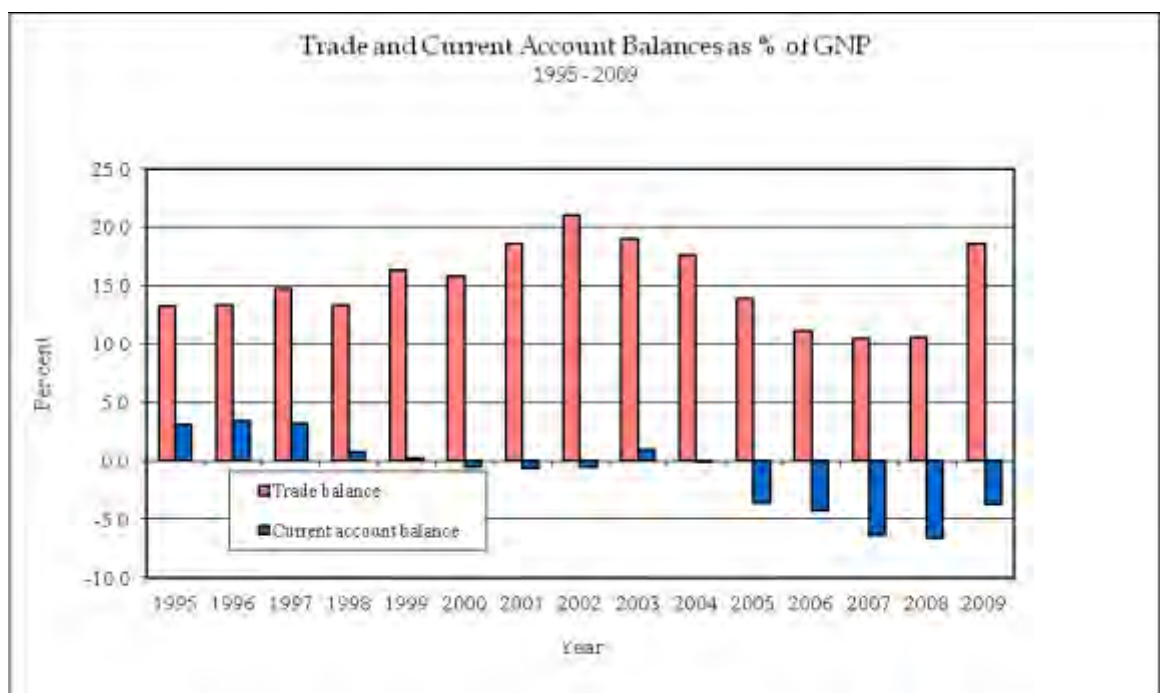
At the same time, Ireland experienced a sharp loss of competitiveness as domestic demand-led growth drove up prices and wages in the economy (Figure 3.4). From the late 1990s until 2008, the cost of Irish labour exploded relative to other countries such as Germany, the US, and the UK (Figure 3.6). A clear inflection point around the late 1990s as the prospect of inappropriately low interest rates can be seen in Figure 3.6. Prior to 1997-1998 there was no marked divergence in Irish and German unit labour costs. But after that point, Irish labour costs surpassed German costs, while German costs actually remained stable. In addition, the consumer boom increased imports, resulting in a deteriorating trade balance (Figure 3.5). The effects were not yet felt in aggregate unemployment while the domestic boom continued. Many of the exceptional factors, such as booming exports and increased labour productivity that had generated exceptional growth had begun to play themselves out by c. 2000 and as Whelan (2013) argues, labour force participation and demographic factors could no longer be called upon to generate large increases in the labour force and the period of catch-up productivity growth had come to an end. Even without an international slowdown or a domestic crisis, Ireland entered the second half of the 2000s with an economy that was on the road to slowing down, although the low stock of debt appeared to position the country well for coping with a slowdown.

**Figure 3.4: Index of nominal unit labour costs in the total economy – common currency**  
 (€) - 2000 = 100



Source: European Commission AMECO database.

**Figure 3.5: Trade and current account balances as percentage of GNP**



Sources: CSO 'Balance of International Payments', 'National Income and Expenditure', 'Quarterly National Accounts'. Note: Trade balance relates to exports and imports of goods and services.

### 3.3.1 The Emergence of a Property Bubble – What Went Wrong in Ireland?

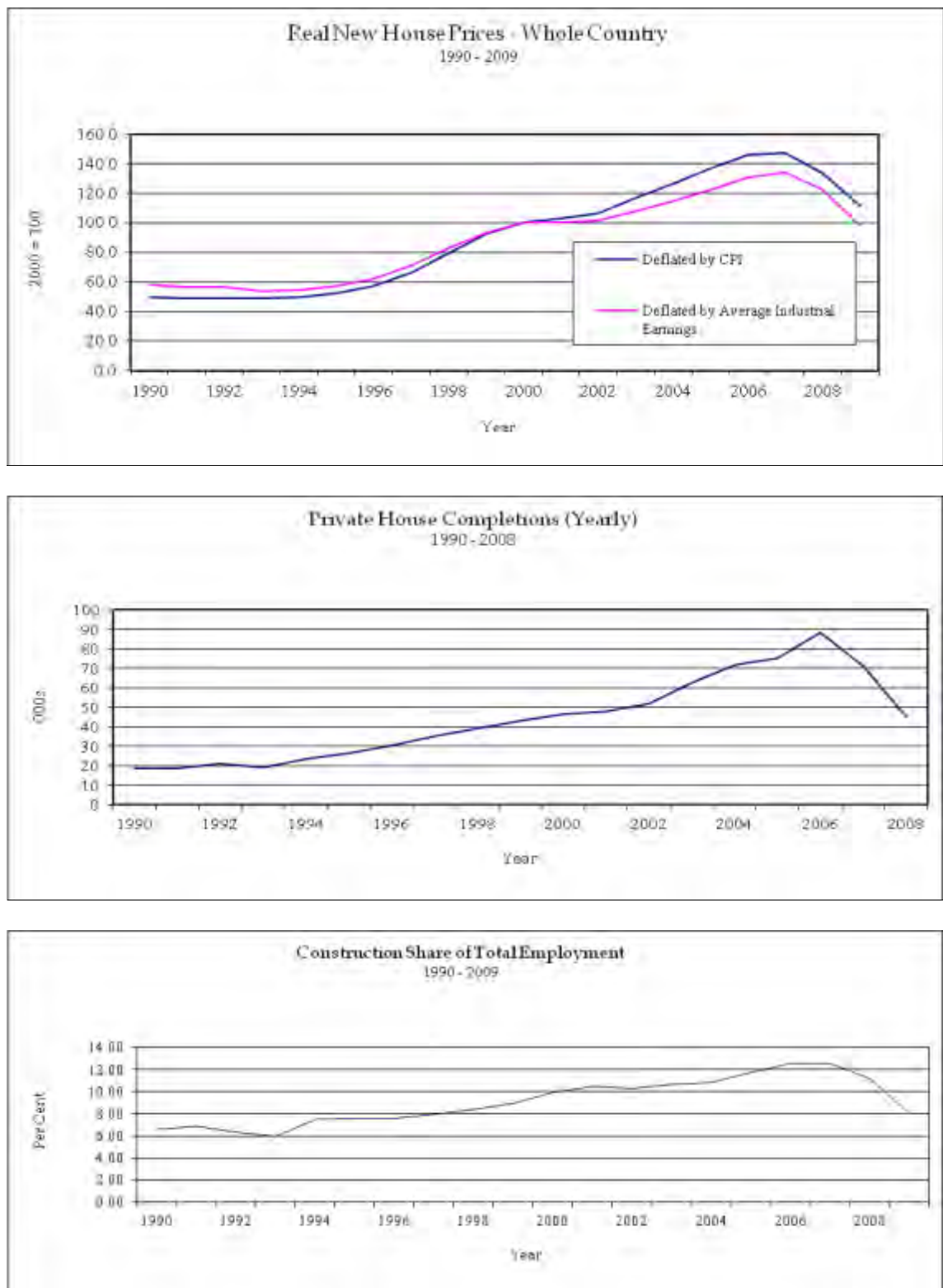
Even if the combination of lower interest rates from 1998 (see Figure 3.6) and higher income meant a sizeable increase in housing affordability, property prices overshot equilibrium levels. Lucey (2014) notes that over the course of 15 years, and in particular after 1996, Ireland saw astonishing house price increases. While house prices increased across the country, the phenomenon was focused in Dublin. The threefold increase in average real new house prices 1993 to 2007 was the highest in any advanced economy in recent times. Private house completions accelerated to a peak of over 88,000 in 2006 and the share of the (growing) workforce engaged in construction rose from 6-7 per cent in the early 1990s to nearly 13 per cent in 2006-07 (Figure 3.7). It is clear from Figure 3.7 that there was an inflection point in the trend of Irish house prices in the mid-1990s. Prior to that, house price increases had been modest and uniform; after that, increases were much higher. Figure 3.7 shows that it was by the mid-1990s that the trend line of Irish house prices profoundly altered as Ireland's membership of EMU became increasingly certain and as interest rates lowered, and converged towards German levels (see Donovan and Murphy 2013 for similar discussion).

**Figure 3.6: Real interest rates – Ireland and EU-15**



Source: European Commission AMECO database.

**Figure 3.7: Real house prices, private house completions, and construction's share of total employment**



Sources: Department of the Environment, Heritage and Local Government, CSO 'Consumer Price Index', CSO 'Industrial Employment', CSO 'Earnings and Labour Costs', CSO 'Labour Force Survey', CSO 'Quarterly National Household Survey'.

In 1995 the average first-time buyer took out a mortgage equal to 3 years' average industrial earnings, and the average house 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 ... As the price of new houses rose faster than the cost of building them, investment in housing rose. By 2007, Ireland was building half as many houses as Britain, which has 14 times its population (Kelly 2010a).

The legacy of this second boom was that by 2011 Ireland had a large excess stock of housing. In parallel with the property bubble, a sharp escalation in private debt had developed. The difficulties facing the Irish banks by 2007 – whether in terms of liquidity or solvency – were directly attributable to their over-lending for land and property investment, much of it funded through heavy short-term wholesale foreign borrowing. Without the latter, the banks would not have been as vulnerable to the worldwide liquidity crisis which intensified throughout 2008 (Honohan 2010b, p. 22).

### ***3.3.2 The Property Market Downturn of 2001 and the Irish Government's Response***

As Donovan and Murphy (2013) note, property prices, linked to the extraordinarily impressive growth performance, had been rising at a rapid rate up to 2000. Initially prompted by the increased household formation (related to unprecedented levels of net immigration – see Figure 3.3) and by the sharp fall in interest rates that accompanied the transition to EMU membership, the property bubble, as will be discussed, was increasingly financed after 2003 with foreign borrowing by the banks, who in turn lent to overleveraged households. House prices suddenly plateaued in 2001; however, as Donovan and Murphy (2013) note, rather than heeding the warning that house prices would not inevitably be rising always, instead the Government introduced a wide range of property-related fiscal incentives that, when linked to the gradual change in the banks' approach to lending, helped to develop a property bubble. The result was that an unsustainable property price and construction boom had taken over from exports as the main driver of Irish growth from 2001 onwards. The CSO residential property price index shows that house prices increased by 311% between 1996 and 2007 (its peak). Honohan (2010b p.30) highlighted how from 2002 onwards the Government made extensive use of taxation incentives aimed at encouraging the construction sector. For example, the rates of stamp duties, which were high, were lowered several times in 2001-2003, 2005, and 2007. At the height of the boom, in 2004-06, tax incentive

schemes existed for urban renewal, multi-storey car parks, student accommodation, buildings used for third level, etc.

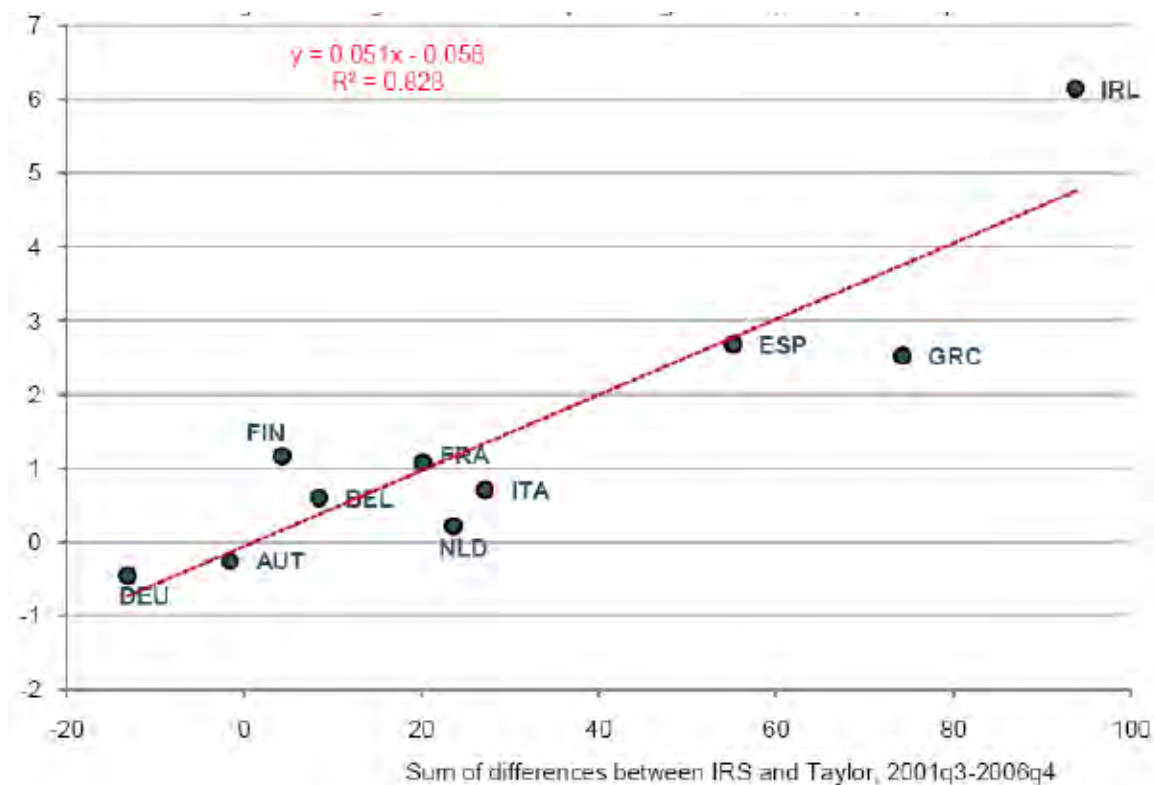
### ***3.3.3 Inappropriate Interest Rates***

Lucey (2014 p.28) notes that one of the first signs that things were going to be different for Ireland as a member of the Eurozone was that interest rates dropped sharply from the late 1990s onwards. This happened in anticipation of high Irish interest rates being replaced by much lower Eurozone interest rates that would be heavily influenced by the needs of Germany, which was dealing with national reunification at this time. This meant that interest rates that may have been suitable for Germany were far too low for Ireland's national circumstances. White (2005) observed that these inappropriate policy rates for Ireland were fueling the residential construction sector and estimated that by 2005 an appropriate rate for Ireland would have been around 6 per cent, fully four percentage points above its actual level. White's (2005) analysis was further verified by research undertaken by Ahrend et al (2008) in an examination of appropriate Central Bank policy rates for an economy. Their research, which focused on the period 2002 – 2005, found that deviations by countries from the Taylor rule<sup>31</sup> explained a large fraction of the cross-country variation in housing booms in OECD countries, including Ireland. Figure 3.8, taken from Ahrend et al (2008), highlights clearly that the greater the degree of interest rate reduction a country received from Eurozone membership, such as in Ireland's case (mapped on the horizontal axis), the greater the increase in housing investment in the country (vertical line). These inappropriate interest rate policy over the period 2002-2005 in combination with rapid financial market innovation were among the main factors behind the increase in asset prices and consequent financial imbalances that developed and the (partial) unwinding of which helped trigger the Irish financial market turmoil.

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<sup>31</sup> See Ahrend et al (2008) for detailed discussion of the Taylor rule

**Figure 3.8: Change in housing investment as a percentage of GDP, 2001q1- 2006q4**



Source: R. Ahrend, B. Cournède and R. Price (2008) "Monetary Policy, Market Excesses and Financial Turmoil", *OECD Economics Department Working Papers*, No. 597, March 2008.

The direct result of overly cheap credit combined with a change in the banks' approach to financing was that borrowing levels increased (see Lucey 2014 and Donovan and Murphy 2013). The extent of the speed of expansion by banks is clear when one considers that from between January 2003 and December 2005 domestic banks in Ireland grew their asset base by 256%.

### 3.3.4 Fiscal Crisis

Whelan (2009 p.3) notes that the exceptional growth rates allowed the Irish Government to achieve a holy grail that was the envy of politicians around the world. The Government was able to lower tax rates and raise public spending and yet economic growth delivered sufficient tax revenues to generate a string of budget surpluses from 2000 onwards. Lucey (2014) notes that government spending more than doubled over the decade between 1997 and 2007, having grown at an annual pace of c. 8.5 per cent. Figure 3.9 shows the way in which government spending had a strong upward momentum over this period. A sectorial analysis of Ireland's job growth from 1998

onwards shows that the highest rates of employment growth were experienced by the interest-rate-sensitive sectors (the unemployment rate had shrunk from 15 per cent, on the ILO basis, in 1994 to 4 per cent in 2000).<sup>32</sup> With interest rates inappropriately low, those sectors most exposed to the resulting credit boom were construction and financial services (Lucey 2014).

Although the Irish Government ran annual budget surpluses until 2006, an increasing share of the revenue that supported these surpluses had come from taxes whose yield was sensitive to high and increasing asset prices and asset transactions, including housing (capital gains taxes, capital acquisition taxes and stamp duties).<sup>33</sup> As low interest rates spurred a property boom and the wider economic boom, the finances of the Irish public sector received a boost. Lucey (2014) notes that rising employment and economic activity meant that tax revenues soared and between 1997 and 2007 annual government revenue grew from €23 billion to €60 billion – increasing at an annual rate of circa 10 per cent. Once the asset markets turned, the volume of transactions dried up, the level of tax revenues plunged during 2008 exposing a structural deficit – exacerbated by a strong upturn in public expenditure in preceding recent years.

The Irish Government had entered the crisis period with a healthy balance sheet – the gross government debt stood at only 24.8 per cent of GDP at the end of 2007 and Ireland had a sizeable sovereign wealth fund in the form of the National Pension Reserve Fund (Honohan and Lane 2009). During the four years 2003-2006, the surge in tax revenue directly related to property transactions was another manifestation of the credit boom. The Irish property tax system was highly geared to activity and property prices: stamp duty was a straight transaction tax; VAT was charged on the gross purchase price of a new home; and Capital Gains Tax (CGT) liability was triggered, where it was applied, through the realisation of gains. Revenue from property jumped from 8 per cent of total tax receipts in 2002 to 18 per cent by 2006. However, after the collapse of the construction and property bubble, total direct revenue from property<sup>34</sup> dropped to €3.6bn in 2008 from €8bn in 2006 (McCarthy and White 2008, p. 8).

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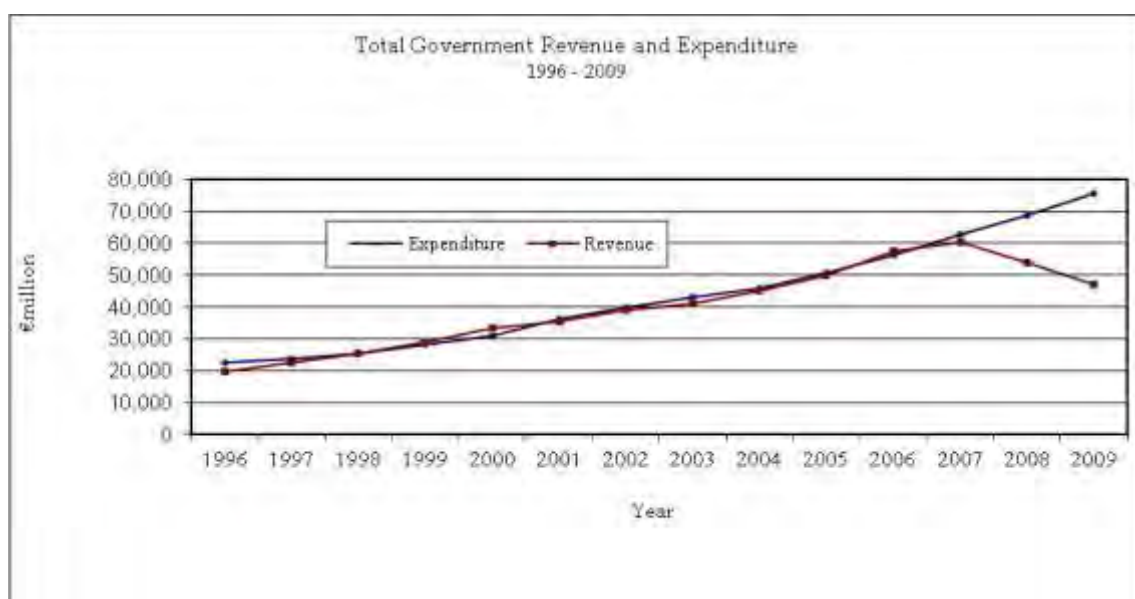
<sup>32</sup> Sources: CSO 'Labour Force Survey', CSO 'Quarterly National Household Survey'.

<sup>33</sup> The sustained output, profit and asset price boom which extended for two decades from 1988 – with only two brief hesitations in 1993 and 2001/2 – lulled policymakers into a false sense of security as to the sustainability of the revenues from cyclically sensitive taxes, and induced them to take advantage of the extra revenues by narrowing the base of the personal income tax and lowering rates.

<sup>34</sup> This excludes income tax from construction workers, VAT on furniture and electrical goods, and corporation tax receipts from construction firms.

Between 2007 and 2009, overall 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 (Kelly 2010b). The dependence of the Government on transitory property revenue was remarkable and should not have been seen as a platform for expenditure increases. Whelan (2013) notes that the collapse in construction activity and the corresponding jump in unemployment resulted in a huge loss of income tax revenues. In combination with the collapse in tax revenues in 2008-9, the fiscal crisis was partly driven by an autonomous surge in Total Government Expenditure (after 2004). Figure 3.9 presents data for *Total Government Expenditure (Gross Current Expenditure plus Exchequer Capital Expenditure)* and *Gross Current Government Revenue* for the period 1996-2009, and reveals the sudden collapse in taxation. It also shows the strong upward momentum of government spending.

**Figure 3.9: Ireland – total revenue and spending, 1996-2009**



Sources: Department of Finance 'Revised Estimates for Public Services' (various years) and 'Finance Accounts' (various years); 'Public Capital Programme'; CSO 'National Income and Expenditure'.

### 3.3.5 *The Property Bubble, the Banking Crisis and Public Debt*

Apart from the experience of Iceland, this has turned out to have been the poorest performance of any banking system during the current global downturn. Yet Irish banks had not indulged in the financing of US securitised mortgages, nor were they involved in aggressive international acquisitions – flaws that characterised weakened banks elsewhere (Honohan 2010b, p. 19).

The economic fault line in relation to the debt crisis in which Ireland found itself ran from (highly procyclical) bank-lending practices feeding an unsustainable property bubble, resulting in a banking crisis that required extraordinary intervention by the State with the manifestation that the enormous private debt of the Irish banking system would eventually be loaded on the taxpayer. The collapse of the Irish economy, more specifically the collapse of property values, placed the banks under severe pressure. Having lent so excessively to one sector to finance property development, the banks were exposed to the huge risk of loan losses if these developments faltered (Lucey 2014; Donovan and Murphy 2013). The total for loans to Irish Residents for house purchase exploded from €43bn in January 2003:Q1 to a peak of €127bn in May 2008 (CBI 2015),<sup>35</sup> which was c. 60 per cent of that year's GDP. Whelan (2009) further explains that in addition to the mortgage lending, the Irish banks also built up huge exposures to property development projects as property-related lending went from €45bn in 2003:Q1 to a peak of €125bn in 2008:Q1. Donovan and Murphy (2013) argue that the continuing rise in residential property prices, although very significant, was not the most important element of the property bubble from 2002 onwards. While the rapidly surging house prices helped to encourage profit-seeking builders and developers, if the boom had been solely confined to the residential market, what subsequently happened would, arguably, have been manageable. It was the lending of the ever-increasing large sums of credit to developers that contributed most significantly to the banks' losses (Donovan and Murphy 2013, p. 66). However, Irish banks were also exposed to another serious problem that was less commonly understood. At root cause, the property bubble was funded by the Irish banking system, which in turn relied heavily on the international inter-bank market and accumulated substantial net external liabilities.

As credit growth began to exceed deposit growth an increasing share of lending was funded mainly by borrowing from other financial institutions, with nearly half coming from UK banks. After 2003, the rapid expansion of banks into property-related lending was largely financed by bonds issued to international investors. As Whelan (2013) highlights, from less than €15bn in 2003, the international bond borrowing of the six main Irish banks rose to almost €100 billion (well over half of GDP) by 2007. Figure 3.10 shows the growing reliance of the Irish banking system on wholesale external borrowing as opposed to the more traditional domestic deposit funding model. This

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<sup>35</sup> Table A.6 Loans to Irish Residents - Outstanding Amounts (Incl. Securitised Loans) CBI 2015.

significant change in the funding profile of the banks represented additional risk as this source of funding would prove to be less stable than deposit funding once the property market crashed. By early 2008, net foreign borrowing by Irish banks had jumped to over 60 per cent of GDP from 10 per cent in 2003 (Honohan 2009a, p.5).

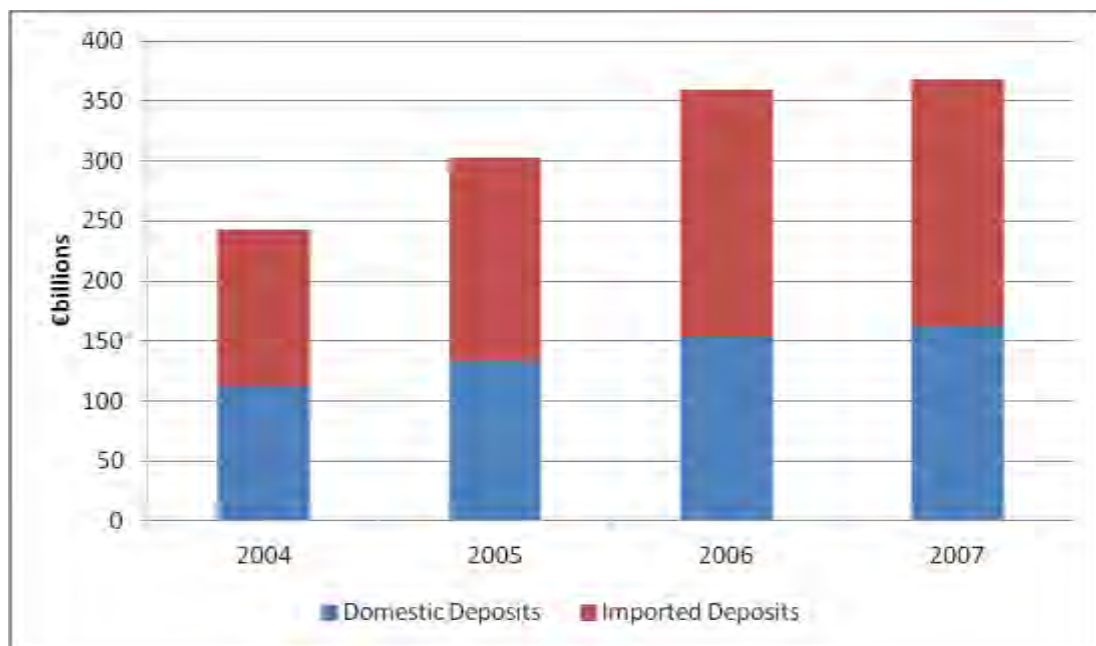
From 2007 onwards, the collapse of the construction and housing bubble and the concentration of Irish banking loans in these sectors were centrally important in the deterioration in the financial health of the Irish banking system. Banks faced losses so large that they would eventually threaten the solvency of the banking system as the value of banks' property-related assets fell below the value of their liabilities, leaving them with negative equity. By 2007, property-related lending (residential mortgages, commercial property and lending to construction companies) accounted for more than half the stock of bank lending (Figure 3.11). To the lack of diversification in loan assets there was spiralling loan-deposit ratios (see Figure 3.12) and a pronounced deterioration in shareholder equity to assets and to risk-weighted assets ratios. In a wider context, while Basel II was designed to improve prudential risk management, this was at a time when the general international application of Basel II risk weighting would have released capital for most banks. At a minimum, the internal risk management of the main Irish banks left much to be desired. This was compounded by what could euphemistically be described as "light-touch" regulatory oversight.<sup>36,37</sup> To put further context on the pace of credit extension undertaken by the banks, in 1997, Irish banks' lending to the non-financial private sector was 60 per cent of GNP. By 2008, this had grown to 200 per cent of national income. Irish banks were lending 40 per cent more in real terms to property developers alone in 2008 than they had been lending to everyone in Ireland in 2000, and 75 per cent more to house buyers (Kelly 2010). By 2006, two-thirds of loans to first time buyers had loan-to-value in excess of 90 per cent; one-third were getting 100 per cent loans (Honohan 2009a, p. 5).

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<sup>36</sup> Prior to the onset of the current global credit crisis, a light-touch regulatory orthodoxy held sway in many countries. Over the previous decade, the financial system had expanded hugely. This was encouraged by a general belief in *laissez-faire* regulation based on the assumption that financial innovation was spreading risk, not concentrating it. Ultimately, financial regulators were not equipped to see the risk concentrations and were not able to contain the risks resulting from rapid innovation and increased leverage, which had been building for years.

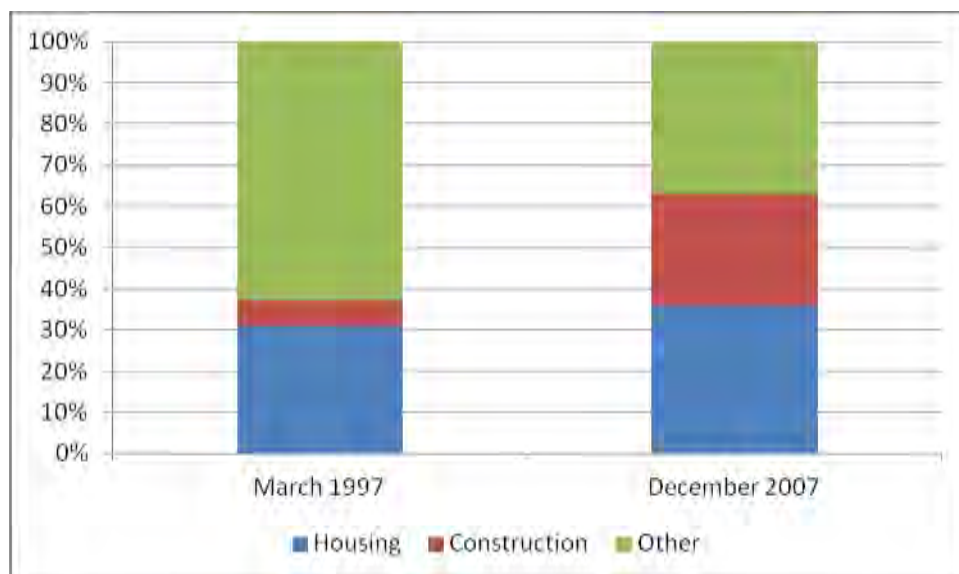
<sup>37</sup> Private sector imbalances, such as excessive credit growth and large current account imbalances, were not at the core of the scrutiny framework used under the euro area's existing surveillance arrangement. Furthermore, the Stability and Growth Pact was created to ensure that no country would pursue fiscal policy that would endanger the financial and economic stability of the other member states and the euro area as a whole. However, this mechanism was not broad enough in scope, as it left non-fiscal economic imbalances outside the scope of surveillance. Ireland is an unfortunate (though far from blameless) example of this.

**Figure 3.10: Irish domestic banks' funding (2004-2007)**



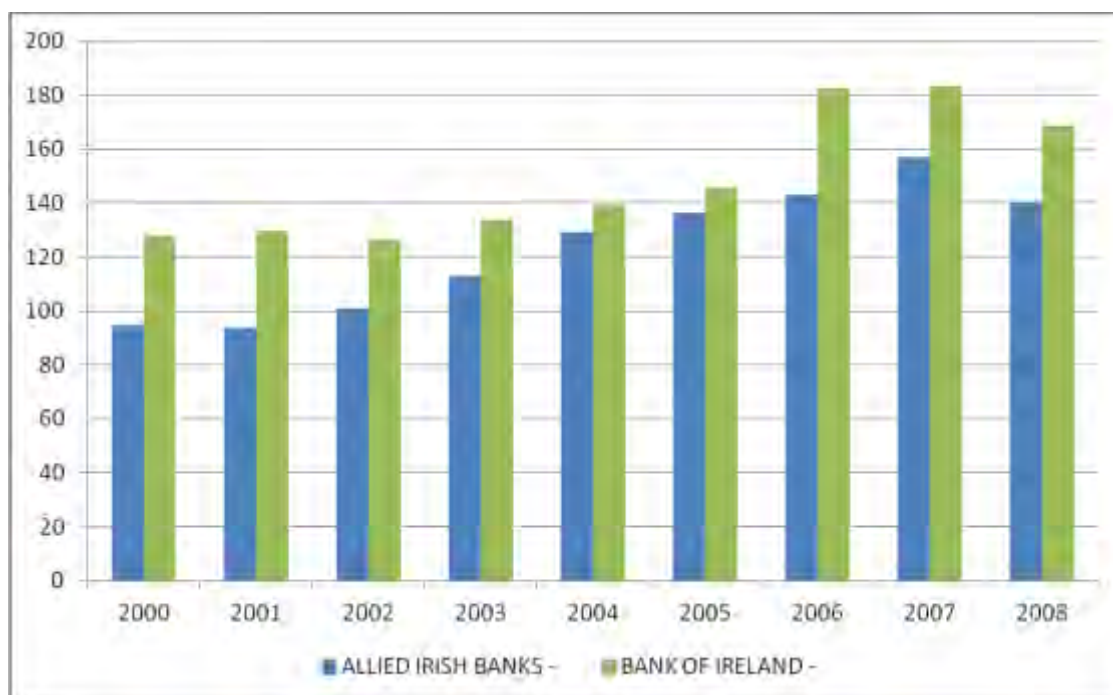
Source: Central Bank of Ireland.

**Figure 3.11: Breakdown of bank lending Irish commercial banks**



Source: Central Bank of Ireland.

**Figure 3.12: Loan-to-deposit ratios – Irish banks**



Sources: BankScope and Annual Reports of AIB and BOI.

As already highlighted, elements of Eurozone membership, including low interest rates and the removal of exchange rate risk, certainly contributed to the highly procyclical lending behaviour, property bubble and deteriorating drift in wage competitiveness. The exchange rate and interest rates were no longer sensitive to domestic developments – the "one size fits all" low interest rates prevailing in the Eurozone were orthogonal to Ireland's business cycle for virtually all of the period between the launch of the single currency and the onset of the global recession. During the period 1998-2007, real interest rates averaged *minus* 1 per cent (Honohan 2009a, p. 7). Unlike imbalances of the past, over borrowing on the Eurozone inter-bank money markets from 2003 did not lead to interest rate increases because currency risk had been altogether removed. By the summer of 2007, Lucey (2014) trenchantly notes that a bank that was overly reliant on short term funding, such as Irish banks, were faced with serious difficulties as interbank markets froze.

### **3.4 Regulatory Failures**

The huge build-up of risk on the balance sheets of Irish banks during this period raises questions about why the Central Bank of Ireland, which was charged with maintaining the stability of Ireland's financial system, did not intervene and why external bodies such as the IMF and European Commission did not express concern. Following in the

wake of the newly established Financial Services Authority (FSA) in the UK the Irish Government decided in October 1998 to consolidate the prudential and customer protection regulation of all financial institutions under the umbrella of one institution called the Irish Financial Services Regulatory Authority (IFSRA). In 2003, IFSRA initiated a move to a principles-led and risk-based approach to regulation with the aim of improving “the quality and minimise the quantity, where possible, of regulation” (Government of Ireland 2004). This involved moving away from reliance on detailed rules and relying instead on high-level broadly stated rules or principles (Black *et al* 2007). In this new “principles-led” environment the board of directors of each supervised financial institution was responsible for setting their own standards in relation to tolerance of risk, etc. This approach relied on entities to act with their own integrity and placed a much greater emphasis on internal supervisory systems within banks.

As discussed by Honohan (2010), the “principles-based” supervisory culture at the Central Bank during this period meant there was very little supervisory interference in bank operations. Whelan (2013 p.12) highlights how the Central Bank had been tasked during this period with promoting Ireland’s financial services industry and presentations from this period to international investors highlighted the “user-friendly” nature of the regulatory approach. Whether because of this role or because of other failings, the outcome was a supervisory policy of not-so-benign neglect that left the banks totally unprepared for a slowdown in the property market. The Irish retail banks’ management took full advantage of the discretion that principles-based regulation allowed and began to expand their business models at an unprecedented pace. In the period from 2000 to 2005 alone, Irish domestic banks’ lending doubled. The international credit boom saw an increase in bank lending across most Eurozone economies and the UK, with loans increasing to 100 per cent of GDP on average in 2008. In Ireland, Spain and Portugal (in descending order), bank lending to households and non-financial firms as a percentage of GDP exceeded 150 per cent. In Ireland’s case, this indicator had accelerated to almost 200 per cent by 2008.

Since joining the EMU, Irish banks had been operating in a setting of greatly increased wholesale funding opportunities, and banks from abroad began to compete strongly in the Irish retail mortgage lending market. Competition intensified and “uncritical enthusiasm” (Regling and Watson 2010, p.35) within the Irish banking system resulted

in an environment where prudent risk management was ignored. Financial sector compensation became based on short-term profits, as the Irish retail banks sought to generate returns via rapid expansion of their loan books. Short-term (wholesale) borrowing to fund long-term loans held sway. Against this backdrop, strongly risk-averse reactions from the Irish Regulator would have been needed. However, in reality, there were serious failures regarding the supervision of credit institutions in Ireland, and bank governance and risk management were seriously flawed.

By 2007, it had become evident that the Irish Regulator had placed an unfounded reliance on principles-based regulation “based on a mistaken view of governance within banks” (Cowen 2010) and had not backed this up with adequate supervision. As Honohan (2009b p.7) notes, the Regulator “largely ignored the need for conventional prudential regulation of the main banks” and was inadequate in addressing the overexposure of the Irish banks to the accumulation of excess risk through their lending activities. However, the Irish Regulator throughout the boom period was operating within an environment where excessive weight was placed on fears of upsetting the competitive position of domestic banks, even at the expense of prudential considerations (Honohan 2010b). Ultimately, the IFSRA had failed in its primary job of protecting and ensuring the credibility and solvency of the Irish banking system.

### **3.4.1 IMF and The Directorate-General for Economic and Financial Affairs (DG ECFIN)**

The IMF also failed to see the dangerous connection between Ireland’s construction sector and bank system when it reported in May 2006:

The outlook for the financial system is positive. That said, there are several macro-risks and challenges facing the authorities. As the housing market has boomed, household debt to GDP ratios have continued to rise, raising some concerns about credit risks. Further, a significant slowdown in economic growth, while seen as highly unlikely in the near term, would have adverse consequences for banks’ non-performing loans. Stress tests confirm, however, that the major financial institutions have adequate capital buffers to cover a range of shocks. (p.1)

Another body that had considerable influence over the Irish banking sector was the DG ECFIN. This body also failed to diagnose what was happening in Ireland. On 3 March 2008 it published its Macro Fiscal Assessment of Ireland and again presented complacent conclusions.

Despite the weakening of the budgetary position in 2007, the medium-term objective (MTO), which is a balanced position in structural terms (i.e. in cyclically-adjusted terms net of one-off and other temporary measures), was reached by a large margin. (p.5)

One explanation as to why external bodies such as the IMF may not have raised concerns is that these agencies were focusing too much on the apparently strong capital adequacy ratios. In the IMF's 2007 Article 4 review on Ireland, there was a sub heading which stated, Irish "banks have large exposures to property, but big cushions too." This messaging was in line with the Irish Government's belief that the profitable Irish banks were going to be safe even if the economy hit a serious downturn.

### **3.5 Measures Taken to Tackle Ireland's Banking Crisis in 2008**

During 2008, as evidence built up of the scale of the Irish construction collapse, international investors became concerned about the exposure to property investment loans of the Irish banks. The domestic banks were finding it increasingly difficult to raise funds on bond markets and on 30 September 2008, two weeks after the collapse of Lehman Brothers, following meetings on the previous night between senior government officials, representatives of the Irish banks, the Department of Finance and the Central Bank, the Irish government decided to guarantee all the liabilities of the Irish domestic banking sector. (Connor et al, 2015). One of the biggest banks, Anglo, was possibly days away from defaulting on its liabilities and the other banks were extremely concerned about the impact on their operations if such a default was to occur (Whelan 2013). The highly connected banking system was beginning to crumble. Various policy measures were undertaken to manage the Irish banking crisis and can be divided into four separate categories: liability guarantees; removal of toxic loans from balance sheets of the banks; recapitalisation of the banks; and a new regulatory or supervisory regime.

The first tool deployed by the Irish Government was the extension of a blanket guarantee (including deposits and most debt) across the six principal Irish financial institutions.<sup>38</sup> This original guarantee, called the Credit Institutions Financial Support Scheme (CIFS), was announced September 2008 and expired December 2010. This guarantee effectively saw the Irish domestic banks effectively changed from private enterprises to nationalised (AIB, PTSB) or partly nationalised institutions (Bank of

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<sup>38</sup> This is often referred to as the six covered banks. "Covered banks" refers to the six Irish banks guaranteed by the Irish Government in September 2008.

Ireland). The guarantee was run for two years and meant that any default on bank liabilities that occurred during that period would be covered by the Irish Government. However the CIFS was followed in December 2008 with the Extended Liability Guarantee (ELG). The distinction between the two guarantees was that the ELG applied to new borrowing and not existing stock of debt.<sup>39</sup> The impetus for both guarantees was to prevent a run on the banks. The blanket guarantee severely complicated crisis management from that point forward, ensuring that the large losses beyond the capital of the banks would ultimately become a liability of the state (McHale 2012, p. 1232). The ECB (2009) notes that while many other European countries provided guarantees to bank creditors in the months post Lehman brothers collapse in the US, most were limited in nature and had specific limits of coverage.

As well as guaranteeing the deposits and most bonds of Irish banks, the Government announced in April 2009 that a National Asset Management Agency (NAMA) would be created to buy the non-performing development property loan portfolio of the banks at a written-down value. NAMA was established as a national ‘bad bank’ to take the most toxic loans off the balance sheets of the banks (See Honohan (2009c) for a full discussion on the workings of NAMA). NAMA took the worst-performing property and development loans off the balance sheets of the participating at a discount (“haircut”), paying the banks with government-backed bonds, issued by a special purpose vehicle. The banks could then use these bonds as collateral against which they could borrow (access liquidity) from the European Central Bank. In return, the banks received government-backed NAMA bonds (95 per cent), paying a floating rate of interest (half a percentage point above ECB’s main refinancing rate) and subordinated bonds (5 per cent) that only pay off if NAMA makes a profit (McHale 2012, p. 1223). Banks will be faced with a levy in the event of NAMA making an overall loss. The main purpose of NAMA was to exchange uncertain valued loans for (more) certain valued government bonds, thus stabilising the balance sheet. NAMA bonds also had the effect of improving the liquidity and funding situation of the banks as they could be used as collateral at the participating banks. They also have been praised for forcing earlier recognition of losses by the banks and forcing timelier recapitalisation of the banks. NAMA, however, did

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<sup>39</sup> The ELG expired 28 March 2013.

not address the Irish banks' losses for mortgages, personal lending, and the small-to-medium enterprise sector.<sup>40</sup>

Another policy response was the stress testing of the main Irish banks, resulting in extensive recapitalisation of the banks by forcing the earlier recognition of losses in an attempt to meet the requirements of increased capital levels.<sup>41</sup> The biggest capital shortfall was for Anglo Irish Bank, which was nationalised in late 2009, and which (along with Irish Nationwide Building Society) is now in the process of being finally wound down following a transfer of deposits to other banks. Ireland's two main banks, AIB and Bank of Ireland – which after mergers with smaller institutions became the 'pillars' of the new banking system – also required significant capital injections. The Department of Finance notes in its September 2014 scorecard that the recapitalisation of the six "covered" Irish banks has cost c.€64bn – equivalent to 40 per cent of GDP – and as we see in the next section, the Irish banking crisis ranks as one of the biggest and most expensive bailouts ever. Policy reform of Ireland's financial regulatory architecture has included a new formal risk assessment framework, known as PRISM (Probability Risk and Impact System), which came into effect at the end of 2011. More prescribed and clear regulatory rules and instruments must be accompanied by sufficient powers – including manpower – to discharge the regulatory function effectively.

We have begun the process of re-structuring and resourcing our organisation to deliver a more assertive, risk based and challenging approach to banking supervision. We are placing a greater focus on macro-prudential analysis to identify the risks and stresses for business models, sectors of the economy and the financial system. We are building our capability to enforce standards, rules and requirements and deliver a credible threat of enforcement to underpin the new approach. We want to be in a strong position to translate macro-prudential analysis and micro-prudential oversight into the supervisory actions necessary to address identified risks. We want to better influence and implement the regulatory legislation and requirements emanating from the EU. (Extract from the Opening Statement by Matthew Elderfield to the Joint Committee on Economic Regulatory Affairs – 6 October 2010.)

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<sup>40</sup> The NAMA process has left the banks with insufficient capital. As loan losses crystallize and get taken into account in a bank's balance sheet, its cushion of capital (essentially the difference between its assets and its non-risk-bearing liabilities) shrinks. Government injections of capital are more about protecting the depositors and other creditors against future risks than they are about making loanable funds available.

<sup>41</sup> The Irish Financial Regulator set out a basic 8 per cent Core Tier 1 requirement for Irish banks, higher than the 6% per cent Core Tier 1 requirement under Basel III – this was to be met by December 2010.

### 3.6 Cost of the Irish Banking Crisis

Estimating the net fiscal costs related to banking crises can be problematic. Even when assessing the fiscal costs of historical crises where one would imagine that the passage of time would allow for a complete analysis, it is often difficult to source reliable data on the amounts paid out by the exchequer and the rate of recovery. It is even more difficult to examine the fiscal costs associated with ongoing crises, where the costs related to guarantees, recapitalisations, nationalisations and liquidity schemes will not become apparent for a number of years. Notwithstanding these difficulties, from the information available it is clear that the Irish banking crisis currently ranks as one of the costliest in history. The Department of Finance (2014) posits that Ireland invested €64bn (see Table 3.2 below) into the banking system during the crisis – equivalent to 40 per cent of GDP.

**Table 3.2: Cost of the banking crisis**

|                  | <b>Capital injection</b> | <b>2011 PCAR injections</b> | <b>Total</b> |
|------------------|--------------------------|-----------------------------|--------------|
| AIB              | 7.2                      | 12.6                        | 19.8         |
| Bank of Ireland  | 3.5                      | 1.2                         | 4.7          |
| EBS              | 0.9                      | -                           | 0.9          |
| IL&P             | -                        | 4.0                         | 4.0          |
| Anglo Irish Bank | 29.3                     | -                           | 29.3         |
| INBS             | 5.4                      |                             | 5.4          |
| Total            | 46.3                     | 17.8                        | 64.1         |

Source: Department of Finance September Scorecard 2014.

While the Irish banking crisis has obviously resulted in significant direct fiscal costs, it is also important to note the considerable indirect cost of the crisis in terms of its impact on key variables such as output, unemployment and government debt. The peak-to-trough decline in real GDP, increase in unemployment, fiscal deterioration, and explosion in national debt all rank among the worst experienced in the aftermath of a banking crisis on record (see Palcic and Reeves 2011). The sheer scale of the crisis is put in stark perspective by Reinhart and Rogoff (2011), who show how the increase in public debt experienced in Ireland (and Iceland) between 2007 and 2010 already ranks as the worst in history. The authors state that the debt build-ups in both countries (which are projected to increase further) are “associated with not only the sheer magnitude of

the recessions or depressions in those countries but also with the scale of the bank debt build-up prior to the crisis – which is, as far as these authors are aware – without parallel in the long history of financial crises” (Reinhart and Rogoff 2011, p. 11). Fitzgerald (2016, p.14) noted that the injection of capital into the banks at its peak in 2011 accounted for 47% of GNP. However, between 2007 and 2013 the bulk of the increase in indebtedness was accounted for by the accumulated borrowing to fund the huge deficit (55% of GNP). Since 2013 the burden of the debt has begun to fall, with growth in the economy and some initial repayments from the banking system. In the long run, if the recovery continues and is successfully managed, the state could benefit from the eventual sell off of the state-owned banks, recovering some, but not all of its forced investment in the banks.

### **3.7 Conclusion**

Chapter 3 offered insight on the Irish banking crisis and provided a background to the preceding chapters by discussing the economic transformation of Ireland since 1990, specifically focusing on the banking sector. Although economic cycles are taken as a natural and recurring phenomenon, actions undertaken by private sector behaviour and practices, prudential regulation, fiscal and macroeconomic policies all unwittingly acted to magnify and drive the Irish economic cycle which in turn fed into the banking crisis. Given the openness of the economy, Ireland would not have escaped the impact of the great recession that affected the world economy. However, the costs could have been dramatically reduced if wise policies had been pursued over the 2000s. This chapter has highlighted how a housing price and mortgage bubble, a lenient supervisory regime, and aggressive risk taking by banks as preceding events of the Irish banking crisis (Honohan 2010; Regling and Watson 2010; and Nyberg 2011). This pre-crisis environment also posed challenges to banks’ internal risk management in areas such as assessment of credit risk and stress testing, allowing vulnerabilities to develop on banks’ balance sheets, which was a critical factor that contributed to the overall level of risk exposure in the Irish banking system. The Irish banking crisis and its impact on the real economy underline the need to manage banks’ risk indicators in order to identify and monitor future risks to financial stability.

## **Chapter Four: Irish Retail Banks: Could Banks' Distress Have Been Predicted Before the Crisis?**

### **4.1 Introduction**

This chapter seeks to establish if it was possible that information prior to the financial crisis could have provided early warning signals to Irish banks' management and allowed them to identify and monitor the potential risk to financial stability in a timelier manner. To address this question, this thesis develops a unique database and employs PROBIT analysis to systematically analyse a range of financial indicators for the main Irish banks in the lead-up to the GFC, and compares them to a European sample of peer banks. PROBIT analysis is undertaken to identify the most significant variables to identify potential bank distress, and determine whether the relationships between the variables and a bank requiring a bail out relate to the hypotheses outlined within the chapter. To systematically analyse the key risk indicators of the banks, a selection of ratios are reviewed, based on performance in five key areas: capital adequacy (C), asset quality (A), management competence (M), earnings performance (E), and liquidity risk (L). Collectively, these bank-specific areas are known under the acronym CAMEL and are considered to reflect the overall safety and soundness of a financial institution (King 2006). This unique empirical analysis offers important learnings for future banking policy formulation.

Overall findings suggest that there was statistical evidence to identify, before the crisis, structural differences between those banks that had to be bailed out (such as the Irish banks) and those that did not. Results indicated that funding structure was the most robust predictor of bank performance during the turmoil – banks with more depository funding experienced a lower probability of bail out due to financial distress. The leverage variable was a significant predictor of probability of bail out. Low balance sheet liquidity also did well in predicting probability of bail out. ROA was also significant, indicating that deteriorating profitability is a good predictor for potential bank distress. The results highlight that banks' supervisors should engage in stronger monitoring of the quantity *and quality* of bank capital, liquidity, and funding model management.

#### **4.1.1 Predicting Bank Distress**

The motivation for examining bank performance by reviewing a selection of bank-specific financial ratios based on performance in five key areas was predicated on the fact that the literature on predicting bank distress draws heavily on the Uniform Financial Rating System, informally known as the CAMEL ratings system, introduced by the US regulators in 1979. By focusing on the five key areas of CAMEL, the ranking framework was designed to allow regulators to identify ailing banks before failure happened; banks, in turn, were forced to take corrective action. It has proven to be an effective internal supervisory tool for evaluating the soundness of a financial firm, on the basis of identifying those institutions requiring special attention or concern (US Uniform Financial Institutions Rating System 1997, p.1). Since the development of the rating system and because of the simple structure, the use of CAMEL financial indicators has become widespread in empirical literature and they have become the yardstick for an assessment of banks' performance.

As observed by King et al. (2006), since CAMEL combines financial soundness (credit risk) indicators, regulators and (importantly for the purpose of this study) bank management can use it to assess the soundness of individual banks' balance sheets. Cihák's (2006) study on the contents of central banks' financial stability reports from around the world noted that almost all such reports presented the different financial ratios in discrete categories, reflecting the CAMEL classification in assessing banks' financial stability. The categorisation of financial variables under the CAMEL rating framework soon became a popular measure of potential banking risk (see Looney, Lane and Wansley 1989; Whalen and Thomson 1988; Thomson 1991; Barr and Siems 1994; Cole and Gunther 1995; and Zhao et al. 2009). Earlier studies by Altman (1968), Sinkey (1978), and Thomson (1991) used portfolio-based assessment methods and were broadly consistent with the list of financial ratios used in Chapters 4, 5 and 6 of this thesis. A classic study by Altman (1968) uses the Z-score model, which is based on several financial ratios capturing asset quality, earnings performance, and liquidity, but this analysis is focused on the individual firm, and uses financial variables categorised under CAMEL to identify signals of potential bank failure. Zhao et al. (2009) conclude that most of the financial indicators for detecting banking risk can be classified under the CAMEL framework. They also conclude that financial ratios, while simple to use, significantly improve proxies for banking distress risk compared to the situation where plain, non-relative accounting measures are used.

As noted by Barr and Siems (1994), the goal of an early-warning model for bank distress is to identify an institution's financial weaknesses at the initial stage of deterioration so as to warn interested parties of its potential failure. Therefore, the categorisation and analysis of financial ratios under the CAMEL framework represents a way of detecting potential bank failure. Several bank failure prediction models have been developed since the mid-1970s, and most rate the probability of bank failures based on a set of high-level financial ratios, drawing on data that banks supply in their annual reports and on regulatory authorities' returns.

One important observation by Putnam (1983) was that early-warning research, developed during the 1970s and 1980s, was consistent in identifying variables that emerged as important predictors of banking problems: capital, asset quality, profitability (earning potential) and liquidity appeared as statistically significant in almost every study, although they were often measured using different ratios. Sinkey (1978) argues that poor asset quality and low capital ratios were the two characteristics of banks that have most consistently been associated with banking problems over time. Barr and Siems (1994) note that most bank failure prediction models include variables that can be categorised under CAMEL. Their study analyses the five factors in the CAMEL rating at the time, and a proxy for local economic conditions. They conclude that bank failure prediction models are more accurate when they contain CAMEL variables and that they have key implications for policy makers. They argue that an efficient system will detect and classify the weakest financial institutions, allowing regulators to focus on those that are the greatest threat to stability.

Cole and Gunther (1995) incorporate variables that represent the four financial components of the system – capital adequacy, asset quality, earnings, and liquidity – and point out that bank regulators pay the greatest attention to these variables as a means of capturing the effects of a bank's financial condition. Their model also includes efficiency, bank structure, and economic conditions. Their findings suggest that basic indicators of a bank's condition, such as capital, troubled assets and net income, are important in explaining the timing of bank failure. Whalen and Thomson (1988) attempt to predict a bank's soundness and stability by using publicly available data to examine deterioration in its condition by analysing changes in CAMEL ratings. They also find that on-site examination of measures can be rather costly and time-consuming; this

makes it beneficial that in the CAMEL framework, mainly accounting measures play a role and these can be observed more easily.

Thomson (1991) uses publicly available balance-sheet and income statement measures for a sample of American banks between 1983 and 1988 to analyse failures of efficiency in management and regulation. This study also incorporates measures of local economic conditions, showing that variables related to a bank's solvency – including capital adequacy, asset quality, management quality, earnings performance, and the relative liquidity of the portfolio – effectively predict its likelihood of failure. The study found that most of these factors can be used to predict a bank's likelihood of failure as much as four years prior to the event. Said and Saucier (2003) evaluated the liquidity, solvency and efficiency of Japanese banks between 1993 and 1999, and concluded that poor capital adequacy levels and considerable problems in their assets quality were the key features of failed institutions during the time period.

Several earlier IMF studies also explore banking sector indicators which can serve as valuable early warning signs of banking distress. Rojas-Suarez (1998) finds that selected CAMEL ratios of individual financial institutions may be used to detect potential bank fragility. Bongini et al. (1999) highlight the reliability of financial ratios in the CAMEL framework as a predictor of bank failure in relation to the Asian crises of the late 1990s. Their study concluded that had bank management analysed bank ratios under the framework, they may have identified weaknesses at the individual bank level prior to the exogenous shocks that also played a role in causing the systemic crisis. Nurazi and Evans (2005), in their study of whether CAMEL ratios can be used to predict bank failure, suggest that analysis of bank-specific ratios under the CAMEL framework could function as an early warning tool for both bank management and regulators.

Research since the GFC also validates the appropriateness of examining financial variables under the CAMEL framework in signalling banking distress. Männasoo and Mayes's (2009) application of the framework to consider the joint role of macroeconomic, structural and bank-specific factors in explaining the occurrence of banking problems in the nineteen Eastern European transition countries between 1998 and 2008 found that a fragile funding basis, accompanied by high exposure to market risk, is a typical precursor of bank distress. Siva and Natarajan (2011) empirically tested

the framework in light of the current health of financial institutions, concluding that annual CAMEL scanning helps bank management to establish balance sheet financial health and allows them to take preventive steps for its sustainability if problems are on the horizon. Chaudhry and Singh (2012) analysed the impact of the financial reforms on the soundness of Indian banking by analysing the health of individual institutions using the CAMEL framework. The study identified the key factors of poor risk management, high NPA levels and ineffective cost management as precursors to bank distress.

A comprehensive review of the bank failure prediction literature by Zhao et al. (2009) found that over 100 financial ratios constructed based on raw accounting variables have been used to measure the five CAMEL components. While all studies in their review followed the CAMEL categorisation in general, the specific measures they have used are often substantially different. One major difference between the measures used in different studies is in their complexity. For example, in measuring asset quality, the portfolio diversification level can be measured by the ratios of the loans in individual industries to the total loans. Some studies, however, have developed much more complex measures, such as a loan portfolio Herfindahl index, which is a sum of the squares of these ratios.

The remainder of the chapter is structured as follows: Section 4.2 justifies the choice of financial variables analysed in this study and outlines the hypotheses for reviewing bank performance. Section 4.3 discusses the methodology and provides information on the sample of banks. Section 4.4 discusses empirical results, while section 4.5 discusses the lessons and policy implications. These in turn are placed in the context of relevant banking and financial reforms in Ireland and the EU since the GFC to date, as well as forthcoming Basel III and European Banking Union reforms in section 4.6. The chapter concludes with section 4.7.

## **4.2 Assessing Bank Performance**

This section justifies the choice of financial variables analysed in this study, which were selected based on the relevance of their information to the hypotheses outlined in the following sub sections. Each variable is also defined in Appendix D.1. The CAMEL framework does not prescribe a particularly well-defined set of optimal, bank-specific financial ratios to be analysed. As noted by Poghosyan and Čihák (2009, p.5), there appears to be no consensus in the literature on how to combine the various CAMEL

indicators into an assessment of bank soundness. Most researchers who use ratios as predictor variables do so on the basis of their popularity in the literature. Indeed, a number of studies that use fairly divergent measures in employing the framework have similar results. For example, the IMF (2000) establishes a core set of financial soundness indicators that does not include management quality. The choice of financial variables for this study reflects both the theory of CAMEL, as discussed in the previous section, and data availability over the period 2001-2008. Following on from the detailed review of the relevant CAMEL literature in section 4.1.1, the hypotheses emanating from this studies research objectives are presented in the following sub sections.

#### ***4.2.1 Capital Hypothesis***

This rationale for capital adequacy (C) is that it is a measure of a bank's financial strength, i.e. a bank's ability to withstand future unanticipated and abnormal losses. This hypothesis is that banks entering the crisis with low and/or poorer-quality regulatory capital performed relatively worse during the crisis, as capital resources were insufficient to absorb the large losses sustained. To capture capital adequacy, two variables are used: the Tier I capital ratio and the capital-to-assets ratio (also called the leverage ratio). Researchers use Tier I capital ratios and leverage ratios as risk measures to capture capital adequacy (see, for example, Ötoker-Robe and Podpiera 2010). Tier I capital ratio consists of capital (shareholders' capital, reserves, and hybrid capital to certain limits) divided by risk-weighted assets. The Tier 1 ratio is a capital buffer for loss absorption. In a similar vein, the leverage ratio is used to reflect that, more generally, banks operating with high leverage prior to the crisis performed relatively poorly during the crisis, since highly leveraged banks simply did not have sufficient equity to absorb the large trading and credit-related losses incurred during the crisis.

#### ***4.2.2 Asset Quality Hypothesis***

This hypothesis is based on the fact that as risks to the solvency of financial institutions most often derive from impairment of assets, assessment of asset quality is important. A risky asset portfolio carries a higher credit risk to the bank; unfavourable events could lead a bank with fewer assets compared to liabilities into solvency issues. Risk indicators in this category include loan quality and exposure concentrations of bank asset portfolios. This study hypothesises that banks with poorer quality assets fared worse during the crisis. Kwan and Eisenbeis (1997) observed that asset quality, which also determines the reliability of capital ratios, is commonly used as a risk indicator for

financial institutions. Their study indicated that capitalisation of banks affects the operation of a financial institution and concluded that the higher the levels of capital present in a bank, the higher its profitability. Similarly, Barnhill et al. (2000) find that the credit quality of a bank's loan portfolio indicates its resilience more than any other financial ratio. Analysing a bank's loan portfolio can provide insight into debtors' soundness and therefore the bank's credit vulnerability.

To capture asset quality, this study uses two asset-quality indicators: the provision for loan losses over the year as a percentage of average total loan, and the ratio of reserves for loan losses with total loans, in percentage. Both indicators are positively linked to increased credit risk for banks (i.e. increased credit extension), since higher newly expected losses and a higher stock of non-performing loans increase banks' vulnerability and default risk. Falling levels of non-performing loans, and in turn loan-loss provisions, signal improvement in the quality of credit portfolios for banks. Improving asset quality should be correlated with declining levels of loan-loss provisioning.

#### ***4.2.3 Management Quality Hypothesis***

The management quality hypothesis emphasises whether management can control day-to-day costs and run efficient banks. It is primarily a measure of efficiency. This study hypothesises that banks with less cost-efficient operations fared relatively poorly during the crisis, since their pre-crisis margin was more vulnerable to the higher cost of borrowing during the crisis. Regulators use efficiency ratios as indicators of management efficiency, reflecting the insight that banks' stability requires sound management. Management quality differs from other aspects of the framework in that it requires a more qualitative judgement than the other CAMEL concepts, which reflect balance sheet numbers more directly. The IMF (2000) argues that balance sheet information provides insight into management quality. Klomp and De Haan (2012) use the ratio of operating expenses to total assets. This study uses one ratio to capture management – the efficiency ratio (also known as cost-to-income ratio). This ratio is commonly used in the financial sector and measures costs compared to revenues. This measures management flexibility to adjust costs to changes in the business development signalled by revenues, with lower values of this indicator suggesting better managerial quality.

#### ***4.2.4 Earnings Potential Hypothesis***

The earnings potential hypothesis relates to a bank's ability to generate income. Commonly addressed by means of establishing profitability (i.e. earnings minus costs), profitability and earnings determine the success of a bank, and, over time, profitability directly indicates a company's success in that period. This study hypothesises that banks entering the crisis with low levels of profitability performed relatively worse during the crisis, as resources were insufficient to absorb the large losses incurred during the crisis. Increasing levels of profitability and earnings positively influence successful continuation and consistently lower banking risk. Measures used to determine a company's earning potential or profitability in this study are return on assets (ROA) and return on equity (ROE) ratios. ROA and ROE underline the profitability of bank assets and equity (IMF 2010).

#### ***4.2.5 Liquidity Hypothesis***

The basis of the liquidity hypothesis is that in order to operate in a sound manner, financial institutions need to maintain a level of liquidity sufficient to meet current as well as future financial obligations. This study hypothesises that banks relying more heavily on short-term sources of funding performed relatively poorly during the crisis, as wholesale funding markets became significantly impaired amidst large global bank losses. To capture liquidity and funding shocks that damage a bank's balance sheet, this chapter describes a bank's liquidity or funding position using three ratios: the loan-to-deposit ratio, the short-term borrowing to total liabilities ratio and the liquid assets to total assets ratio. These ratios are important, as the funding profile of a bank represents a risk for banks. Deposits are typically stable and cheap sources of funding for a bank; as such, greater dependence on wholesale funding may signal higher funding risk and overall higher risk-taking or risk appetite. From a funding perspective, the higher the LTD ratio, the higher a bank's dependence on non-deposit funding.

The share of short-term borrowing to total liabilities is an alternative measure of a bank's reliance on wholesale funding (Ötcker and Podpiera 2010). Wholesale funds are potentially volatile; in the event of a crisis, an institution's credit lines may be called or they may lose access to wholesale markets altogether, causing several liquidity problems, as a bank with a higher share of short-term borrowing would be more vulnerable in the event of a bank run. Institutions that use wholesale funds to facilitate

long-term assets cannot readily convert to cash, so they experience additional risk. Both ratios measure the degree to which banks can withstand sudden liquidity distress.

In summary, following evidence from both theoretical and empirical literatures, this study proposes the following hypotheses:

H1: There is a negative association between high capital levels and bank distress.

H1a: There is a positive association between high leverage and bank distress.

H2: There is a positive association between a risky asset portfolio and bank distress.

H3: There is a negative relationship between banks' efficiency and bank distress.

H4: There is a negative relationship between increasing levels of profitability and earnings and bank distress.

H5: There is a positive relationship between banks relying more heavily on short-term sources of funding and bank distress.

H5a: There is a positive relationship between banks that have a high LTD ratio and bank distress.

H5b: There is a negative relationship between banks that have high levels of liquid assets and bank distress.

### **4.3 Methodology and Sample**

This section provides information on sample selection and methodology. The hypotheses outlined in Section 4.2 (H1-H5) are examined using 10 variables which were selected based on the relevance of their information to the hypotheses. The sample period is 2001 to 2008. Multivariate regression analysis has been frequently used to forecast bankruptcies with variables such as CAMEL (Said and Saucier 2003). Many studies have employed regression analysis to establish if financial indicators could predict potential bank distress (see Appendix D.2 for a summary of relevant studies). The rationale is that these variables should deteriorate before failure actually occurs. Specifically, this study analyses a sample of large commercial banks in 12 European countries, and looks for the best predictors of bank performance in the lead up to the GFC.

#### **4.3.1 Dataset**

The sample of banks consists of 28 banks from 12 European countries. All banks were identified by the IMF as systemically important in Europe in a 2010 study (see Ötke-

Robe and Podpiera 2010). All are commercial banks and are either large in their domestic markets (local market interconnections represent a high local systemic risk, with assets as a percent of domestic claims exceeding 10 percent), and/or they have large cross-border exposures (the share of foreign revenues in the bank's total revenues exceeds 30 percent). These criteria and data availability limitations lead to a sample of 28 financial institutions in 12 European countries (see Appendix D.3). Bank-level financial data was obtained from Bloomberg, which provides data in a standardised format, adjusted for differences in accounting and reporting standards across countries. Consolidated statements are used as much as possible to reflect the overall capital, liquidity leverage, and funding positions of the individual banks. The data coverage of banks' financial statements and ratios by Bloomberg is about 80 percent of the needed data. The missing data has been filled directly from banks' publicly available statements.

#### **4.3.2 Model Specification**

Following other studies (e.g. Ratnovski and Huang 2009; Arjani and Paulin 2013; Sagarra et al. 2016), multivariate regression analysis is performed to find the most significant variables to identify potential bank distress, and determine whether the relationships between variables and bank failure relate to the hypotheses outlined. The study uses a binary indicator of bank performance during the GFC. This dependent variable takes the value of 1 if a bank was "bailed out", and a value of 0 if a bank was "not bailed out". Following the work of Arjani and Paulin (2013), to be classified as bailed out, one or more of the following three events had to occur during 2008–09:

1. The bank was declared bankrupt.
2. The bank was acquired either by another private bank (e.g. a government-assisted transaction) or by their home government via nationalisation.
3. The bank received capital support from either a national or a state government.

Again, following the work of Arjani and Paulin (2013), a bank that benefited from extraordinary liquidity assistance from a central bank, or from a public guarantee on its debt or the debt of a subsidiary does not qualify as a bailout in this study.<sup>42</sup> The sample

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<sup>42</sup> Data used to compile this list was based on a database compiled by Arjani and Paulin (2013). The data used for this analysis is dated 12 September 2009, and is available online at <http://www.bankofcanada.ca/wp-content/uploads/2013/12/dp2013-04.pdf>

is divided into 15 banks that required a bailout and 13 that did not. To see the impact of the CAMEL variables on the dependent variable, the model estimate is as follows:

**Model 1a**

$$\Pr(\text{bank}=1) = \varphi (\beta_0 + [\beta_1\text{LEV} + \beta_2\text{tier1}] + [\beta_3\text{LLPOTL} + \beta_4\text{RLLTL}] + [\beta_5\text{EFFR}] + [\beta_6\text{ROA} + \beta_7\text{ROE}] + [\beta_8\text{LTD} + \beta_9\text{STBOTLIAB} + \beta_{10}\text{LAOTA}])$$

**Model 1b**

$$\Pr(\text{bank}=1) = \varphi (\beta_0 + [\beta_1\text{LEV}] + [\beta_3\text{LLPOTL}] + [\beta_5\text{EFFR}] + [\beta_6\text{ROA}] + [\beta_8\text{LTD}])$$

**Model 1c**

$$\Pr(\text{bank}=1) = \varphi (\beta_0 + [\beta_2\text{tier1}] + [\beta_4\text{RLLTL}] + [\beta_5\text{EFFR}] + [\beta_7\text{ROE}] + [\beta_9\text{STBOTLIAB}])$$

**Model 1d**

$$\Pr(\text{bank}=1) = \varphi (\beta_0 + [\beta_1\text{LEV}] + [\beta_3\text{LLPOTL} + \beta_4\text{RLLTL}] + [\beta_5\text{EFFR}] + [\beta_6\text{ROA} + \beta_7\text{ROE}] + [\beta_8\text{LTD} + \beta_9\text{STBOTLIAB} + \beta_{10}\text{LAOTA}])$$

Where  $\varphi$  is the cumulative normal distribution.

**4.3.3 Summary Statistics**

The means and standard deviations of the variables to be analysed are presented in Table 4.2 along with maximum and minimum values. The table shows a significant variation in movement of the majority of the variables over the period 2001-2007 as indicated by the standard deviations, with mean rates ranging from 133% (LTD) to 27% (leverage ratio). There was not a significant variation in capital levels or loan loss provision levels for the database as a whole over the period 2001–2008, as indicated by the standard deviation. The final sample consisted of observations from 28 banks, with a total of 2240 observations. With respect to bank characteristic, three of the 28 banks are Irish owned, the remainder are European banks.

**Table 4.1: Descriptive statistics of the sample**

| Variable                  | # of Obs | Mean  | Std. Dev. | Max   | Min   | Expected sign |
|---------------------------|----------|-------|-----------|-------|-------|---------------|
| <b>CAPITAL</b>            |          |       |           |       |       |               |
| Tier1                     | 224      | 8.1   | 1.4       | 13.9  | 5.1   | -             |
| FinLev                    | 224      | 27.4  | 10.0      | 67.7  | 10.7  | +             |
| <b>ASSET QUALITY</b>      |          |       |           |       |       |               |
| LLP_TL                    | 224      | 0.5   | 0.4       | 2.5   | -0.1  | +             |
| RLL_TL                    | 224      | 2.0   | 1.3       | 6.6   | 0.1   | +             |
| <b>MANAGEMENT QUALITY</b> |          |       |           |       |       |               |
| Efficiency                | 224      | 67.7  | 50.3      | 225   | 15.6  | -             |
| <b>EARNINGS</b>           |          |       |           |       |       |               |
| ROA                       | 224      | 0.6   | 0.4       | 1.5   | -1.1  | -             |
| ROE                       | 224      | 13.3  | 11.3      | 37.0  | -61.4 | -             |
| <b>LIQUIDITY</b>          |          |       |           |       |       |               |
| Loan_Dep                  | 224      | 133.3 | 52.6      | 323.6 | 35.0  |               |
| STB_TotLiab               | 224      | 22.8  | 12.0      | 61.6  | 1.5   | +             |
| LA_TA                     | 224      | 12.1  | 7.5       | 44.8  | 0.1   | -             |

Source: Author's calculations from Bloomberg

#### 4.4 Results and Discussion

Here the results of the probit regressions, analysing the association of the variables to bank performance, are shown in Table 4.2. The table displays the outcomes for models 1a, 1b, 1c and 1d. Interestingly, the pattern of significance is consistent for the key areas, irrespective of the model specification. This section examines each of the variables in relation to this study's hypotheses.

##### 4.4.1 Capital Hypothesis

The capital hypothesis indicates that high levels of capital are negatively associated with bank distress. That is, banks entering the crisis with high regulatory capital would be expected to perform well during the crisis as they would hold sufficient capital to absorb potential large losses. From table 4.2 we see that the capital ratio appears as an insignificant explanatory variable. This is an unexpected result. Although the Tier 1

ratio does not provide any indication of banking problems, the FinLev variable is significant at the 6% level in models 1a, 1b and 1d. This underpins the view that increasing debt is a significant predictor of government assistance. This simple measure of leverage appears to be a good predictor of bank performance during the turmoil, because although banks continued to meet their regulatory requirements for stipulated capital ratios, the composition of this capital changed materially; in many cases, the lower the level of equity, the higher the risk of some sort of vulnerability in the case of an economic downturn. Thus, while Tier 1 levels may have been high leading into the crisis, the composition of that capital may not have been as robust. This would lend support to regulatory reform in the post-crisis environment that has focused on improving both the quality and quantity of capital. This is not interpreted to mean that regulatory capital does not matter for banks, but rather improvements in the quality and quantity of Tier 1 capital definitions are warranted. Therefore, this study rejects the H1 capital hypothesis, but accepts the H1a hypothesis.

**Table 4:2: Probit results**

| Variables    | Model Ia            | Model Ib               | Model Ic               | Model Id               |
|--------------|---------------------|------------------------|------------------------|------------------------|
| Tier 1       | -.075<br>(0.399)    |                        | .1089626<br>(0.156)    |                        |
| FinLev       | .031*<br>(0.064)    | .0403732***<br>(0.010) |                        | .0293803*<br>(0.071)   |
| LLP_TL       | -.364<br>(0.255)    | -.0034854<br>(0.990)   |                        | -.307111<br>(0.337)    |
| RLL_TL       | .238**<br>(0.031)   |                        | .2446718***<br>(0.006) | .2645134***<br>(0.008) |
| Efficiency   | .005<br>(0.235)     | -.0016064<br>(0.319)   | .0150253<br>(0.123)    | .0040427<br>(0.186)    |
| ROA          | -1.588**<br>(0.039) | -.994302**<br>(0.021)  |                        | -1.575432**<br>(0.035) |
| ROE          | .049**<br>(0.050)   |                        | .0107339<br>(0.537)    | .0488044**<br>(0.044)  |
| Loan_Dep     | -.007<br>(0.009***) | -.0016096<br>(0.386)   |                        | -.005791<br>(0.012)**  |
| STB_TotLiab  | .061***<br>(0.000)  |                        | .055***<br>(0.000)     | .061<br>(.0344163)     |
| LA_TA        | .002<br>(0.853)     |                        | -.0009225<br>0.943     |                        |
| Observations | 200                 | 200                    | 200                    | 200                    |

\*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

*Note:* P-values are in parentheses. Estimates include country dummies, but are not shown. Robust standard errors are calculated to allow for heteroskedasticity.

#### **4.4.2 *Asset Quality Hypothesis***

Credit risk is the main focus of asset quality analysis. When banks make a bad loan, one that will not be repaid, it generates losses and erodes capital. Under H2, the variables RLL\_TL and LLP\_TL are expected to be positive and significant. Table 4.2 finds that declining asset quality, reflected in increases of loan loss reserves to total loans, is indicative of impending banking turmoil at the 1% and 5% level in models 1a, 1c and 1d. By contrast, loan loss provisions are not significant in any of the model specifications. This is unexpected, as this ratio is expected to exhibit a significant and positive relationship with the probability of bailout. This unexpected outcome may be due to the fact that deteriorating asset quality is only appropriately accounted for by banks when the crisis materialises. As the summary statistics table also highlights (table 4.1), there was not any significant variation in growth for provisions over 2001–2008, as indicated by the standard deviations. During this period, the mean for the full sample was not distorted by outliers (i.e. banks with extraordinarily high or low results), which indicated a high homogeneity of asset quality levels throughout this time.

The analysis points to an initial limitation of asset quality ratios, namely, that they are not risk sensitive. In times of economic upturn, extraordinary elements may become significant (lending into one particular sector, e.g. construction; rapid increase in house prices) but fail to appear in reported asset-quality figures. As a matter of fact, asset quality figures did not reflect the sustainability of banks' performance. A large concentration of aggregate credit in a specific economic sector or activity, especially commercial property, may signal an important vulnerability of the financial system to developments in this sector or activity. Many financial crises in the past (including the Canadian banking crises discussed in Chapter 6) have been amplified by downturns in particular sectors of the economy spilling over into the financial system via concentrated loan books of financial institutions. Key risk elements are missing from these asset quality ratios (e.g. the proportion of risky assets and the solvency situation). These indicators are lagged and therefore primarily provided backward-looking information to bank management. Asset quality is therefore not a standalone performance measure. Overall, given the significant results for loan loss reserves, this study finds there is sufficient evidence to support the asset quality hypothesis and, consequently, H2 is accepted.

#### ***4.4.4 Earnings Potential Hypothesis***

This hypothesis indicates that increasing profitability and earnings would have a negative relationship with the probability of a bank bailout. Looking to table 4.2, ROE and ROA are significant. This indicates that deteriorating profitability is a good predictor for potential bank distress. Review of the ROE and ROA ratios of the Irish banks finds that they improved between 2001 and 2008, and this positive trajectory would have built management confidence in banks' performance. Profitability is an indicator of management's success or failure in its strategic and leadership activities. If a bank's ROE or ROA measures are higher than those of its peers, as was the case for the Irish banks, it indicates that these banks are performing better (Waymond 2007). These strong, positive earnings ratios were a clear indication that the Irish banks' management were taking on more risk but also pricing assets and funding liabilities better than many of their peers. The strong earnings ratios also indicated good yields on loans, lower cost rates, effective use of earnings, and good returns from interest-bearing assets.

However, these results must be interpreted with caution. Given the level of government intervention for 15 of the banks in the sample, there now appears to be little support for ROE ratios of well above 20% (as displayed by the Irish banks), as these have mostly proved to be unsustainable (See ECB 2010 pg. 5). Although the "traditional" ROE measure may have been useful to assess banks' performance during benign times, this approach has clearly not proven adequate in an environment of much higher volatility – and did not aid managements' understanding of the potential trade-off between risk and return in performance. The ROE figures failed to discriminate the best-performing banks from the others in terms of sustainability of their results. ROE is therefore not a standalone performance measure, and decomposition or further information is necessary to identify the origin of developments and possible distortions over time. Given the results, this study finds sufficient evidence to accept H4, that there is a negative relationship between increasing levels of profitability and earnings and bank distress.

#### ***4.4.3 Management Quality Hypothesis***

Analysis of cost management via the cost-to-income ratio is used to assess management, as controlling overhead expense is a fundamental task for profit-conscious bank management. Under H3, the cost efficiency variable is expected to be negatively associated with government assistance and significant. However, as shown in table 4.2,

results suggest that managerial quality is not a significant factor for indicating the probability of bailout. The cost-to-income ratio that this study employs is a widely used measure of banks' managerial quality. The fact that it does not emerge as significant suggests that low costs do not indicate a better (or worse) likelihood of preventing bank distress. Indeed, some of the distressed banks had very good cost-to-income ratios.

Between 2001 and 2008, the sample mean for the cost-to-income ratio for the full sample was 68%. The Irish banks AIB, BOI and Anglo all had efficiency ratios in line with, and in many cases better than, their European neighbours and consistently lower than the sample average from 2001 to 2008. While AIB and BOI remained constant at circa 57% between 2001 and 2008, Anglo was much lower, with an average ratio of 30%,<sup>43</sup> which, holding all other things equal, would have been indicative of efficient cost management. The consistent ratios suggested that costs were being managed effectively up to 2008 and would not have signalled a cause of concern to bank management – this pattern was consistent across the group. The recent crisis has shown that cost-to-income ratio does not take into account a bank's long-term damages caused by a crisis. Its weaknesses are even more obvious in times of stress, when a climate of uncertainty surrounds the medium-term profitability of institutions. Thus, there is insufficient evidence to support the management quality hypothesis and, consequently, H3 is rejected.

#### ***4.4.5 Liquidity Hypothesis***

This study finds significant evidence in favour of the liquidity hypothesis H5. The short-term borrowing to total liabilities ratio is highly significant (at the 1% level). This indicates that banks that relied more heavily on short-term sources of funding had a higher probability of being bailed out. This result is expected, as a change in wholesale funding (relative to deposit-based funding) can render a bank more vulnerable not only to fluctuations in international interest rates but also to changes in market sentiment. Liquidity mismatch is potentially dangerous, meaning that banks' management must keep sufficient liquid assets at hand to meet their customers' liquidity requirements. Liquidity inspires confidence; illiquidity, rather than poor asset quality, is the immediate cause of a bank crisis. It can be argued that liquidity is in fact more important than asset

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<sup>43</sup> Salaries represent the largest cost items for banks due to the people-intensive nature of banking. As Anglo Irish Bank did not have an extensive distribution network, similar to AIB and BOI, it would be expected to have a much lower cost-to-income ratio.

quality, as a bank with NPLs can continue to operate indefinitely, provided that deposits remain stable. Liquidity ratios should be watched carefully by bank management. Under H5a, the Loan\_Dep ratio is expected to be significant. Results in table 4.2 confirm the significance of the Loan\_Dep ratio (the 1% level), although signed negatively, which is contrary to intuition. Viewed over time, the ratio of credit to total deposits may give indications of the ability of the banking system to mobilise deposits to meet credit demand during times of distress. A high ratio may indicate stress in the banking system and a low level of liquidity to respond to shocks (IMF 2000). Surprisingly, the liquid assets ratio is not significant.

Based on the results in table 4.2, the leading determinants of banks' crisis performance appear to be the pre-crisis funding models, as well as balance sheet liquidity. On average, within the sample of 28 banks, institutions that performed poorly during the crisis (i.e. were bailed out) by 2008 had: (i) a greater reliance on short-term, non-deposit sources of funding, (ii) higher balance sheet leverage, and (iii) lower balance sheet liquidity. Results find evidence to suggest that global banks' pre-crisis funding models and balance sheet liquidity were key determinants of crisis performance. The results suggest that, in line with economic theory, bank distress is negatively associated with bank earnings and positively associated with leverage. Similarly, bank distress is inversely related to asset quality. Assuming that the higher loan loss reserves profile implies a riskier loan portfolio, the positive sign for this variable indicates that the probability of bank distress is influenced by the deterioration of the loan portfolio. The cost-to-income ratio does not emerge as significant and suggests that low costs do not indicate a better (or worse) likelihood of preventing bank distress. Somewhat surprisingly, the empirical analysis also suggests that banks' pre-crisis regulatory capital levels were not significant determinants of crisis performance.

#### **4.5 Policy Recommendations**

The empirical analysis offers important learnings at the level of future policy formulation. This section discusses the lessons and policy implications arising from earlier discussions. It must be noted that many broader political and social lessons are outside the scope of this chapter. In section 4.6, identified lessons and policy implications are placed in the context of relevant banking and financial reforms in Ireland and the EU from the GFC to date, as well as forthcoming Basel III and

European Banking Union reforms. The key findings of this study prompt the following policy recommendations.

### **Policy recommendation – capital management**

Given discussions in section 4.4, banks' supervisors should engage in stronger monitoring of the quantity *and quality* of bank capital, liquidity, and funding model management. The recommendations below seek to address this insufficiency in the Irish system:

1. **Capital: increase minimum capital requirements and capital quality.** Future policy needs to ensure that banks undertake more vigorous capital management. This should focus on the quantity of capital and its quality. Section 4.4 highlighted how highly capitalised banks pre-crisis quickly eroded their capital levels.
2. **Liquidity: tighten liquidity management.** Future policy should require more vigorous liquidity management by banks. Bank management should examine quality and maturity risk of assets as well as liquidity levels. Supervisors should examine such factors as dependence on short-term funding. The nature of assets and their holdings' time horizons should address the "mismatch ratio" or increases in liquidity ratios. Section 4.4. highlighted how banks with an over-reliance on external wholesale funding can run into serious difficulties when access to that funding dries up.
3. **Funding Models:** Future policy should focus on the importance of robust funding models for banks.
4. **Reduce procyclicality by encouraging countercyclical capital buffers.** Irish regulatory policy should balance the procyclical tendencies present in the financial system by adopting countercyclical measures in regulating capital and provisioning, to avoid allowing changes in problem loans to drive procyclical lending theories as they did in the lead-up to the crisis. The introduction of countercyclical capital and provisioning practices is desirable from a macro-prudential and macroeconomic perspective; it also reduces the risk of bank failure. By restraining credit expansion, it would reduce the dangers of market overreactions during the recession. Section 4.4 highlighted how essential it is that a bank maintains capital to absorb unexpected credit losses, to provide safety for

depositors and creditors and to satisfy regulatory authorities' concern for a stable banking system.

#### **4.6 Reform in the Post-Crisis Environment**

The crisis of 2007 should prompt a fundamental reconsideration of how regulatory authorities approach financial regulation and supervision. The purpose of this section is to place the policy recommendations presented in section 4.5 in the context of relevant financial and banking reforms which have been introduced in Ireland from the GFC to date, as well as forthcoming Basel III and European Banking Union reforms. This section also highlights gaps that still exist. Policymakers have sought to rectify the damage done to financial systems and economies by enacting a large set of financial reforms, at both international and domestic level. Many of these changes will affect how bank management present and interpret their key risk indicators moving forward.

##### ***4.6.1 International reforms: International Change Design and Implementation of Capital, Liquidity, Funding, and Leverage Financial Regulation: Basel III***

In 2010, the Basel Committee on Banking Supervision addressed the inadequacies of Basel II and replaced it with a third agreement: Basel III. Basel III forms the basis of the new prudential banking regulatory framework in Europe and is enshrined in the fourth capital requirements directive (CRD IV) and the capital requirements regulation (CRR). They have been in force since 1 January 2014. While it is too early to evaluate the full impact of the new Basel requirements, initial analysis suggests that the international regulator/policy agenda is moving in the right direction to make banks more resilient to future financial shocks. This section examines forthcoming Basel III and European Banking Union reforms (these have also been discussed in Chapter 4). Some of the main areas of change include the following:<sup>44</sup>

- Sufficient levels of bank capital relative to assets were an important focus of the Canadian regulator and have been recognised as important worldwide. The emphasis on common shares in Tier 1 capital has been seen as having contributed to the resilience of Canadian banks. Both the quantity and quality of capital that banks are required to hold are now increased under Basel III.

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<sup>44</sup> Please note that many of these changes resonate with the Canadian example discussed in Chapter 6.

Whereas up to the end of 2013, banks could operate with as little as 2% of capital, they now need at least 4.5% of a more tightly defined equity.

- Similarly, the importance of the Canadian use of a leverage ratio (discussed in Chapter 6) has become a focus for the Basel Committee and under the Basel III Accord. Banks are now required to maintain a non-risk-based leverage ratio that includes off-balance-sheet exposures as a way to contain the risk-based capital requirement as well as a build-up of leverage. The leverage ratio is computed as shareholders' equity over total assets (off and on balance sheet), and was introduced to ensure a hard minimum capital level, regardless of the structure of risk weights in bank balance sheets (Vazquez and Federico 2012). The leverage caps banks' assets at no more than 33 times Tier 1 capital, and ultimately means that banks must raise more capital as they grow their balance sheet. As noted in Chapter 4, while leverage ratios can provide an extra safety net and potentially offer a reliable non-risk-based measure, they will not predict distress in the system on their own. Implementation of leverage ratios costs nothing, due to their simplicity, and they prevent banks from engaging in arbitrage by engaging with products that have leaner credit ratings.
- Basel III also acknowledges the importance of the relationship between bank funding profiles and their risk of default, reflected in two prudential ratios that entail minimum binding liquidity standards: a Liquidity Coverage Ratio (LCR), aimed at promoting banks' resilience to liquidity risk over the short term, and a Net Stable Funding Ratio (NSFR), aimed at promoting resilience over a one-year horizon. The LCR will work by promoting short-term resilience by ensuring that banks have sufficient high-quality liquid assets (e.g. cash, sovereign debt) to allow them to meet all due net cash outflows over a period of 30 days given a particular stress scenario. The LCR is being phased in between 2015 and 2018, and banks are required to report this ratio to the CBI on a monthly basis. The net stable funding ratio (NSFR) aims to ensure that a bank has sufficient long-term stable funding (over a one-year horizon) to support its customer business; this should improve structural asset and liability maturity. In the event of financial stress, an accumulated stock of high-quality liquid assets will help banks to absorb liquidity shocks. The NSFR came into force on 1 January 2018.

Basel III represents an important adjustment for both the global and Irish banking industries, with implications for borrowers and national economies more broadly. While higher capital and liquidity standards are designed to contribute significantly to financial stability, there will be costs involved, since equity is a more expensive form of financing than debt, and liquid assets typically yield lower returns. Nonetheless, when considering the costs associated with implementing Basel III, it is essential to keep in mind the enormous negative impact of financial crises. The new Basel III regime clearly represents progress that will force banks to take better heed of fundamental ratios in the areas of capital, liquidity, solvency, and leverage. However, only the passage of time can reveal the impact of these regulatory reforms, and gaps remain.

### **Regulatory Reform Gaps**

Gaps include the possibility that a capital buffer will not effectively smooth the credit cycle. The build-up of an additional capital buffer during a boom may reduce banks' desire to lend excessively, and in a downturn the release of the buffer may avoid a credit crunch by reducing the pressure on banks to deleverage to meet regulatory capital requirements. However, as a 2013 IMF paper notes,<sup>45</sup> the effectiveness of the buffer will depend on the level of capital that banks hold in excess of what the regulator requires. Issuing new equity is relatively cheap in a boom, reducing the effect of the buffer on credit expansion. More generally, the same IMF paper notes that the effects on overall credit and the real economy will depend on the extent to which non-financial firms can find substitute credit from non-regulated financial intermediaries and in markets.

The greatest source of caution should come from the fact that new requirements may have an impact on the short-term dynamics of Irish banks. The proposed shift from short-term to long-term liquidity will increase the cost of funds. Banks may respond to regulatory tightening by raising lending rates to keep return on equity at an attractive level. Reducing the level of risky assets on banks' balance sheets may require them to reduce the supply of credit. In the current environment, a continued focus on the extension of credit to SMEs could have negative consequences. The new, narrower definitions of capital also come with warnings, as the increased cost of capital and cost of borrowing that will ensue may drive banks to increase borrowing costs. Lower return

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<sup>45</sup> IMF (2013) Key Aspects of Macroprudential Policy – Background Paper. <http://www.imf.org/external/np/pp/eng/2013/061013C.pdf>.

on equity (ROE) will divert shareholders away from banking equity and bonds. The new accord does not address these outcomes.

Basel III's emphasis on optimising capital allocation may also require banks to focus on their core businesses and exit low-profit and low-growth businesses. As large and global banks seek to meet higher capital requirements ahead of schedule, a significant capital shock has occurred, prompting banks to hoard capital. The increased regulatory capital required under Basel III may increase barriers to entry into the sector, benefiting existing players but potentially exiling some borrowers to unregulated channels. New forms of systemic risk may arise if the migration is significant to unregulated channels, causing another source of potential systemic risk.

#### **4.7 Conclusion**

This chapter sought to establish if it was possible that information prior to the financial crisis could have provided early warning signals to Irish banks' management and allowed them to identify and monitor the potential risk to financial stability in a timelier manner. To address this question, this thesis developed a unique database and employed PROBIT analysis to systematically analyse a range of financial indicators for the main Irish banks in the lead-up to the GFC, and compared them to a European sample of peer banks to see if bank management could have foretold, in a timelier manner, the potential distress in which the Irish banks found themselves. This unique empirical analysis offered important learnings for future banking policy formulation. To systematically analyse the key risk indicators of the banks, a selection of bank-specific ratios were reviewed, based on performance in five key areas: capital adequacy (C), asset quality (A), management competence (M), earnings performance (E), and liquidity risk (L).

Overall findings suggest that there was statistical evidence to identify, before the crisis, structural differences between those banks that had to be bailed out (such as the Irish banks) and those that did not. Results indicated that funding structure was the most robust predictor of bank performance during the turmoil – banks with more depository funding experienced a lower probability of bail out due to financial distress. Banks with higher levels of short-term funding experienced a higher probability of requiring a bail out. Although the bank capital ratio taken by itself was not a robust predictor of resilience, the leverage variable was a significant predictor of probability of bail out. Low balance sheet liquidity also did well in predicting extreme stress. ROA was also

significant, indicating that deteriorating profitability is a good predictor for potential bank distress. These results suggest several important areas of emphasis going forward. First, banks need to place a strong emphasis on their risk-management function, where the appropriateness of a bank's risk-management practices should not be assessed based on a bank's level of capital alone. The empirical results also emphasise the contribution that sound funding models and appropriate loan loss reserve management can give to weathering potential bank distress more effectively.

## **Chapter Five: A Macroprudential Approach to Financial Regulation: Lessons from the Spanish Provisioning Experience**

### **5.1 Introduction**

In spite of many similarities between the Irish and Spanish commercial banks, the Spanish commercial bank, while confronted with volatile markets and a subpar economic environment, proved resilient through the GFC of late 2008. The focus of this chapter is to investigate the difference in banking performance of the main commercial banks in Spain and Ireland during the GFC, with a view to drawing useful lessons for both Irish and international financial regulatory reform in the post-crisis environment. This chapter will examine the underlying causes of the greater resilience of the Spanish commercial banks, by presenting an analytical framework to consider the significant differences between the two retail banking systems in the build-up to and during the GFC. To the best of the author's knowledge, no study in the extant literature to date has undertaken an analysis of this nature.

This unique framework will consider the following areas: a review of how the Bank of Spain, in response to pronounced procyclicality, implemented a countercyclical method of loan loss provisioning that allowed banks to build a reserve in good times to cover losses in bad times; how the Spanish commercial banks were more diversified in their geographic footprints compared to their Irish peers; the excessive expansion of the Irish and Spanish banking systems into real estate and construction (a necessary component in any comparison of the Spanish and Irish banking crisis); the interest rate environment and monetary channels in which the banks operated; a review of governance differences; and the dependence of both the commercial and cajas banks on wholesale funding. Section 5.4 in turn seeks to examine the Spanish commercial banks' balance sheet performance – including provisioning levels – that marked them out as different from their Irish peers and ultimately gave the Spanish commercial banks more resilience at the onset of the GFC.

To undertake an analysis of the key risk indicators of the banks, as in Chapter 4, this study reviews a selection of bank-specific ratios based on performance in five key areas: capital adequacy (C), asset quality (A), management competence (M), earnings performance (E), and liquidity risk (L). Collectively these bank-specific areas are known under the acronym CAMEL and are considered to reflect the overall safety and

soundness of a financial institution. The sources of resilience of the Spanish commercial banks would be useful for countries seeking to learn from their experience.

This chapter will show that international diversification proved a key area of distinction between the Spanish and Irish commercial banks. The main Spanish commercial banks were large, internationally active banks and well diversified in their geographic footprints, with only one-third of their net profits generated domestically by 2006. Interestingly, while regulation in both countries was ill-equipped overall to deal with risks stemming from unsustainable credit-extension increases from the late 1990s, there was one exception in the Spanish regulatory tool box – the introduction of a dynamic provisioning (DP) framework in July 2000. The use of this unique loan loss provisioning approach in Spain meant that by the start of the GFC, Spanish banks had one of the highest ratios of loan loss provisions to total loans in the world, about four times higher than in the other euro area countries, including Ireland (IMF 2006). This point is reinforced in Section 5.4, where analysis found that the Spanish commercial banks stood out from their Irish and European peers in terms of their provisioning levels. This research suggests that while the success of the Spanish experience with DP was limited, it reflects the benefit that DP may provide as part of a wider regulatory toolkit. DP is a macroprudential tool that deserves attention from policymakers and regulators for its ability to distribute the cost of loan impairment more evenly over the credit cycle.

The motivation for examining the Spanish commercial banks as the main focus for this chapter is predicated on the following areas: the economic growth trajectories of both countries were similar in the lead-up to the GFC; the composition of assets and liabilities of Irish and Spanish retail banks changed during the ten years that preceded the GFC, in that banks in both countries sourced funds from international financial markets and increasingly substituted deposits for wholesale funding to finance their activity; and banks in both countries had used the new funding sources to finance exponential growth in their lending activity, especially real-estate loans. These areas of comparison will be further developed in Sections 5.2 and 5.3.

### **Similar Economic Growth Trajectory**

Both countries had similar economic growth trajectories in the lead-up to the GFC. By the beginning of the 1990s, both countries, like other peripheral EU countries such as Greece and Portugal, had the poorest living standards in the Organisation for Economic Co-operation and Development (OECD). However, Spain and Ireland became two of the fastest-growing economies in Europe between the establishment of the Single Market in 1993 and the end of the first year of EMU membership in 1999. The turnaround of the Spanish economy in the early 1990s was closely connected to its integration into the EU. Spain's EU membership facilitated the micro and macro reforms that successive Spanish governments undertook throughout the 1980s until the early 2000s, as governments sought to reform welfare systems and labour markets, benefiting from an expanded flow of EU Structural and Cohesion Funds.<sup>46</sup>

One of the most remarkable features of this period of economic growth in Spain and Ireland was both economies' capacity for creating employment on a rapid and sustained basis. Another key feature was the overall effects of EMU integration. One of the crucial features was the dramatic reduction of short-term and long-term nominal interest rates. The lower costs of capital led to an important surge in domestic demand and credit extension by financial institutions.

### **Increased Bank Lending Activity**

Banks in both countries experienced a divergence between domestic deposit growth and credit growth beginning in 2000. The composition of assets and liabilities of both Irish and Spanish banks changed during the ten years that preceded the GFC, in that banks in both countries sourced funds from international financial markets and increasingly substituted deposits for wholesale funding to finance their activity, becoming increasingly dependent on foreign wholesale markets. Banks in both countries had used the new funding sources to finance exponential growth in their lending activity, especially real-estate loans. This meant that the pattern of net international debt flows was closely aligned to domestic credit growth, with high external borrowing marking the domestic credit booms in both countries. The combination of lower interest rates from 1998 onwards and higher income and increased household formation meant a

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<sup>46</sup> The successive aid programmes produced an average increase in per capita income of €638 each year (at 1999 prices) over the entire period, and of €1027 per capita during 2000–2006. Without the structural aids, the Spanish per capita income index in 2006, relative to the average for EU-15 would be, *ceteris paribus*, almost six percentage points lower (Sosvilla-Rivero and Herce, 2008).

sizeable increase in housing affordability in both countries. Residential property price inflation increased dramatically, as did home building levels.

### **Construction Bubble**

In both countries residential property price inflation increased dramatically from the late 1990s driven by increased availability of cheap mortgages but unusually was accompanied by marked growth in new house building. Thus, following the international credit crunch in 2008, a simultaneous contraction in both mortgage credit and house building occurred in Ireland and Spain, which precipitated a marked knock-on decline in the employment, tax revenue and consumer spending which the housing boom had underpinned (Norris and Byrne 2015). The concentration of banking loans in these sectors, caused both banking systems to suffer from increasing non-performing loans on their loan books. Banks faced losses so large that they would eventually threaten the solvency of the banking system, as the value of banks' property-related assets fell below the value of their liabilities, leaving them with negative equity. The main Irish commercial banks were either fully (AIB) or partially (BOI) nationalised by 2009. By the end of 2010 the Irish State was unable to borrow on international markets and was forced to negotiate an emergency loan from the IMF (International Monetary Fund), the EU and an associated four-year austerity programme, in order to fund public spending and bank recapitalisation.

In Spain, it was the domestically focused savings banks (also known as the *cajas*) that were affected severely. The large commercial Spanish banks, unlike their Irish counterparts, did not need public financial support, because they had diversified and internationalised their operations in the years before the crisis. Because of this, Spain did not have to enter a full IMF financial stability programme, although it had to negotiate a smaller, more targeted package of support from the EU/IMF in order to recapitalise the *cajas*. Nonetheless, Ireland's troika funding of €67.5 billion was equivalent to 43 percent of Irish GDP, while the Spanish funding of €100 billion was equivalent to about 9 percent of Spanish GDP by 2012 (Lane 2012).

This chapter is structured as follows: the next section compares macroeconomic and housing market experiences in Ireland and Spain, before and during the GFC. Section 5.3 presents a framework for analysing significant differences between the Irish and Spanish retail banking systems in the build-up to and during the GFC, with the aim of

establishing lessons that can be learned from the better-performing Spanish commercial banks. Section 5.4 examines the Spanish commercial banks' balance sheet performance – including provisioning levels – that marked them out as different from their Irish peers and ultimately gave the Spanish commercial banks more resilience at the onset of the GFC. These sources of resilience would be useful for countries seeking to learn from their experience. Section 5.5 discusses the policy implications arising from the Spanish experience in the context of relevant financial or banking reforms in Ireland, as well as forthcoming Basel III and European Union reforms. Section 5.6 concludes.

## **5.2 Wider Macroeconomic, Debt and Housing Market Context**

This section explores in more detail how one of the main motivations for examining the Spanish commercial banks as the primary focus for this chapter is predicated on the similar economic growth trajectories of Ireland and Spain in the lead-up to the GFC. Ireland and Spain are distinguished from most of their western European neighbours by economic underperformance in the decades following World War II, with both countries failing to industrialise to any significant extent, due in part to strict adherence to protectionism policies (Norris and Byrne 2015). Thus, Spain and Ireland lagged behind during the European economy's "Golden Age", which spanned the period 1950–73. Consequently, they remained economically depressed regions, and living standards remained well below the western European average in the 1980s (see Tortella 2000).

Hence, there were elements of delayed catch-up in Ireland's and Spain's economic transformation during the 1990s (Barry and Crafts 1999). Both countries were exposed to the same set of changes in their international policy environment in the late 1990s and early 2000s, in the form of a low interest rate regime associated with the creation of European Monetary Union (EMU); and both countries had extreme experiences of housing bubbles during the 2000s, suffering a similar construction-related economic collapse that caused the near-failure of their respective banking systems after 2008.

While there has been some limited discussion on the Irish and Spanish housing bubbles (see Conefrey and Fitzgerald 2010, Dellepiane and Hardiman, 2013, and Norris and Byrne 2015), a review of the most recent literature would suggest there has been little focus on how Spain's economic transformation from the mid-1990s to 2008 was strikingly similar to Ireland's over the same period. The remainder of this section highlights parallels between the Irish and Spanish macroeconomic experiences from the

1990s onwards, including how the advent of EMU changed the cost of capital facing households during the 2000s and how housing market crashes in both countries had very severe repercussions domestically. It briefly discusses, in turn, the changing debt profile of households in both countries during the decade preceding the crisis.

### ***5.2.1 Spain's Economic Transformation and Growth Convergence from mid-1990s to 2007***

Ireland's and Spain's economic upsurge during the 1990s was outstanding not only in terms of each country's historical experience, but also in an international comparative context. The Irish growth performance in the 1990s was a clear outlier, in terms of GDP per capita based on purchasing power parities, relative to the group of OECD countries considered in Chapter 3, Figure 3.1, which presents initial income levels and subsequent growth. Ireland is well above the trend line (not shown), illustrating the very robust annual average growth in income per capita experienced between 1992 and 1999. The Spanish economy also experienced such levels of growth convergence for the same period, although not to the same level and extent as Ireland, and it is clear that Ireland's and Spain's belated catching-up was a comparatively rapid phenomenon.

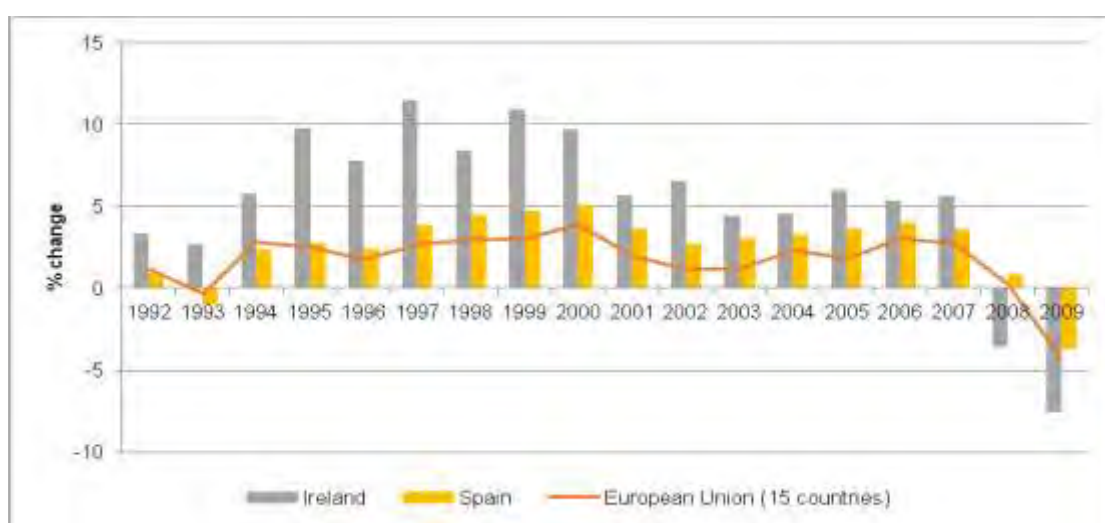
The key to understanding Spain's economic transformation lies in realising that the recorded surge in macroeconomic growth stemmed from two very different phases, and the transition between them attended a significant change in the structure of the Spanish economy. The Spanish economy, which had severe fiscal imbalances and endemic unemployment in the 1980s and early 1990s, began to transform from c.1995, exhibiting remarkable economic growth, high net immigration, and employment gains. The upswing from c.1995 was propelled significantly by a rise in domestic demand and exports. The turnaround of the economy in the early 1990s was closely connected to Spain's integration into the EU. Its EU membership facilitated the micro and macro reforms that successive Spanish governments undertook throughout the 1980s until the early 2000s, as governments sought to reform welfare systems and labour markets, benefiting from an expanded flow of EU structural funds<sup>47</sup> (see for example European Commission 2007b, and Sosvilla-Rivero and Herce 2008 for further discussion). From

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<sup>47</sup> Research by Sosvilla-Rivero and Herce (2008) found that between 1989 and 2006, the successive EU aid programmes in Spain produced an average increase of almost 0.4 percentage points in the real annual growth rate of the Spanish economy when compared to what would have ensued without the European grants. This translates into an average increase in per capita income of €638 each year (at 1999 prices) over the entire period, and of €1027 per capita if we refer to the period 2000 through 2006. Without the structural aids, in 2006, the Spanish per capita income index relative to the average for EU-15 would be, ceteris paribus, almost 6 percentage points lower.

1995 to 2006, Spain's real GDP grew at an average annual growth rate of 3.75% per year (AMECO 2014).<sup>48</sup> Although this was not the highest growth rate attained in past economic expansions in Spain, it was the longest period of sustained growth since the late 1960s. By 2008, Spain was in its fourteenth year of uninterrupted growth (Figure 5.1), and it was benefiting from the longest cycle of continuous expansion of its economy, which contributed to narrowing the per capita GDP gap between Spain and the EU. Ireland is the only country in the Eurozone to have a better record for this period (see Chapter 3, Figure 3.1 for further detail on Ireland).

**Figure 5.1: Irish and Spanish GDP volume (annual, %) 1992–2009 (at 2000 market prices)**



Source: European Commission AMECO Database and author's own calculations

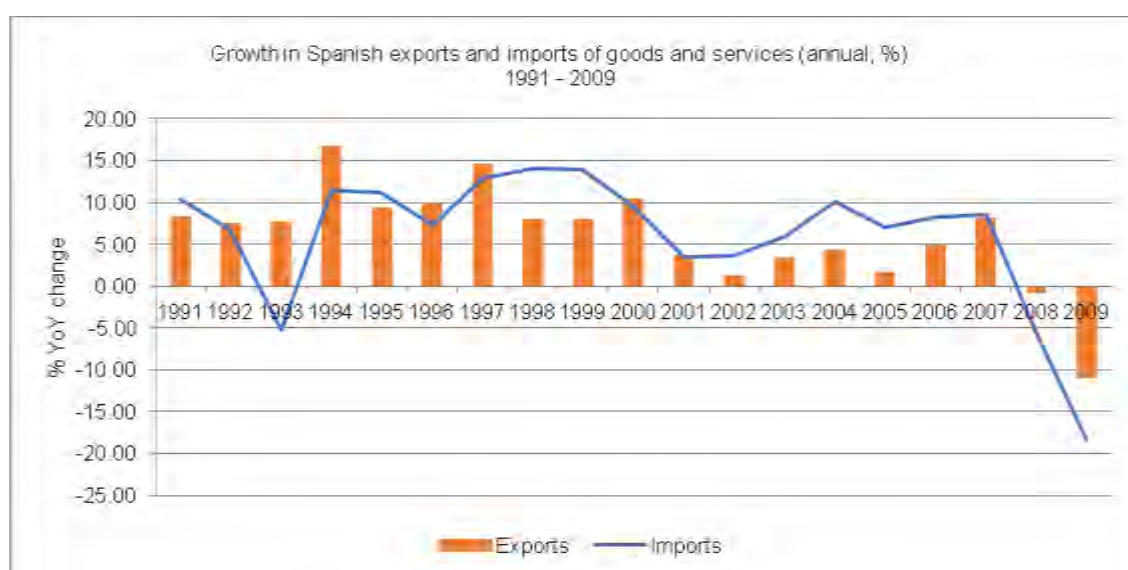
### Increased Domestic Demand

The economic expansion of the Spanish economy from the mid-1990s displayed two distinctive features: a relatively larger contribution of investment, and a decreasing contribution of net exports. Domestic demand was the key driver of expansion of economic activity between 1995 and 2007 and was mainly explained by the extraordinary dynamism recorded by housing investment. Other construction played a rather modest role in comparison with previous Spanish economic booms of the 1970s and 1980s. These drivers of economic growth echoed the drivers of growth in the Irish economy from 2000 onwards. From 1990 to the late 1990s, exports of goods and services made an increasing contribution to GDP growth for Spain.

<sup>48</sup> Author calculations based on data obtained from the AMECO database, available at: [http://ec.europa.eu/economy\\_finance/ameco/user/serie/SelectSerie.cfm](http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm) (accessed 2 September 2014).

The economy was helped by increased competitiveness, helped by four devaluations of the peso in 1992, 1993 and 1995. Combined with the sustained growth in world trade, this increase led to a sustained output boom during the 1990s. However, as Figure 5.2 highlights, from 1998 onwards, imports increased as the external current account deficit expanded to over 75% of GDP by 2005 – the second-largest in the world in absolute terms (Kang and Shambaugh, 2013). Thus, the initial years of EMU membership were associated with strong current account deficits that resulted in large liabilities against the rest of the world. From 1998 to 2010, the Spanish trade deficit tripled as domestic demand caused imports to grow at a higher rate than exports. As Kang and Shambaugh (2013) note, the key explanations for widening current account deficits for Ireland and Spain in mid-2000s are: (i) deteriorating export performance due to a steady deterioration of competitiveness and (ii) a domestic demand-driven boom stemming from excessive optimism, capital flow-driven cheap credit, as well as fiscal excess.

**Figure 5.2: Growth in Spanish exports and imports of goods and services (annual, %) 1991–2009**



Source: European Commissions AMECO database and author’s calculations

### 5.2.2 Population, Employment and Productivity

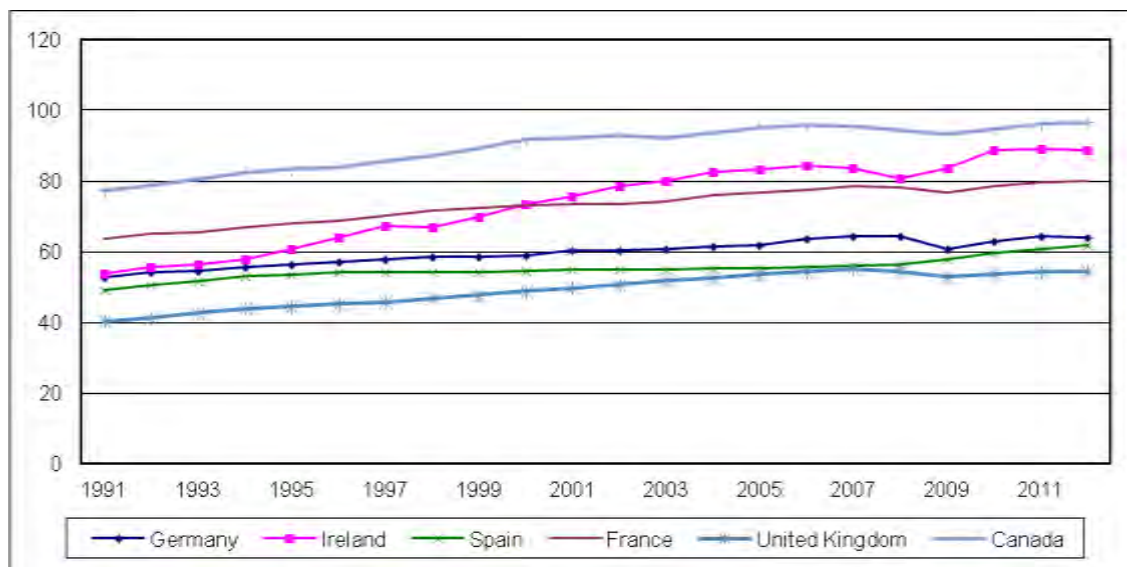
One of the most remarkable features of this period of economic growth in Spain was the economy’s capacity for creating employment on a rapid and sustained basis. The high unemployment rate that had plagued the Spanish economy during the 1980s fell continuously throughout the 1990s and into the 2000s, from 22% in 1993 to 8.2% by 2007 (AMECO 2016). Consistent with increased and sustained economic activity, and underpinned by increases in female labour force participation and immigration,

employment rose in Spain by an annual average rate of above 3% between 1995 and 2006 (AMECO 2016). Spain added 5.5 million new jobs, or almost 40% of the total employment created in the euro area between 1995 and 2006 (European Commission 2010). Between 2001 and 2006 the Spanish population grew by more than 3 million people, representing half of total migrant inflows to the Euro area for that time period (OECD 2007).

### **Labour Productivity**

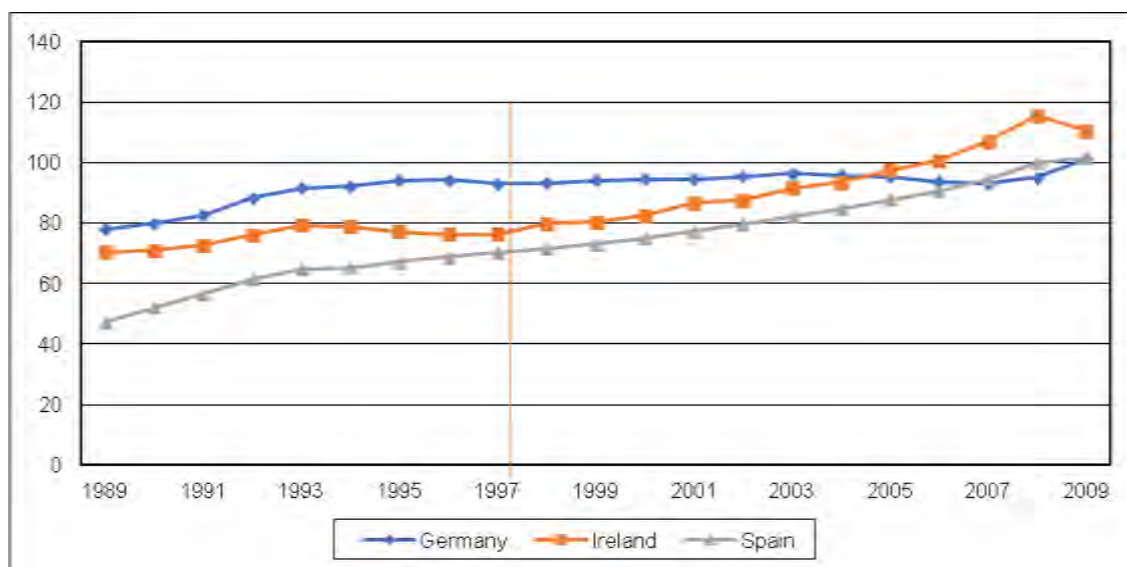
Of particular note, however, was the absence of any increase in the rate of growth of overall labour productivity, as measured by GDP per worker (see Figure 5.3). The stagnation in Spanish labour productivity levels from 1994 to 2007, seen in Figure 5.3, reflected a relative specialisation of the Spanish economy in low-intensity economic sectors, such as services, tourism and construction, which are not exposed to international competition. By 2006 job creation was centred in low productivity areas such as construction (33 per cent) services associated with housing sales and rentals (15 per cent) and tourism and domestic service (30 per cent) (OECD 2012). Productivity only grew at 0.3 per cent during the between 1998 to 2008 (0.7 per cent in 2006) one whole point below the EU average, placing Spain just above Italy and Greece (Royo 2013). At the same time, Ireland and Spain experienced a sharp loss of competitiveness as domestic demand-led growth drove up prices and wages in the economy (Figure 5.4). From 1996 to 2008, Irish and Spanish labour costs increased at a much faster pace than in other countries such as Germany. Figure 5.4 highlights a clear inflection point around 1997 at the prospect of inappropriately low interest rates. After that point, Irish and Spanish labour costs increased at a much faster pace (see Section 3.3 for more detailed discussion on the Irish case).

**Figure 5.3: Gross domestic product at 2010 reference levels per person employed 1991–2013**



Source: European Commission AMECO database and author's calculations

**Figure 5.4: Index of nominal unit labour costs in the total economy 1989–2009 (€) – 2010 = 100**



Source: European Commission AMECO database and author calculations

### **5.2.3 Interest Rate Environment**

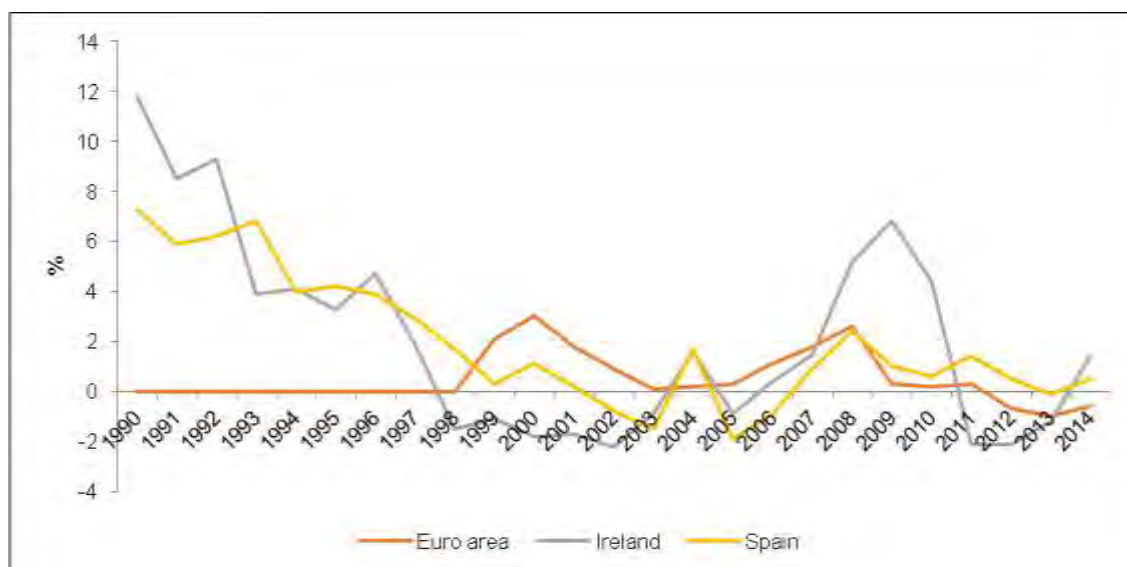
On Spain's joining of the EMU, as in other EU member states, including Ireland, nominal interest rates converged rapidly towards the low levels of core European countries such as Germany, France, and the Netherlands. The macroeconomic stability policy framework Spain had put in place to facilitate euro adoption supported this convergence. (As Chapter 3, Section 3.3.2 describes, Ireland had a similar trajectory.) Between 1990 and 1998, real interest rates fell by 560 basis points (see Figure 5.5 below). On Spain's EMU accession from 1999, with monetary policy now in the hands of the ECB, real interest rates continued to fall until 2005, albeit much more slowly than in the pre-EMU period (1992–1999). For example, short-term and long-term nominal interest rates dropped sharply, from 13.3 per cent and 11.7 per cent in 1992 to, to 3.0 percent and 4.7 per cent in 1999, and 2.2 per cent and 3.4 per cent in 2005.<sup>49</sup> The lower cost of capital led to a surge in consumption by families (in housing and consumer goods) and businesses (in increased employment and capital goods).

Prompted by increased household formation related to increasing levels of net immigration, and by the sharp fall in interest rates that accompanied the transition to EMU membership, there was a significant rise in the indebtedness of households and firms (see Chapter 3, Section 3.4.2 for a description of Ireland's asset boom, which also involved a significant housing boom). Norris and Byrne (2015) point out that as the economy and population grew, the housing boom in both countries was underpinned by very strong credit growth, albeit from a low base compared to the rest of western Europe (European Mortgage Federation, various years). As discussed in more detail in Section 5.3.1, credit expanded particularly fast between 2000 and 2006, when outstanding residential loans rose by 281 per cent in Ireland and by 204 per cent in Spain. Although mortgage lending and private sector credit more broadly increased across the EU and most developed countries concurrently, this trend was especially pronounced in Ireland and Spain. Between 2000 and 2007, outstanding residential loans expanded by 80.3 per cent across all 27 EU members (European Mortgage Federation various years).

---

<sup>49</sup> AMECO database: [http://ec.europa.eu/economy\\_finance/ameco/user/serie/ResultSerie.cfm](http://ec.europa.eu/economy_finance/ameco/user/serie/ResultSerie.cfm) (accessed 2 September 2014).

**Figure 5.5 Real interest rates Spain, Ireland and EU Area (1990–2014)**

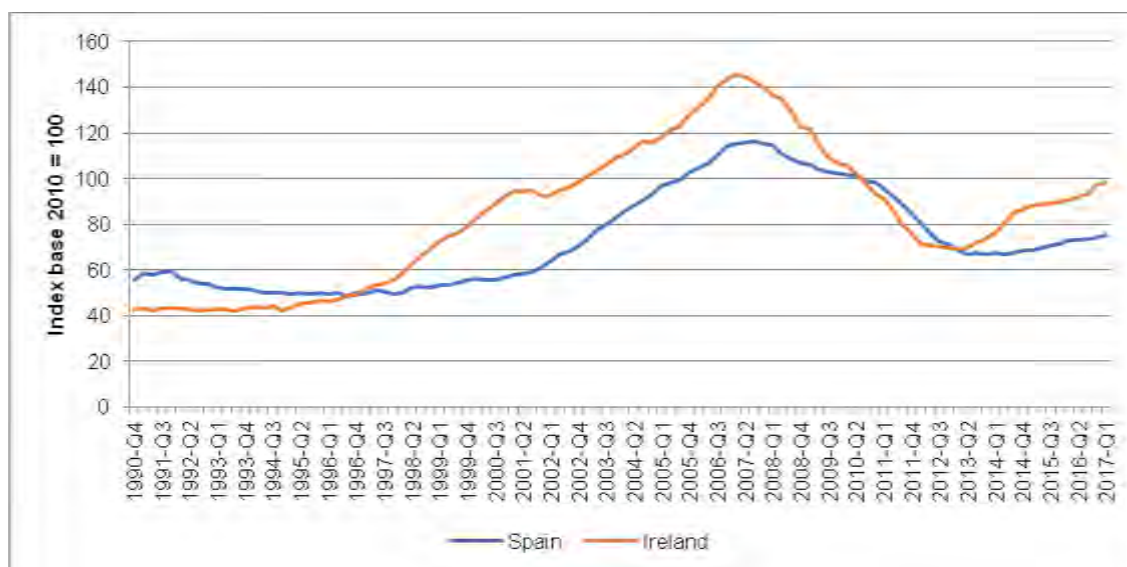


Source: European Commission AMECO database and author's calculations

#### **5.2.4 Housing Market**

A sharp increase in house prices accompanied an increase in the number of new dwellings built each year (see Figure 5.6). House prices soared: between 1997 and 2007 the average house price in Spain rose by 115 per cent in real terms. The corresponding price rise for Ireland was 160 per cent, UK 140 per cent, US 80 per cent, and the Eurozone 40 per cent (Bank of Spain 2011). House completions in Spain from 2000 to 2009 averaged 600,000 units per annum. At the peak of the Spanish housing boom, Spain was building as many new dwellings as the rest of the EU combined, three times the number completed in 1996 (Garca and Lis 2009). A strong expansion in overseas property investment in Spain intensified the boom, and the purchase of secondary homes by citizens of neighbouring EU member states likewise increased. This concentration of economic activity in the construction and housing sector separated Ireland and Spain from their European counterparts. By 2006, the construction sector accounted for c.18 per cent of GDP in Spain and c.20 per cent of GDP in Ireland, while the EU average was c.11 per cent (European Commission – AMECO database). Mirroring employment trends in Ireland, by 2006, 33 per cent of new jobs created in Spain were in construction, with an additional 15 per cent in areas associated with housing, such as sales and rentals (Royo 2013).

**Figure 5.6: Ireland and Spain real house prices (1990–2017)**



Source: OECD Database 2017

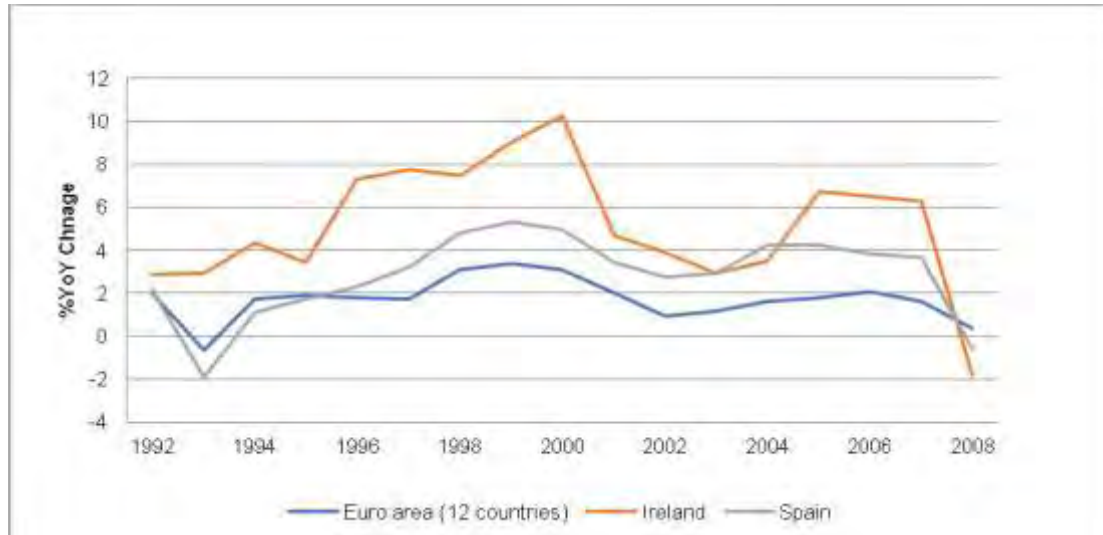
### 5.2.5 Debt

From 1996 onwards, Spanish household consumption patterns (Figure 5.7) grew ahead of the EU average and were enabled by households accumulating household debt (Figure 5.8). Following the same trend as in Ireland, Spanish household indebtedness as a percentage of disposable income moved from 82 per cent in 2000 to 140 per cent by 2007. This was not as high as in Ireland, where household debt reached 210 per cent by 2007. Nonetheless, the total debt of the Spanish economy against the rest of the world jumped from 70 per cent of GDP in 1995 to almost 200 per cent in 2006 (European Commission 2007b, p.6).

As credit conditions continued to ease in the 2000s, combined with reductions in personal income taxes, low interest rates and strong consumer confidence, additional borrowing allowed households to reduce their savings rate below the Euro area average (see Figure 5.9) as they allocated a larger proportion of their income towards consumption. Accordingly, although the reduction of households' saving ratio has been a common phenomenon in Europe, not only has the ratio in Ireland and Spain been lower than in the Euro area but the gap has widened since 2000. In both Ireland and Spain, the development of household debt prior to the GFC was unprecedented, and the record expansion of home ownership in the lead-up to the GFC in both countries had an effect on household leverage (IMF 2009). Chmelar (2013) notes that between 1995 and

2007, the overall stock of household debt in the EU expanded almost three times. In Ireland and Spain the debt expanded as much as six-fold.

**Figure 5.7: Private consumption expenditure at 2000 prices 1992–2008**



Source: IMF 2012

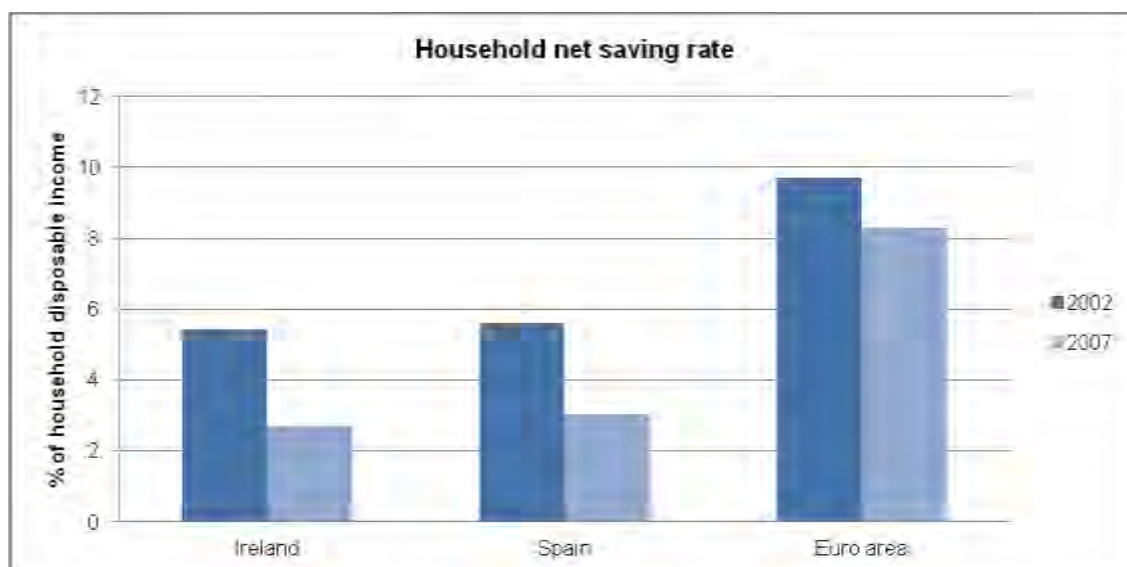
**Figure 5.8 Household debt as a percentage of disposable income**



Source: OECD Factbook, 2013<sup>50</sup>

<sup>50</sup> Source: [http://asset.keepeek-cache.com/medias/domain21/\\_pdf/media1684/264767-uoc3tbbd1k/large/3.jpg](http://asset.keepeek-cache.com/medias/domain21/_pdf/media1684/264767-uoc3tbbd1k/large/3.jpg).

**Figure 5.9: Household net saving rate**



Source: OECD National Accounts 2009

This section has highlighted how, similarly to Ireland, by 2001 the sources of economic growth in Spain had shifted sharply: an unsustainable property boom had begun to take over from exports as the main driver. Monetary conditions became exceptionally easy, especially after the ECB reduced interest rates in April 1999. The resulting low real interest rates encouraged rapid increases in household indebtedness and house prices. Economic growth became and remained unbalanced in both countries from 2000 onwards, manifested in a large external deficit. The next section will examine the underlying causes of the greater resilience of the Spanish commercial banks by presenting an analytical framework to consider the significant similarities and differences between the two retail banking systems in the build-up to and during the GFC.

### **5.3 A Framework for Analysing the Irish and Spanish Banking Systems**

This section makes the first attempt in the literature to present a framework for analysing significant differences between the Irish and Spanish retail banking systems in the build-up to and during the GFC. The aim is to establish lessons based on the better-performing Spanish commercial banks. Given the similarities between the two banking systems and their diverging fates, this analysis has broad potential to benefit policy in Ireland. The key areas for consideration by the framework include: a review of the Bank of Spain's unique use of a provisioning countercyclical regulatory tool (the use of such a tool was a key difference between the Spanish and Irish banking systems

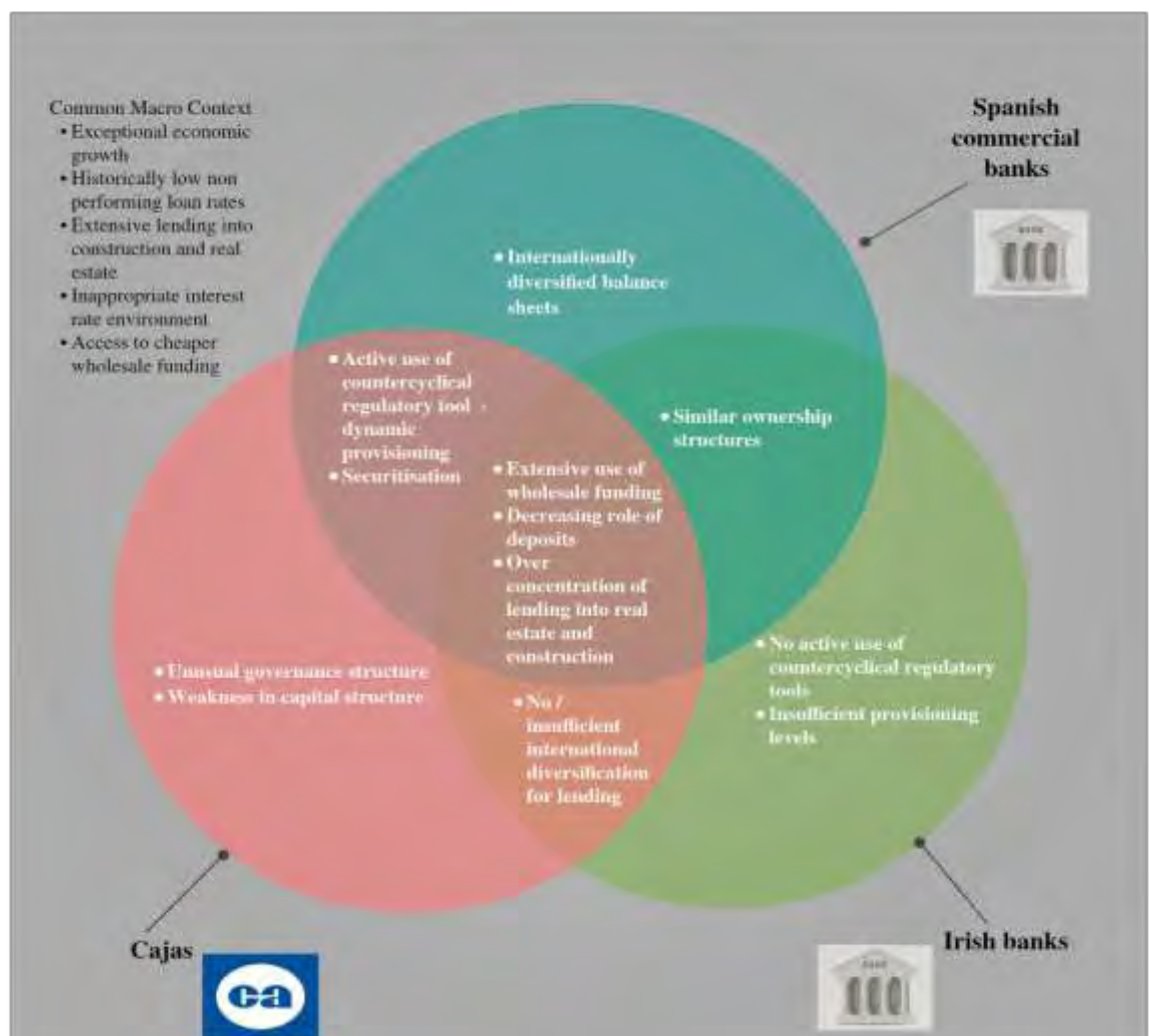
in the lead-up to the GFC); how the Spanish commercial banks were diversified in their geographic footprints compared to their Irish peers; the excessive expansion of the Irish and Spanish banking systems into real estate and construction; the interest rate environment and monetary channels in which the banks operated; a review of governance differences; and the dependence of both the commercial and cajas banks on wholesale funding. These key areas for consideration are reviewed, bearing in mind the common macroeconomic elements that affected both countries, as discussed in Section 5.2. These elements primarily are: exceptional economic growth; historically low non-performing loans; excessive lending into construction and real estate; inappropriate interest rate environment; and access to cheaper wholesale funding.

Figure 5.10 below presents the key areas for consideration by the framework, while Figure 5.11 highlights the outcome of each element, discussed in turn below. The framework highlights the following: (i) International diversification proved a key area of distinction between the Spanish and Irish commercial banks. The main Spanish commercial banks were large, internationally active banks and well diversified in their geographic footprints, with only one-third of their net profits generated domestically by 2006. (ii) Interestingly, while regulation in both countries was ill-equipped overall to deal with risks stemming from unsustainable credit extension increases from the late 1990s, there was one exception in the Spanish regulatory tool box – the introduction of a dynamic provisioning (DP) framework in July 2000. Given the importance of DP, Section 5.4 seeks to examine the Spanish commercial banks' balance sheet performance – including provisioning levels – that marked them out as different from their Irish peers and that ultimately gave the Spanish commercial banks more resilience at the onset of the GFC (e.g. adequacy of capital, asset quality, management quality, earnings and liquidity).

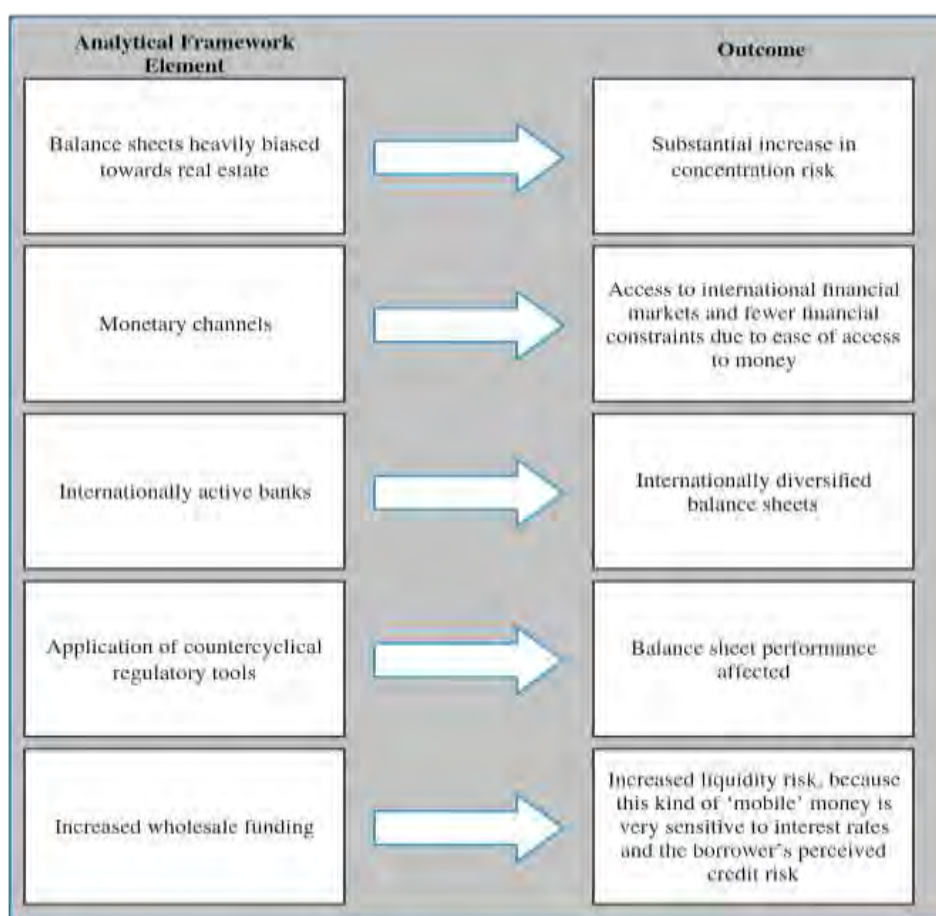
This section begins by examining the expansion of the banking system into real estate and construction, a necessary component to understand the Spanish banking crisis. It then examines the interest rate environment in which the banks operated. Similar to Lucey's (2014) observations for Ireland (see Chapter 3, Section 3.3.3), one of the first signs that things were going to be different for Spain as a member of the Eurozone was that interest rates dropped sharply from the late 1990s onwards. This happened in anticipation of high Spanish interest rates being replaced by much lower Eurozone rates that catered to Germany's needs during national reunification (as noted in Section

3.3.3). Next, monetary channels are reviewed because membership in the Eurozone fundamentally changed the dynamics of the Spanish banking system. The following two Sections, 5.3.4 and 5.3.5, then review governance differences between the Spanish banks and cajas and, in turn, examine the dependence of both banks on wholesale funding. The final area for review is countercyclical regulatory tools – that is, tools designed to reduce the procyclicality of the banking system.

**Figure 5.10: An analytical framework to establish significant differences between the Irish and Spanish retail banking system in the build-up to and during the GFC**



**Figure 5.11: Summary of analytical framework and their outcomes**



### **5.3.1 The Property Bubble and the Banks**

This section looks at the evolution of the balance sheets of the Spanish commercial banks and cajas from c.2000 onwards. By 1999, two types of institutions dominated the Spanish credit market: the commercial retail banks, and the savings and loans institutions, also known as the cajas. (Chapter 2, Section 2.5, details the position and function of these different institutions involved in the Spanish lending environment. In particular see Tables 2.10 and 2.11, and see Table 5.1 below for a brief summary.) In general, the balance sheets of both the commercial banks and cajas became heavily biased towards real estate between 2000 to 2008. Bank lending data sourced from the Bank of Spain show strong patterns that highlight the evolution of risk on the balance sheets of the commercial banks and cajas from the late 1990s onwards.

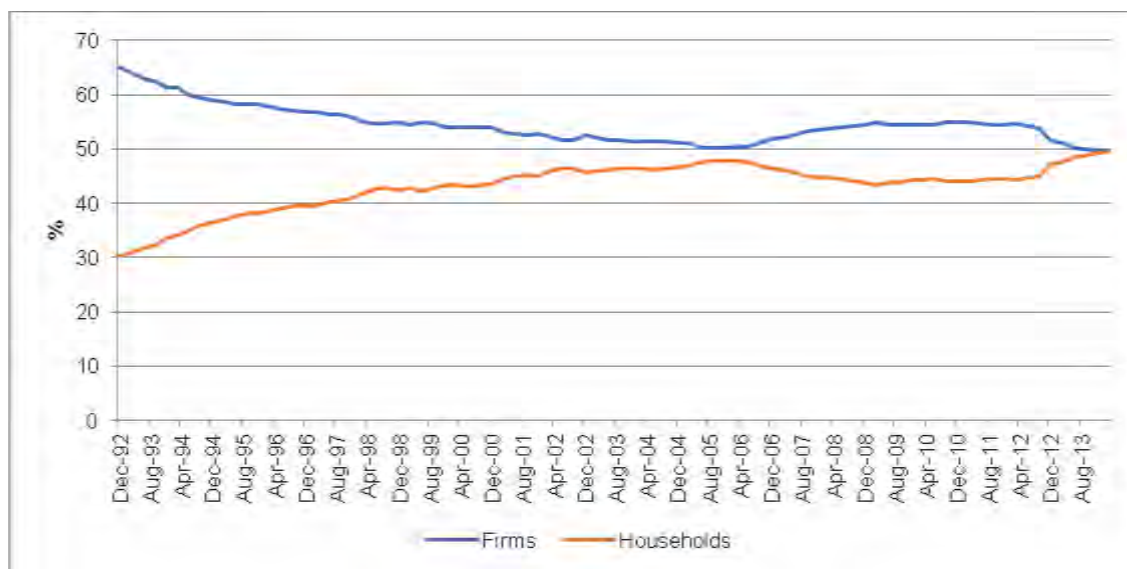
This evolution was very similar to the patterns discussed for the Irish banks in Chapter 3, Section 3.3.3. Figure 5.12 below shows the increase in household finance as loans to households went from 30 per cent of total domestic private credit (the sum of commercial and household loans) extended by the banks and cajas in 1993 to almost 50

per cent by January 2006. Household loans primarily consist of loans for mortgages and renovations. These went from 17 per cent of all loans in 1992 to a high of 38 per cent by March 2006.

**Table 5.1: Market structure**

|  | <b>Ireland</b>  | <b>Spain</b>  |      |      |     |     |      |      |      |      |      |  |     |     |     |     |     |      |      |      |      |      |
|--|---|---|------|------|-----|-----|------|------|------|------|------|--|-----|-----|-----|-----|-----|------|------|------|------|------|
| <b>Market Structure</b>  | <p>Highly concentrated<br/>(%) of total assets top 5 Irish Financial Institutions (“CR5”) held</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>`03</th> <th>`04</th> <th>`05</th> <th>`06</th> <th>`07</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">44.4</td> <td style="text-align: center;">43.9</td> <td style="text-align: center;">45.7</td> <td style="text-align: center;">44.8</td> <td style="text-align: center;">46.1</td> </tr> </tbody> </table> <p>Source: Table 3, EU Banking Structures, Oct 2008 (ECB)</p>  | `03   | `04  | `05  | `06 | `07 | 44.4 | 43.9 | 45.7 | 44.8 | 46.1 | <p>Highly concentrated<br/>(%) of total assets top 5 Spanish Financial Institutions (“CR5”) held</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>`03</th> <th>`04</th> <th>`05</th> <th>`06</th> <th>`07</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">43.1</td> <td style="text-align: center;">41.9</td> <td style="text-align: center;">42.0</td> <td style="text-align: center;">40.4</td> <td style="text-align: center;">41.0</td> </tr> </tbody> </table> <p>Source: Table 3, EU Banking Structures, Oct 2008 (ECB)</p> | `03 | `04 | `05 | `06 | `07 | 43.1 | 41.9 | 42.0 | 40.4 | 41.0 |
| `03  | `04   | `05   | `06  | `07  |     |     |      |      |      |      |      |  |     |     |     |     |     |      |      |      |      |      |
| 44.4   | 43.9  | 45.7  | 44.8 | 46.1 |     |     |      |      |      |      |      |  |     |     |     |     |     |      |      |      |      |      |
| `03  | `04   | `05   | `06  | `07  |     |     |      |      |      |      |      |  |     |     |     |     |     |      |      |      |      |      |
| 43.1   | 41.9  | 42.0  | 40.4 | 41.0 |     |     |      |      |      |      |      |  |     |     |     |     |     |      |      |      |      |      |
| <b>The main commercial banks dominated their respective domestic markets</b> | <p>The Department of Finance has estimated that around 30 institutions were involved in retail banking in Ireland prior to 2007, with 11 having a significant retail involvement through branch networks, six of which were predominantly involved in mortgage business. Traditionally the two largest banks (AIB and BOI) each accounted for around 30 per cent of banking services.</p> <p><b>Post Office:</b> Offers a range of customer services but does not provide mortgage lending services.</p> <p><b>Credit Unions:</b> With over 400 branches spread across Ireland, credit unions have a strong high-street presence. They specialise in personal loans and savings and do not engage in mortgage/construction lending.</p> | <p>By 1986, on Spain’s entry to the European Union, seven large banks (Banesto, Central, Popular, Hispano, Santander, Bilbao, and Vizcaya) dominated the Spanish credit market, while the cajas sector played a much smaller role. By 2000, a series of mergers and takeovers had reduced the number of large international banks to two – BBVA and Santander. Santander and BBVA grew through a strategy of international expansion during the late 1990s and 2000s. By 2006 Santander and BBVA were the dominant commercial banks and together accounted for 30 per cent of the Spanish market (OECD 2009).</p> |      |      |     |     |      |      |      |      |      |  |     |     |     |     |     |      |      |      |      |      |

**Figure 5.12: Commercial and consumer loans extended by the commercial banks and cajas as a percentage of total credit to the private domestic sector 1993–2014**

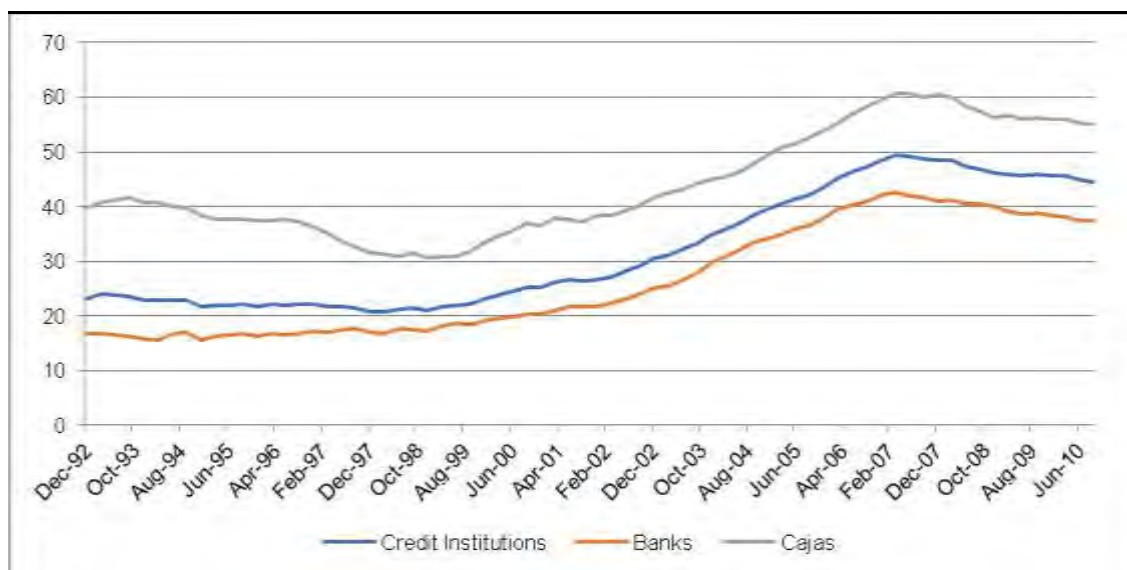


Source: Bank of Spain and author's calculations

Figure 5.13 provides further insight by highlighting the percentage of commercial loans tied to the real estate sector by all Spanish credit institutions,<sup>51</sup> defined as the sum of loans to construction companies and real estate developers. At their peak in March 2007, they accounted for almost 50 per cent of all loans issued by Spanish commercial banks and cajas. The cajas were particularly exposed, having made 61 per cent of their loans to construction companies and developers at the peak of the Spanish housing bubble in 2007 Q2. Banks reached 41 per cent the same quarter, almost 20 percentage points lower. Figure 5.14 summarises the real estate risk that sat on the balance sheets for all commercial banks and cajas, defined as the percentage of the bank's loan portfolio that is a mortgage or a loan to a real estate developer or a loan to the construction sector. At the beginning of the period (1992 Q4), 39.7 per cent of the loan portfolio of the commercial banks and cajas were exposed to the real estate sector; at its peak in March 2007, the number exceeded 60 per cent. This exposure was higher for the cajas, and by mid-2008, 70 per cent of the cajas' loan portfolio was a mortgage or a loan to a construction company, compared to 55 per cent exposure for the banks.

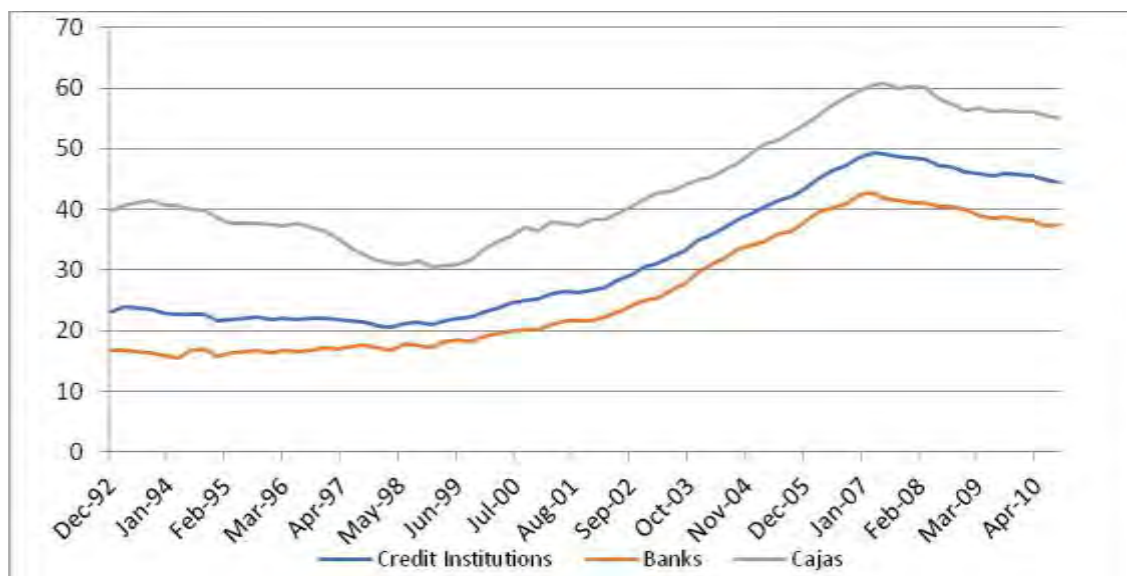
<sup>51</sup> "All Spanish credit institutions" refers to 95% of the financial market – the cajas and commercial banks but not credit co-operatives.

**Figure 5.13: The percentage of commercial loans tied to construction companies**



Source: Quarterly data 1992 Q4–2010 Q2, Bank of Spain.

**Figure 5.14: Loans to construction companies and real estate developers as a percentage of loans to households and firms**



Source: Quarterly data. 1992 Q4–2010 Q2, Bank of Spain.

### 5.3.2 Monetary Channels

Ireland and Spain are members of the EMU, and consequently the ECB has determined monetary policy in both countries since the late 1990s. Just as it did in Ireland (see Chapter 3, Section 3.3.3), membership in the Eurozone fundamentally changed the dynamics of the Spanish economy. The drop in interest rates that accompanied EMU

membership from the late 1990s encouraged high growth behaviour among Spanish banks as they began lending to construction and real estate activities at much higher growth rates than previously. Figures 5.9 and 5.10 in Section 5.3.1 show these levels of growth. (For similar discussion on the Irish case, see European Commission 2016 and Chapter 3, Section 3.3.3.)

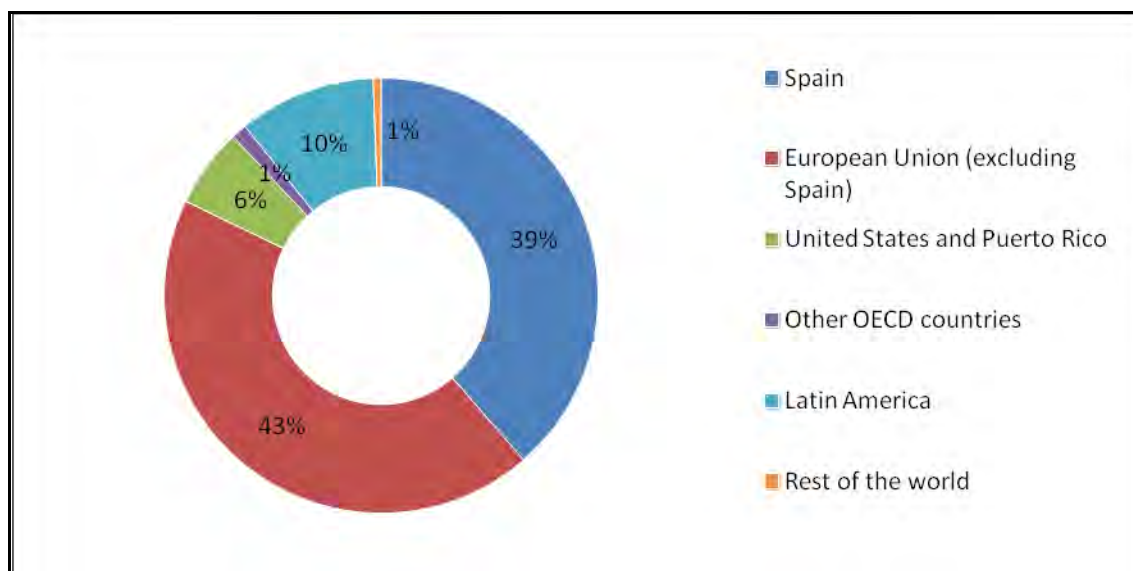
Between the early 2000s and the outbreak of the GFC, interest policy rates were systematically below Taylor-rule-implied rates in a number of advanced economies. Research by Ahrend et al. (2008) posited that for Ireland and Spain, monetary policy rates set to be consistent with conditions in the euro area as a whole were persistently and significantly below what the Taylor rule would have suggested (see Chapter 3, Section 3.3.3, for further discussion). Ahrend et al.'s (2008) analysis was verified by Dokko et al. (2009), whose research explicitly computes the Taylor residuals in a cross-section of European countries, including Spain. Dokko et al. (2009) found that had the ECB applied the appropriate Taylor rule for Spain, the real estate bubble would not have happened there. Spain becoming a member of the Eurozone facilitated access to international financial markets and loosened the financial constraints for both cajas and banks. As highlighted in Section 5.3.5, until the Euro, deposits were the main financing source of funding for the Spanish banking sector. After Spain joined the Euro, the proportion of activity financed by wholesale markets increased exponentially, especially via securitisation (see Martín-Oliver et al. 2015 for detailed discussion). The increase in securitisation is discussed in more detail in Section 5.3.5 below.

### ***5.3.3 Highly Diversified Commercial Banks***

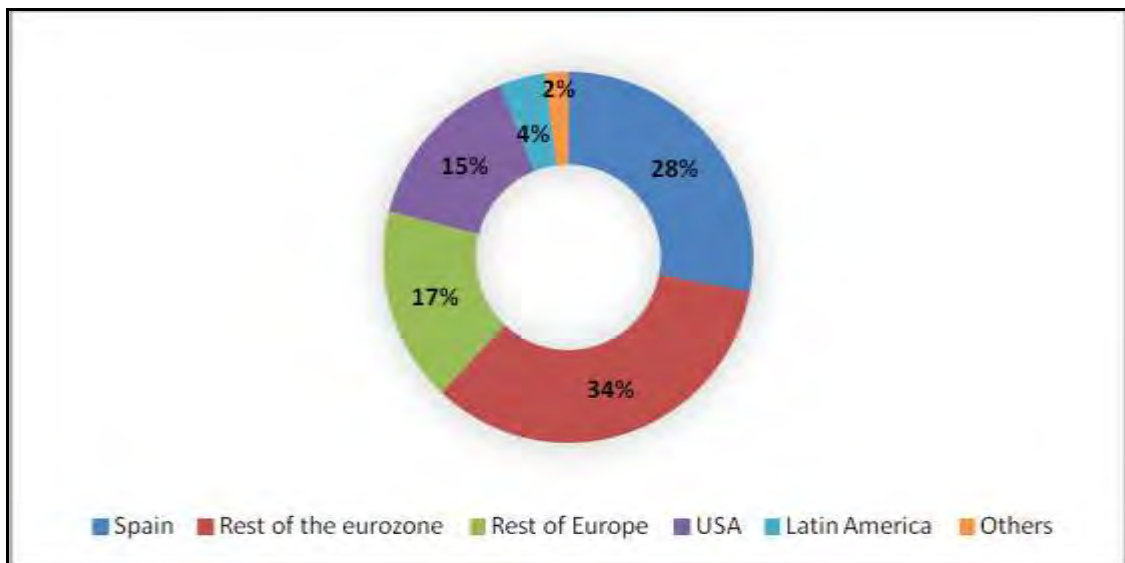
In the decade leading up to the GFC, banks – in particular the large Spanish banks Santander and BBVA – increased their cross-border asset positions away from the traditional domestic model. Financial integration provides investors with opportunities to diversify risks (See Obstfeld and Rogoff 1996, chapters 1 and 5). By borrowing and lending abroad, banks can smooth out shocks to their incomes. They can also share risks across borders by holding internationally diversified assets (IMF 2012a). Santander had expanded its reach extensively across the globe and outside Spain – from Brazil and Chile to Britain, Poland and the United States. BBVA had branched out into Turkey, the United States, Mexico, and other Latin American countries. By 2006, both banks held only a third of their assets domestically (see Figures 5.15 and 5.16).

Exposure to these foreign markets enabled Spanish banks to not only diversify their earnings structure but also compensate for the low earning and operating environment in Spain. In contrast, two thirds of the Irish banks' assets were held domestically, and the bulk of the remainder were held in the UK (see Figures 5.17 and 5.18). These large Spanish banks thus had capital to cushion the problems they faced when the Spanish real estate sector collapsed after 2007. The cajas, however, had no international element to their balance sheets. They also could not be acquired by a bank, which meant they could not diversify internationally. Santos (2014) notes another, subtle consequence of the fact that the cajas had no shares and therefore could not be acquired by banks: the takeover mechanism as a disciplining device was absent, which rendered the internal governance of the cajas all the more important (a point the following section discusses in more detail). International diversification would prove a key area of distinction between the two main Spanish commercial banks and the cajas and the Irish banks. By 2013, Santander's and BBVA's profits continued to benefit from geographic distribution to varying degrees. They generated, respectively, 53% and 60% of their profits in emerging markets in 2013 and 47% and 40% in mature ones (see Table 5.2)

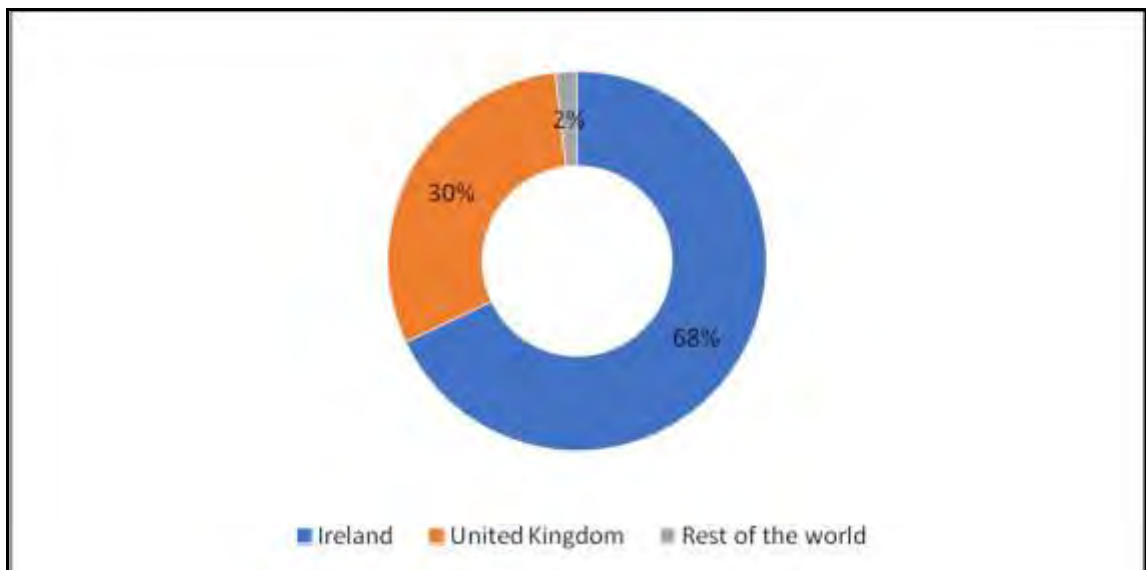
**Figure 5.15: Santander: distribution of assets by geographic area as of 31 December 2006**



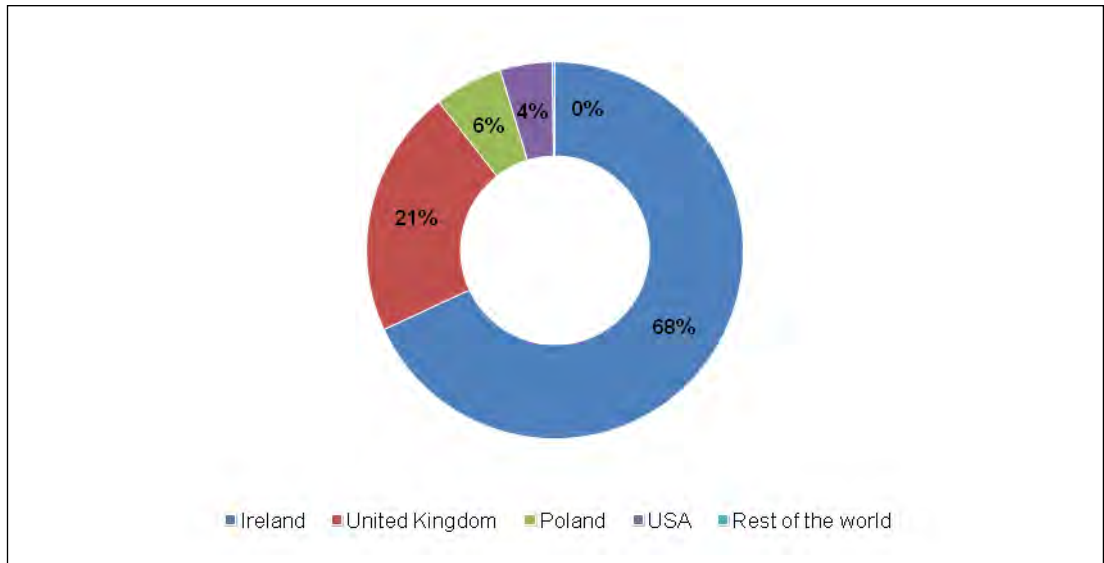
**Figure 5.16: BBVA: distribution of assets by geographic area as of 31 December 2006**



**Figure 5.17: Bank of Ireland: distribution of assets by geographic area as of 31 December 2006**



**Figure 5.18: Allied Irish Bank: distribution of assets by geographic area as of 31 December 2006**



**Source: Bank annual reports**

**Table 5.2: Distribution of Santander's 2013 Profit (% of total) by Operating Segment**

| <b>Distribution of Santander's 2013 attributable profit (% of total) by operating segments <sup>(1)</sup></b> | <b>% of Total</b> |
|---|-------------------|
| Brazil  | 23                |
| UK  | 1717              |
| Mexico  | 10                |
| US  | 10                |
| Spain   | 7                 |
| Rest of Latin America   | 8                 |
| Chile   | 6                 |
| Poland  | 6                 |
| Rest of Europe  | 5                 |
| Germany   | 6                 |
| Portugal  | 2                 |
| <b>Distribution of BBVA's 2013 gross income by countries (% of total) <sup>(2)</sup></b>                      | <b>% of Total</b> |
| Spain   | 27                |
| Mexico  | 29                |
| South America   | 26                |
| US  | 10                |
| Turkey  | 4                 |
| Rest of Europe  | 3                 |
| Asia  | 1                 |

Source: Santander and BBVA annual reports 2013. <sup>(1)</sup> excluding Spain's run-off real estate. <sup>(2)</sup> BBVA does not provide a geographic profit distribution for 2013

#### **5.3.4 Poor Governance**

The cajas, having acquired rights to compete with the commercial banks from 1987, expanded their activities across Spain, primarily into real estate and construction, which contributed to the build-up of risk concentration on their balance sheets. Being unable to raise capital in the absence of a traditional shareholding structure, cajas were not subject to typical market discipline mechanisms (European Commission 2016). The mixture of national and regional charters that supervised cajas created ambiguity about the division of responsibilities. The central government's role blurred with that of local governments, and local government agents were heavily involved in the cajas'

operations, appointing inexperienced managers to the boards of cajas for political reasons (García-Cestona and Surroca 2008). Patterns of expansion and loan availability suggest that political motivations guided cajas' lending decisions as they had a broad variety of stakeholders' interests, including political constituencies, in their decision-making bodies (IMF 2012b, p.4). The delicate balance between central and local powers in the regulation of cajas created a situation resembling the ambiguity of the Irish regulatory regime, where the division of responsibilities among the CBFSAI and the IFSRA was not well defined (see Chapter 2, Section 2.3.3 for discussion of the Irish regulatory regime). The cajas thus were very vulnerable to excessive risk-taking and sector concentration. Their lack of international diversification and absence of shareholders meant that their corporate governance model differed considerably from that of a commercial bank.

### ***5.3.5 Increased Wholesale Funding***

Similar to Irish banks, Spanish banks and cajas had to find funding for an increased level of lending in the decade leading up to the GFC. As the growth of deposits in financial institutions did not keep pace, banks financed their lending by the use of wholesale funding (IMF 2012a).<sup>52</sup> As previously discussed (Chapter 3, Section 3.4.2, and Chapter 4, Section 4.4.5), this mirrored the situation of Irish banks from 2000 onwards. Similar to Ireland, low euro interest rates made it easy for banks to finance construction through wholesale funding in international markets. As Figure 5.19 highlights, deposits constituted the main part of Spanish banks' lending activity until the end of the 1990s. From 1989 to 1999, deposits made up 84 per cent of the liability side of Spanish banks' balance sheets. Only 4 per cent of the liabilities consisted of external sources of funding (debt instruments). However, from 2000 onwards, the composition of the liabilities side changed. By 2006 deposits had decreased to 59 per cent of the liability side of the balance sheet, and wholesale funding had increased to 12.3 per cent. Figure 5.19 shows a clear inflection point around the late 1990s, when wholesale funding and securitisation became a substitute for banks' deposits, driven by Spain joining EMU, which gave the banks and cajas access to the European and international capital markets.

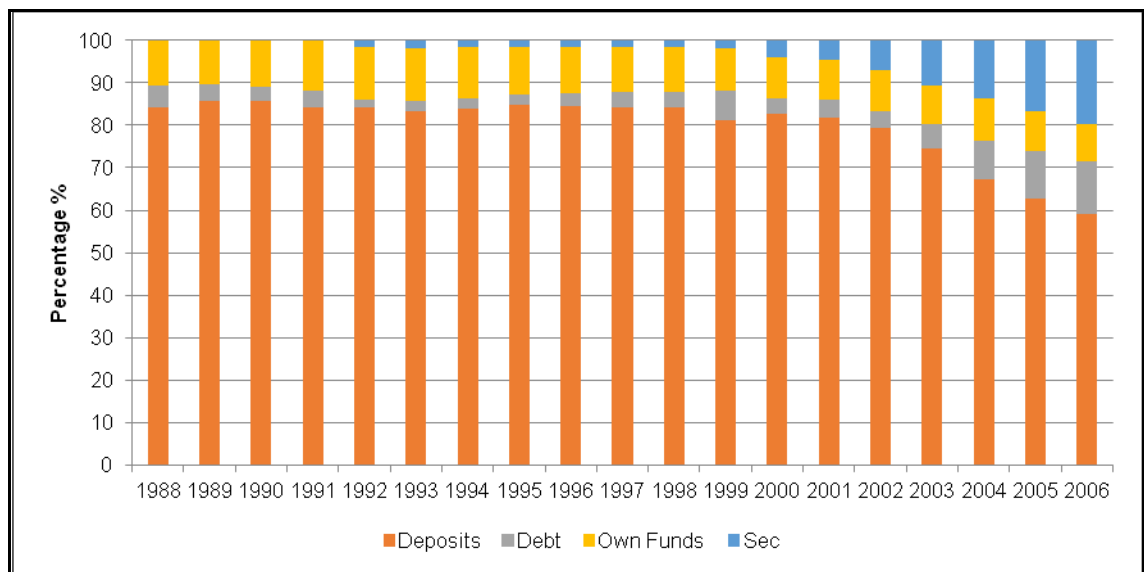
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<sup>52</sup> The cajas' share of total assets funded by domestic deposits (public and private sector, excluding credit institutions), trended downward from over 80 per cent in the early 1980s to 64 per cent in 2010.

Figure 5.20 offers further insight by showing the percentage of the balance sheet that is funded by total deposits for both cajas and banks. Deposits were funding a lower percentage of the balance sheets for both institutions, with a significant drop evident after euro adoption. Again, the pattern suggests that the banks and cajas dramatically increased their reliance on wholesale funding to finance the real estate bubble. The high surge of securitisation in Spain, especially from 2005 to 2006, distinguished the Spanish banks from their Irish counterparts. As Connor et al. (2010) note, Irish domestic banks were not involved in financial securitisation, which had started to gain popularity in Spain. Irish banks still overwhelmingly employed the more traditional ‘originate and hold’ model and kept all assets on their balance sheets. But they had fully embraced wholesale funding, and by 2008, 37 per cent of funding was sourced from abroad. Recourse to securitisation and debt translated into a higher weight of wholesale funding in Spanish institutions’ balance sheet, as deposits become less important to finance banks’ activities.

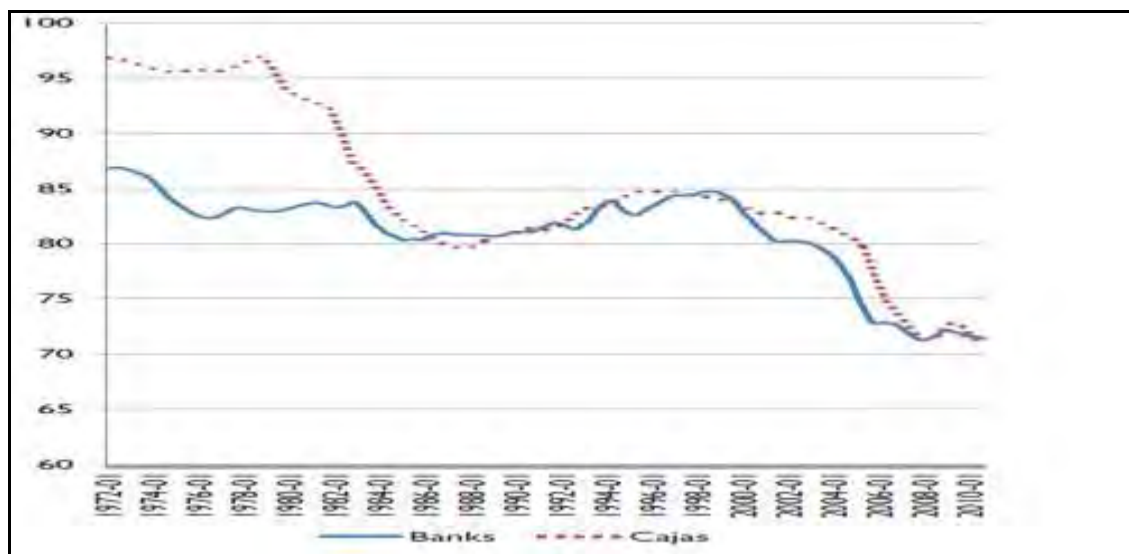
As with the Irish banks, Spanish banks’ balance sheets were vulnerable to the conditions of foreign markets and to changes in international market sentiment. They were dependent on international wholesale funding to refinance debt issuances reaching maturity (Bank of Spain 2015). Against this backdrop, strongly risk-averse reactions from the Bank of Spain would have been needed. Although the Bank of Spain ultimately was unable to prevent the Spanish banking crisis, it did prove willing to try what was, at the time, an innovative macroprudential tool that alleviated some of the initial consequences of the crisis. Section 5.3.6 discusses this tool in more detail.

**Figure 5.19: Change in the composition of liabilities of Spanish Banks**



Source: Adapted from Almazán, Martín-Oliver and Saurina (2013)

**Figure 5.20: Banks and cajas – deposits as a percentage of total assets**



Source: Bank of Spain

### **5.3.6 Countercyclical Tools**

The profound banking crisis of the late 1970s and early 1980s (see Chapter 2, Box 2.1), among other factors, prompted the Bank of Spain to try an innovative, macroprudential loan loss provisioning tool to alleviate the strong procyclicality of credit in Spain (de Lis and Garcia-Herrero p.2). This use of a countercyclical regulatory tool – a tool designed to reduce the procyclicality of the banking system – was a key difference between the Spanish and Irish banking systems. While the literature addresses countercyclical provisioning as a potential financial instrument (Mann and Michael 2002; Borio and Lowe 2001), the only concrete example of a countercyclical provisioning regulatory tool in use was the so-called dynamic provisioning tool that Spain adopted in 2000.<sup>53</sup> This tool was unique to the Bank of Spain and was developed to protect bank capital and produce a more stable flow of credit over the bank lending cycle (Santos 2014). The IMF recognised the tool as effectively “reduc[ing] the procyclicality of both credit and leverage” (IMF 2011b, p.125). (Chapter 2, Section 2.3.3 provides more in-depth discussion of countercyclical provisioning tools.) The subsections below begin by describing why the Bank of Spain initially adopted dynamic provisioning.<sup>54</sup> They then discuss the results of its application, before comparing the provisioning regimes of the main Irish financial institutions in the lead-up to the crisis, highlighting the role of DP in cushioning the initial stages of the financial crisis for the Spanish banks.

#### **(i) The Initial Design and Implementation of Dynamic Provisioning<sup>55</sup>**

Prior to the introduction of DP in Spain, the Spanish banks’ provisioning patterns were close to those of Ireland and most European countries (Mahapatra 2012). Banks were required to make two types of provisions for loan losses. First, they made a general provision in the form of a fixed percentage of credit growth. The objective was to account for losses incurred on average on a homogeneous portfolio without specifically identifying the suspect loans. Second, they made specific provisions for delinquent assets – incurred losses on individual loans which depended on the level of risk of the loan and on the overdue period.

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<sup>53</sup> Variations of dynamic provisioning implemented to date include macroeconomic trigger rules for dynamic provisioning and basing dynamic provisioning rates explicitly on the probability of default (Chapter 2, Section 2.3.8, discusses the various applications of the dynamic provisioning model in existence.)

<sup>54</sup> The literature review, Chapter 2, Section 2.3.8, provides a detailed discussion and background of the development of dynamic provisioning.

<sup>55</sup> Please see the literature review (Section 2.3.7) for more a detailed discussion of dynamic provisioning.

The Bank of Spain implemented the DP system in July 2000 to cope with a sharp increase in credit risk on Spanish banks' balance sheets following a period of significant credit growth during the late 1990s.<sup>56</sup> This growth reflected several factors. First, competition between Spanish banks after 1987 led to inadequate loan pricing (described in Section 5.2.3). Second, Spain's annual domestic credit growth, which had ranged from 5 to 10 per cent in the mid-1990s, accelerated in anticipation of Eurozone membership in 1999. It exceeded 15 per cent in 1998–2000. Consumer inflation increased from 1.97 per cent in 1997 to 3.5 per cent in 2000 (de Lis and Garcia-Herrero 2012, p. 9).

As noted above, the lower cost of capital led to a surge in consumption by families (in housing and consumer goods). EMU membership deprived the Bank of Spain of monetary and exchange rate policies to combat these credit accelerations. Thus, the Bank used DP to increase the cost to banks (in terms of provisioning effort) of issuing new credit in order to slow down the pace of credit growth (Goodhart et al. 2012). As noted in Chapter 2, Section 2.3.3, DP was designed on the premise that lending mistakes (such that materialise in the downturn) are prevalent in the upturn. In this way, it complemented the already existing general and specific provisioning by a statistical component, counting losses that have not yet been identified in specific loans (Saurina, 2009). In a significant divergence from their European peers, including Ireland, all Spanish banks – the commercial and the *cajas* – had to create dynamic loan-loss provisions in addition to general and specific loan-loss provisions. Specific provisions depended on a bank's current non-performing loans (NPLs), and general provisions were 1 per cent of all loans. DP effectively created a second tier of prudential provisioning based on a comparison between the bank's current specific provisions and the average "latent loss" in its loan portfolio. See Box 5.1 for discussion on how banks had to calculate DP quarterly.

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<sup>56</sup> The memory of a real estate bubble between 1986 and 1992 also affected the policies of the Bank of Spain (see Montalvo 2003 and Montiel Márquez & Naredo 2011 for detailed discussion).

### Box 5.1: The Spanish Dynamic Provisioning Calculation 2000–2004

Banks had to calculate dynamic provisioning quarterly as follows:

$$\text{Dynamic } LLP_t = \frac{1}{4} \sum_{i=1}^6 \beta_i C_{it} - \text{Specific } LLP_t$$

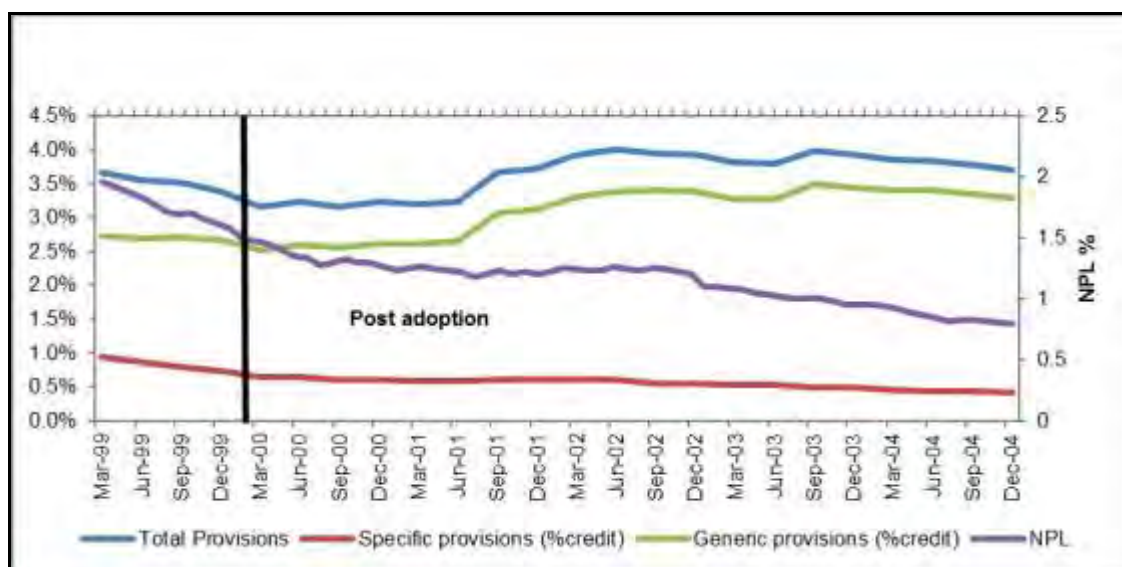
where  $C_{it}$  is the stock of loans in risk category  $i$  in period  $t$ . The parameter  $\beta_i$  can take values from 0%, 0.1%, 0.4%, 0.6%, 1%, and 1.5% for  $i=\{1, \dots, 6\}$ . The Bank of Spain estimated  $\beta_i$  using historical credit volume and loss data since 1987 for six risk categories:

1. Negligible risk: cash, public-sector exposures, and interbank exposures
2. Low risk: mortgages with LTV below 80 per cent and exposures to corporations with a rating A or higher
3. Medium-low risk: mortgages with LTV above 80 per cent and other secured loans not captured by lower risk categories
4. Medium risk: other loans, including unrated or below-A rated corporate exposures and SME exposures
5. Medium risk: consumer loans
6. High risk: credit card exposures and overdrafts. During credit expansionary periods when losses and specific provisions on individual loans were understated, a statistical provision was charged to the profit and loss account.

Source: Data obtained from the Saurina 2009

The Bank of Spain provided banks with a standard model to calculate their latent loss with parameters set according to loan portfolio classes. It set a cap on the size of the DP fund to avoid excessive build-up of provisions, but the economic upswing, stronger and longer than anticipated, resulted in a substantial increase in total provisions after its introduction in 2000 (Figure 5.21). However, provisions plateaued at a relatively high level from 2001 to 2004 because of the cap. As Figure 5.21 shows, NPLs continuously decreased from circa 3.5 per cent to below 1 per cent of total loans in 1999–2004 (specific loan-loss provisions decreased in a similar way). As provisions increased they became increasingly removed from the prevailing levels of NPLs in that they were unrelated from the actual credit quality of borrowers.

**Figure 5.21: DP regime 2000–2004**



Source: Bank of Spain

## (II) Revised Regime

By 2004, the Bank of Spain considered the accumulation of provisions excessive (Santiago Fernández de Lis 2011). The EU's 2004 adoption of the International Financial Reporting Standards (IFRS) forced some revisions, including modifications to scope and loosening of requirements (see Chapter 2, Section 2.3.3, for more detailed discussion). The upper limit to the DP fund was linked to latent loss, and loan-loss provisions were confined to the specific and dynamic. The dynamic provisions had two components, alpha and beta (see Box 5.2 below for further detail); reflecting the reduced pace of accumulation of provisions, the ratio of total provisions to credit decreased from 3.8 per cent in 2004 to 2.8 per cent in 2007. Figure 5.22 below shows the levels of provisions per the revised regime from 2004 for all financial institutions in Spain.

## Box 5.2: Dynamic provisioning reform

### *Dynamic Provisioning Reform 2004*

Following the 2004 reform, the Bank of Spain required two types of provisions instead of three. Specific provisions remained unchanged, but general provisions absorbed the old statistical provisions.

General provision was the sum of two components based on two important parameters, alpha and beta. Alpha was the average estimate of credit losses, say expected losses based on past experience, and beta was the historical average of specific provisions. The underlying principle behind dynamic provisions in Spain was to build up general provisions that account for (i) expected losses in new loans extended in a given period; and (ii) historical average losses on the outstanding stock of loans at the end of that

period after netting off specific provisions incurred during the period (Mahapatra 2012).

#### *In its simplest form:*

Generic provisions =  $\alpha \Delta \text{Credit} + \beta \text{Credit} - \text{Specific provisions}$

Where

$$0 \leq \alpha \leq 2.5\%$$

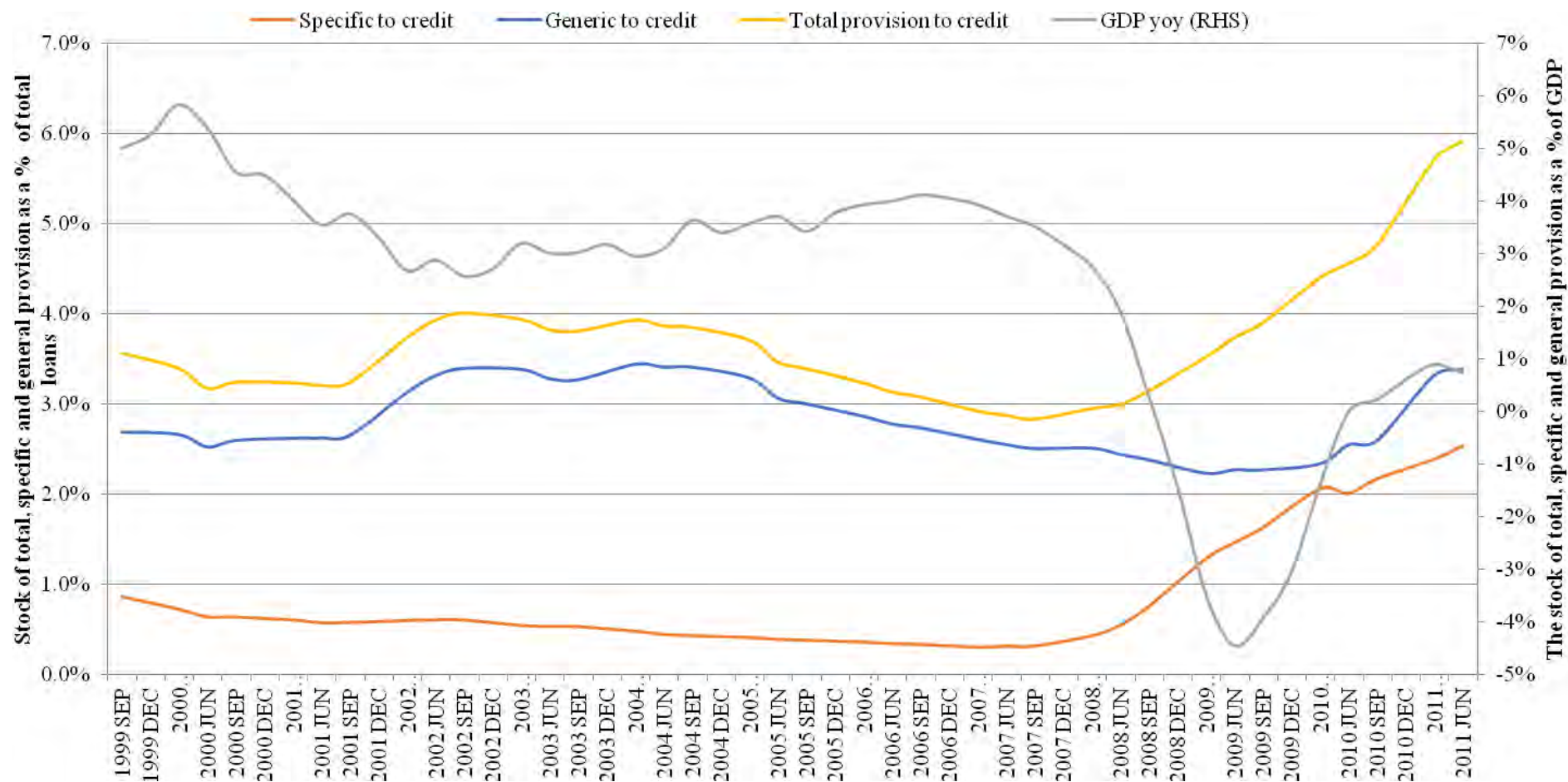
$$\text{and } 0 \leq \beta \leq 1.64\%$$

This formula is a simplified way of presenting provisions. In actuality, there are six risk buckets, or homogeneous risk categories, each with a different  $\alpha$  and  $\beta$ .

| Type of Risk     | $\alpha$ | $\beta$ |
|------------------|----------|---------|
| No apparent risk | 0.0%     | 0.00%   |
| Low risk         | 0.6%     | 0.11%   |
| Low-medium risk  | 1.5%     | 0.44%   |
| Medium risk      | 1.8%     | 0.65%   |
| Medium-high risk | 2.0%     | 1.10%   |
| High risk        | 2.5%     | 1.64%   |

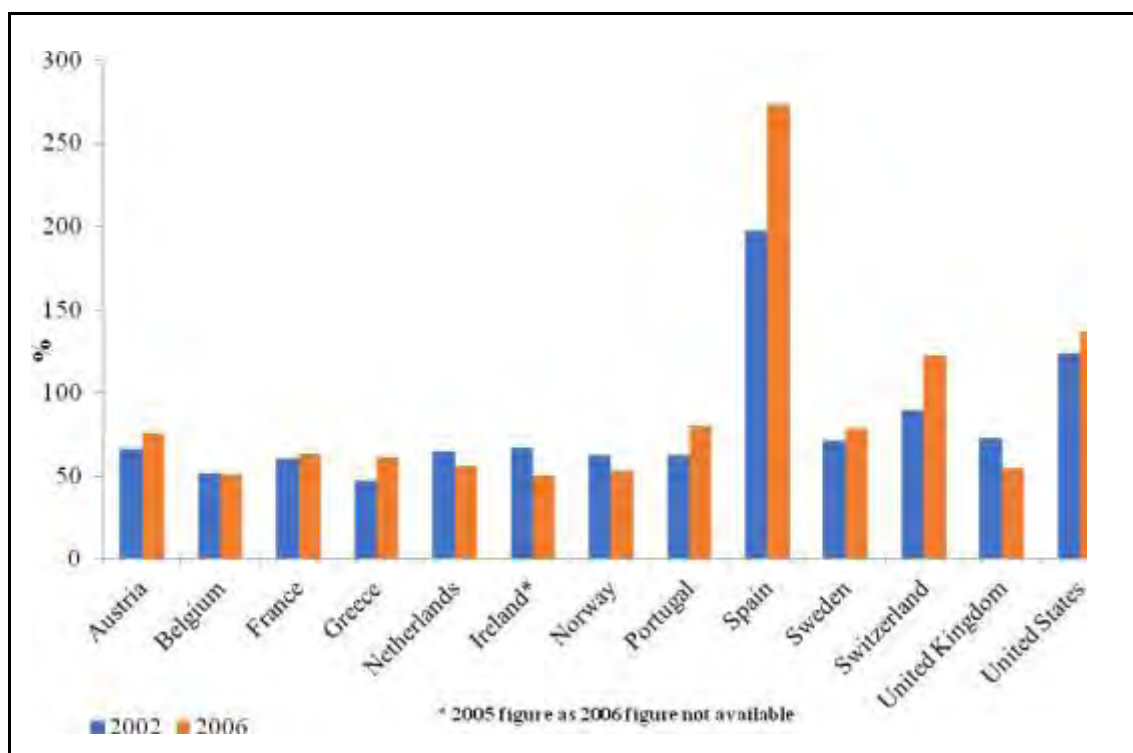
Source: Saurina 2009

Figure 5.22: Spanish banks' provisioning to credit and GDP from 1999 to 2010 granted by deposit institutions



Source: Bank of Spain and author's calculations

**Figure 5.23: Bank loan loss provisions as a percentage of total loans**



Source: IMF 2006

### **(III) Outcome**

This subsection looks to evaluate the application of DP in Spain. A key question here is: having analysed how DP was applied in Spain, how effective was its application? A review of its application found the following observations:

- By 2006, Spanish banks still had one of the highest ratios of loan-loss provisions to total loans in the world, about four times higher than in the other Euro area countries, including Ireland (see Figure 5.23). By the peak of their economic cycle in 2006, Spanish banks had average coverage allocations of over 250 per cent, compared to the EU average of just 60 per cent and Ireland's average of 50 per cent.
- Spanish institutions began to draw down their significant buffers to cover incurred losses from 2009, as individual loan losses began to increase in line with the deteriorating Spanish economy. By being drawn down, DP fulfilled its anticyclical function.<sup>57</sup> As Figure 5.22 shows, the ratio of provisions to credit reduced slightly from 1999 to 2001, increased from 2001 to 2004 and showed a decreasing movement thereafter, with a pattern similar to that of GDP, but much smoother. This

<sup>57</sup> As noted in Chapter 2, Section 2.2.3, the objective of DP is to make both flows and stocks of total provisions, comprising specific and dynamic provisions, less procyclical, or indeed countercyclical.

would indicate that the Spanish DP system did not eliminate procyclicality but did reduce it to a significant extent. The emerging increase of the provisions-to-credit ratio from September 2007 appears to confirm this pattern.

- Spanish banks made limited use of general provisions in the initial stages of the economic downturn, using Bank of Spain guidelines, which aimed at limiting potential profit distribution that would distort the transparency of banks' reporting. However, by 2009 banks were beginning to struggle. The Bank of Spain responded by allowing a greater drawdown of the DP fund than it had previously (see de Lis and Garcia-Herrero 2012 and Jiménez et al. 2012 for more on this). The specific provision fund relative to total loans increased almost tenfold from its minimum during the expansionary years to the crisis period, whereas the ratio of total loan-loss provision fund to total credit increased much more slowly as a result of the application of the general provisions set up for this purpose. General provisions smoothed the impact of the crisis in the early stages (2007–2010). However, total provisions increased sharply again from 2010, as the regulator reformed parameters again.
- One reason the Spanish DP regime was less effective than anticipated was that it was based on collective impairment rules using aggregate data drawing only on credit losses since 1987, based on previous crises in the Spanish banking system (Saurina 2009b). Defining risk categories and their coefficients based on a period covering only a single economic cycle led to overconfidence in loans to real estate and construction companies. Further, DP imposed an additional charge on top of specific and generic provisioning, which may have incentivised banks to engage in riskier lending in search of higher returns due to the increased cost pressure (Illueca et al. 2016).
- Overall, it would appear that the anti-cyclical impact was smaller than what the Bank of Spain might have hoped, especially in the downturn. However, DP gave Spanish banks a far better position than their counterparts in Ireland. While Figure 5.22 highlights that DP alone is not sufficient to avoid excessive credit growth or episodes of rapid contraction, it does suggest that statistical provisioning for expected losses has advantages. Its application has the advantage of simplicity (it is rules-based) and, if properly adjusted, could guarantee a steady ratio between total provisions and total loans. In particular, by linking general provisions to lending growth, it takes account of the correlation between credit booms and laxer credit standards.

Ultimately the lesson for Irish banks from Spain's use of DP is that tools are needed to cope with the excess procyclicality that the lending cycle injects into the real economy; as discussed extensively in Chapter 2, procyclical behaviour is well rooted in both theoretical and empirical grounds. The provisioning regime followed by Irish banks (see Appendix E for an outline and comparison against the Spanish regime for the same time period) proved ineffective for several reasons. The methodology to recognise loan losses set forth by the International Accounting Standards Board (IASB) and followed by Irish financial institutions from 2005 was referred to as the incurred loss model and defined the identification of inherent losses in a loan or portfolio of loans. Under IASB, inherent credit losses were event-driven and could only be recognised upon an event's occurrence. This meant that reserves for loan losses on a bank's balance sheet grew significantly during economic downturn, a time associated with increased credit impairment and default events. Critics of the incurred loss model have pointed to it as one of the causes of the severity of strain that many financial institutions experienced at the onset of the financial crisis of 2007–2009 (Balla and McKenna 2009). The level of provisioning charges in the years leading up to the Irish banking crisis did not reflect the level of risk carried on the balance sheets of the banks. Nor did the level of provisioning provide a link between the level of credit extension and loosening lending standards.

In comparison, Spanish institutions were required to review expected losses periodically and forced to take a realistic view of future losses. Both the balance sheet and the bank's income statement reflected all changes in expected losses (Jiménez et al. 2012; Saurina 2009). One such tool is anticyclical loan loss provisions, and Spain's provisioning system offers a way to address the adverse impact of the lending cycle on banks' financial positions. Certainly, DP should in theory provide incentives for banks to extend loans more carefully due to the mandatory provisions on performing loans that DP requires (see Wezel 2010 for similar conclusion). It is also true that the provisioning charges on new loans cause a decline in banks' capital, which for a given or desired leverage will restraint credit growth somewhat (see also Shin 2009). However, attempting to contain a credit boom primarily through DP would require setting prohibitively high provisioning rates. Therefore, as provisions and capital both serve as defences for expected and unexpected losses, capital requirements also need to become more forward-looking if procyclicality is to be reduced significantly. Therefore, DP should complement – not replace – other capital rules.

### *Summary*

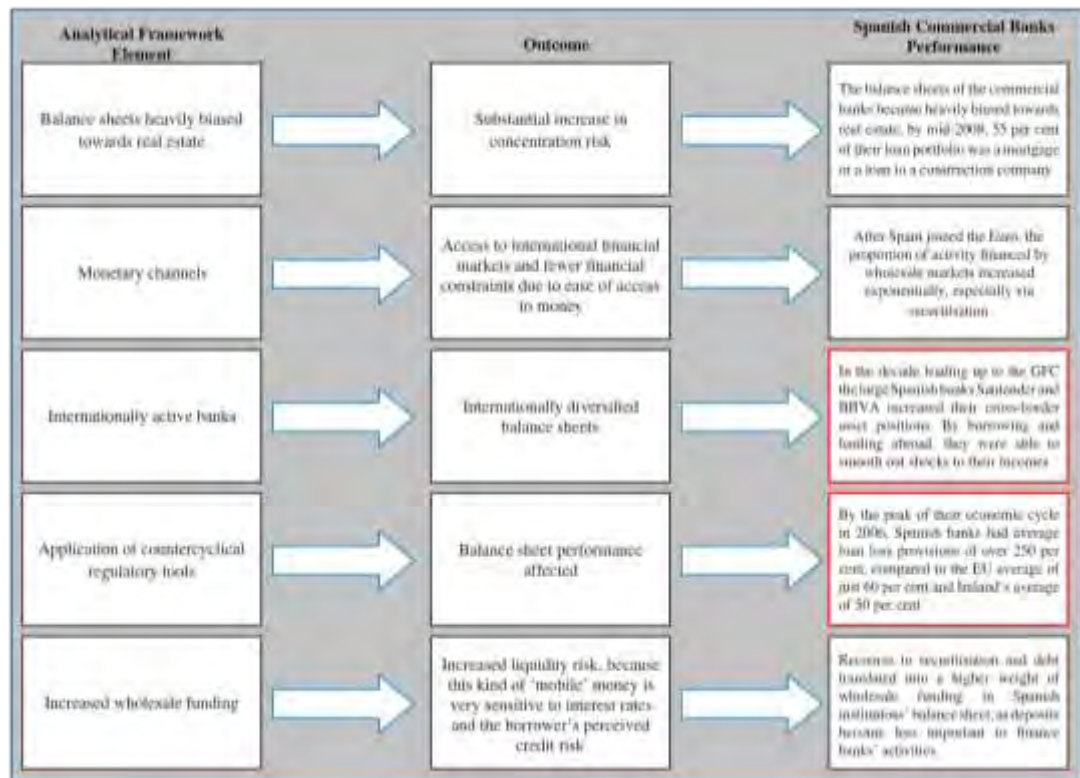
The key findings from the analytical framework presented in Section 5.3 (see also Figure 5.24) are as follows:

- (i) International diversification of balance sheets proved a key area of distinction between the Spanish and Irish commercial banks. The main Spanish commercial banks were large, internationally active banks and well diversified in their geographic footprints, with only one-third of their net profits generated domestically by 2006. Although the Spanish banking crisis was also systemic, the large commercial banks which accounted for nearly half of the system in Spain did not need public financial support. The crisis affected the *cajas* with particular severity. The commercial banks, which had diversified and internationalised their operations in the years before the crisis, were able to weather its effects more effectively.
- (ii) The introduction of DP in July 2000 was unique in Spain, and although no “silver bullet”, the introduction of anticyclical provisioning in Spain provides a lesson on how macroprudential tools can be used to enhance the resilience and stability of the banking system. By requiring the banks to hold such high levels of provisions, it meant that most Spanish banks were prepared with high provisions to absorb the losses at the outset of the GFC. Nevertheless, this success proved short-lived. When the crisis intensified, it exposed the governance design flaws in the *cajas* sector and the overreliance on wholesale funding by both the banks and the *cajas*, specifically for mortgages and construction.

Finding (i) above is important in establishing why the main commercial banks of Spain and Ireland fared so differently during the GFC. Finding (ii) is more interesting in terms of policy recommendations to enhance the resilience and stability of the Irish banking system. DP was a truly macroprudential tool, in the sense that a prudential instrument (provisions) was used to achieve a macroeconomic goal (limiting credit growth). It can also be argued that DP has a microprudential element, since it was also aimed at ensuring adequate protection to individual institutions as it attempted to curb excessive risk assumption that was partly a result of herd behaviour and collective myopia by banks. (See Chapter 2, Section 2.2, for full discussion of key theoretical perspectives that can help explain the pattern of excessive procyclical lending patterns over the bank

lending cycle, with particular focus on the expansionary period.) Given the potential policy recommendations that DP holds for Ireland, the next section seeks to explore whether there were other elements of the Spanish commercial banks performance (e.g. adequacy of capital, asset quality, management quality, earnings and liquidity) that made the Spanish commercial banks stand out when compared to their Irish peers.

**Figure 5.24: Summary of the analytical framework outcomes for Spain.**



Source: Author's work

## **5.4 Empirical Data Analysis: Main Spanish Commercial versus a Sample of their Irish and other International Peers**

This section seeks to examine the Spanish commercial banks' balance sheet performance – including provisioning levels – that marked them out as different from their Irish peers and ultimately gave the Spanish commercial banks more resilience at the onset of the GFC. These sources of resilience would be useful for countries seeking to learn from their experience. To achieve this, the study employs pre-crisis CAMEL indicators of Spanish banks and compares them to a subset of their European peers to establish which fundamentals contributed to the resilience. This approach also allows the study to establish if the Spanish banks were outliers when compared to their peers. The empirical analysis indicates that their pre-crisis provisioning model was a key determinant of crisis performance.

### ***5.4.1 Sample selection***

This section focuses on key bank-specific financial ratios at the end of 2006 to capture conditions prior to the start of the GFC in mid-2007. It compares the main Irish banks with the Spanish commercial banks and compares them to a selection of banks elsewhere in Europe. These criteria and data availability limitations lead to a sample of 27 financial institutions in 12 European countries. (see Table 5.3). Appendix D.2 presents a summary of the variables to be analysed in this chapter. As noted in chapter 4, the sample consists of banks chosen from a set identified by the IMF as systemically important in Europe in a 2010 study (see Ötker-Robe and Podpiera 2010).

**Table 5.3: Sample of banks**

| <b>Bank Name</b>                       | <b>Country</b> | <b>Bailout</b> | <b>Share Price decline Jan 07–Jan 09 %</b> |
|--|----------------|----------------|--|
| Raiffeisen Landesbanken Holding GmbH   | Austria        |                | 100  |
| Erste Group Bank AG                    | Austria        | Yes            | 80   |
| Dexia                                  | Belgium        | Yes            | 89   |
| KBC Group                              | Belgium        | Yes            | 85   |
| Barclays Plc                           | UK             | No             | 85   |
| Royal Bank of Scotland Group           | UK             | Yes            | 96   |
| Lloyds Banking Group Plc               | UK             | Yes            | 84   |
| HSBC Holdings Plc                      | UK             | No             | 41   |
| Standard Chartered Plc                 | UK             | No             | 31   |
| Danske Bank A/S                        | Denmark        | No             | 78   |
| Société Générale                       | France         | Yes            | 74   |
| BNP Paribas                            | France         | Yes            | 65   |
| Deutsche Bank AG                       | Germany        | No             | 81   |
| Commerzbank AG                         | Germany        | Yes            | 89   |
| Allied Irish Banks plc                 | Ireland        | Yes            | 94   |
| Bank of Ireland                        | Ireland        | Yes            | 96   |
| Anglo Irish Bank                       | Ireland        | Yes            | 100  |
| Gruppo Monte dei Paschi di Siena-Banca | Italy          | Yes            | 72   |
| UniCredit SpA                          | Italy          | No             | 81   |
| Intesa Sanpaolo                        | Italy          | No             | 57   |
| DnB Nor ASA                            | Norway         | No             | 74   |
| Banco Bilbao Vizcaya Argentaria SA     | Spain          | No             | 62   |
| Banco Santander SA                     | Spain          | No             | 54   |
| Nordea Bank AB (publ)                  | Sweden         | No             | 59   |
| Svenska Handelsbanken                  | Sweden         | No             | 57   |
| UBS AG                                 | Switzerland    | Yes            | 79   |
| Credit Suisse Group                    | Switzerland    | No             | 66   |

Source: Bloomberg and author's own calculations

#### ***5.4.2 Assessing pre-crisis bank conditions***

The bank-specific ratios highlighted in Chapter 4, Section 4.2, guide the choice of measures to assess banks' pre-crisis condition based on performance in five key areas: capital adequacy (C), asset quality (A), management competence (M), earnings performance (E), and liquidity risk (L). The impact of these ex-ante fundamentals on bank performance during the crisis is captured by establishing share price decline from January 2007 to January 2009. As Ratnotvsky and Huang (2009) note, share price decline is appropriate as it is a summary measure of value destruction resulting from credit losses, write-down on securities, and dilution from new equity issuances, including government capital injections. The analysis uses the financial ratios that form the core part of the explanatory variable set, as outlined in Chapter 4, Section Similar to Arjani and Paulin (2013), the study also includes an indicator of bank performance during the GFC, by noting if a bank was bailed out or not. To be bailed out, one or more of the following three events had to occur during 2008– 09: 1) The bank was declared bankrupt. 2) The bank was acquired either by another private bank (e.g. a government assisted transaction) or by their home government via nationalisation. 3) The bank received capital support from either a national or a state government. A bank that benefited from extraordinary liquidity assistance from a central bank, or from a public guarantee on its debt or the debt of a subsidiary does not qualify as a bailout in this study.<sup>58</sup>

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<sup>58</sup> Data used to compile this list was based on a database compiled by Arjani and Paulin (2013). The data used for this analysis is dated 12 September 2009, and is available online at <http://www.bankofcanada.ca/wp-content/uploads/2013/12/dp2013-04.pdf>

**Table 5.4: Summary of database variables as at 31 December 2006, average in percent – capital and asset quality**

| Institute         | Country     | Share Price decline<br>Jan 07 - Jan 09 | Capital              |                          | Asset Quality                         |                                       |
|-------------------|-------------|--|----------------------|--------------------------|---------------------------------------|---------------------------------------|
|                   |             |  | Tier 1 capital ratio | Financial leverage ratio | Loan-loss provisions over total loans | Non-performing loans over total loans |
| Anglo Irish Bank  | Ireland     | 100                                    | 8.4                  | 25.3                     | 0.2                                   | 0.5                                   |
| Allied Irish Bank | Ireland     | 94                                     | 8.2                  | 19.7                     | 0.1                                   | 0.7                                   |
| B. of Ireland     | Ireland     | 96                                     | 8.2                  | 29.5                     | 0.1                                   | 0.8                                   |
| Santander         | Spain       | 54                                     | 7.4                  | 19.4                     | 0.5                                   | 0.9                                   |
| BBVA              | Spain       | 62                                     | 7.8                  | 21.2                     | 0.6                                   | 1.0                                   |
| Erste             | Austria     | 80                                     | 6.6                  | 27.8                     | 0.5                                   | 4.4                                   |
| Raiff             | Austria     | 100                                    | 9.8                  | 14.2                     | 1.0                                   | 2.3                                   |
| Dexia             | Belgium     | 89                                     | 9.8                  | 34.4                     | 0.0                                   | 0.6                                   |
| KBC               | Belgium     | 85                                     | 8.7                  | 19.9                     | 0.1                                   | 0.0                                   |
| Danske            | Denmark     | 78                                     | 8.6                  | 30.5                     | 0.0                                   | 0.2                                   |
| Socgen            | France      | 74                                     | 7.8                  | 34.4                     | 0.2                                   | 3.3                                   |
| BNP               | France      | 65                                     | 7.4                  | 29.9                     | 0.2                                   | 1.5                                   |
| DB                | Germany     | 81                                     | 8.5                  | 41.1                     | 0.2                                   | 1.8                                   |
| Commer            | Germany     | 89                                     | 6.7                  | 39.1                     | 0.4                                   | 5.2                                   |
| Intesa            | Italy       | 57                                     | 8.8                  | 11.7                     | 0.3                                   | 2.3                                   |
| Unicredito        | Italy       | 81                                     | 5.8                  | 21.9                     | 0.5                                   | 3.0                                   |
| B. Monte          | Italy       | 72                                     | 6.5                  | 20.8                     | 0.6                                   | 3.0                                   |
| DnBNOR            | Norway      | 74                                     | 6.7                  | 20.5                     | 0.0                                   | 0.7                                   |
| Svenska           | Sweden      | 57                                     | 6.8                  | 25.6                     | 0.0                                   | 0.1                                   |
| Nordea            | Sweden      | 59                                     | 7.1                  | 23.8                     | -0.1                                  | 0.3                                   |
| CSuisse           | Switzerland | 66                                     | 13.9                 | 30.3                     | -0.1                                  | 1.0                                   |
| UBS               | Switzerland | 79                                     | 11.9                 | 47.5                     | -0.1                                  | 0.6                                   |

|            |         |  | <b>Capital</b>       |                          | <b>Asset Quality</b>                  |                                       |
|------------|---------|--|----------------------|--------------------------|---------------------------------------|---------------------------------------|
| Institute  | Country | Share Price decline<br>Jan 07 - Jan 09 | Tier 1 capital ratio | Financial leverage ratio | Loan-loss provisions over total loans | Non-performing loans over total loans |
| RBS        | UK      | 96                                     | 7.5                  | 21.8                     | 0.4                                   | 1.4                                   |
| Barclays   | UK      | 85                                     | 7.7                  | 51.6                     | 0.8                                   | 1.8                                   |
| Lloyds     | UK      | 84                                     | 8.2                  | 30.6                     | 0.8                                   | 4.3                                   |
| S.Charter  | UK      | 31                                     | 8.4                  | 16.7                     | 0.5                                   | 2.0                                   |
| HSBC       | UK      | 41                                     | 9.4                  | 16.7                     | 1.3                                   | 2.3                                   |
| <b>Avg</b> |         | 75                                     | 8.3                  | 27.8                     | 0.3                                   | 1.9                                   |

Source: Bloomberg and author's own calculations

**Table 5.5.: Summary of database variables as at 31 December 2006, average in percent – management quality, earnings potential and liquidity**

| Institute          | Mgmt Quality     | Earnings Potential |                         | Liquidity              |   |                                      |                               |
|--------------------|------------------|--------------------|-------------------------|------------------------|---|--------------------------------------|-------------------------------|
|                    | Efficiency Ratio | Return on assets   | Return on common equity | Loan to deposits ratio | Short-term borrowing to total liabilities | Wholesale funds to total liabilities | Liquid assets to total assets |
| Anglo Irish Bank   | 35.6             | 1.1                | 27.3                    | 134.1                  | 14.2                                      | 47.8                                 | 13.9                          |
| Allied Irish Banks | 53.2             | 1.5                | 29.6                    | 144.0                  | 33.2                                      | 49.6                                 | 9.1                           |
| B. of Ireland      | 56.1             | 0.9                | 27.5                    | 173.6                  | 11.2                                      | 60.3                                 | 4.4                           |
| Santander          | 52.9             | 0.9                | 18.0                    | 173.4                  | 18.1                                      | 63.9                                 | 8.9                           |
| BBVA               | 44.2             | 1.2                | 25.0                    | 150.1                  | 14.9                                      | 55.4                                 | 7.2                           |
| Erste              | 62.8             | 0.6                | 15.5                    | 106.9                  | 22.1                                      | 46.8                                 | 13.2                          |
| Raiff              | 59.3             | 2.4                | 34.8                    | 105.7                  | 26.1                                      | 35.3                                 | 22.0                          |
| Dexia              | 51.4             | 0.5                | 17.6                    | 219.9                  | 40.9                                      | 81.1                                 | 14.4                          |
| KBC                | 51.0             | 1.1                | 20.9                    | 74.7                   | 19.2                                      | 41.4                                 | 13.1                          |
| Danske             | 53.9             | 0.5                | 16.0                    | 235.7                  | 21.4                                      | 73.4                                 | 10.5                          |
| Socgen             | 61.0             | 0.6                | 20.0                    | 110.6                  | 50.9                                      | 71.0                                 | 8.1                           |
| BNP                | 60.6             | 0.5                | 16.2                    | 136.2                  | 57.6                                      | 78.4                                 | 5.9                           |
| DB                 | 69.9             | 0.5                | 19.4                    | 43.7                   | 3.1                                       | 73.4                                 | 1.7                           |
| Commerz            | 61.2             | 0.3                | 11.9                    | 208.5                  | 29.3                                      | 76.2                                 | 13.2                          |
| Intesa             | 61.5             | 1.0                | 11.2                    | 154.2                  | 19.8                                      | 59.2                                 | 11.4                          |
| Unicredito         | 60.6             | 0.7                | 14.8                    | 157.7                  | 18.9                                      | 63.1                                 | 10.9                          |
| B.Monte            | 62.1             | 0.6                | 12.1                    | 181.9                  | 17.6                                      | 65.4                                 | 7.9                           |
| DnBNOR             | 50.9             | 1.1                | 21.9                    | 175.2                  | 9.9                                       | 62.2                                 | 6.3                           |
| Svenska            | 42.3             | 0.8                | 19.9                    | 206.5                  | 18.6                                      | 69.0                                 | 10.2                          |
| Nordea Bank        | 52.4             | 0.9                | 22.3                    | 169.2                  | 9.7                                       | 61.9                                 | 8.3                           |
| C.Suisse           | 60.4             | 0.9                | 26.4                    | 54.0                   | 1.8                                       | 67.6                                 | 28.4                          |
| UBS                | 69.9             | 0.6                | 26.2                    | 55.0                   | 16.5                                      | 75.6                                 | 0.1                           |
| RBS                | 52.9             | 0.7                | 15.9                    | 122.5                  | 24.0                                      | 53.5                                 | 10.2                          |
| Barclays           | 60.6             | 0.5                | 24.6                    | 111.2                  | 16.7                                      | 73.5                                 | 4.1                           |
| Lloyds             | 47.7             | 0.9                | 26.3                    | 136.7                  | 21.9                                      | 58.0                                 | 12.8                          |

|            | <b>Mgmt Quality</b> | <b>Earnings Potential</b> |                         | <b>Liquidity</b>       |   |                                      |                               |
|------------|---------------------|---------------------------|-------------------------|------------------------|---|--------------------------------------|-------------------------------|
| Institute  | Efficiency Ratio    | Return on assets          | Return on common equity | Loan to deposits ratio | Short-term borrowing to total liabilities | Wholesale funds to total liabilities | Liquid assets to total assets |
| S.Charter  | 55.6                | 0.9                       | 15.9                    | 96.0                   | 16.0                                      | 40.7                                 | 10.3                          |
| HSBC       | 51.3                | 0.9                       | 15.7                    | 98.3                   | 11.5                                      | 48.6                                 | 11.4                          |
| <b>Avg</b> | <b>57.2</b>         | <b>0.8</b>                | <b>19.3</b>             | <b>134.6</b>           | <b>21.5</b>                               | <b>62.5</b>                          | <b>10.6</b>                   |

Source: Bloomberg and author's own calculations

### ***5.4.3 Main Findings with Respect to Pre-crisis Conditions: Capital***

The financial leverage ratio measures the size of average total assets relative to average total common equity. Higher leverage (lower capitalisation) correlates positively with default risk. The empirical evidence suggests that the leverage ratio appears to be a good predictor of bank performance during the turmoil; it points to vulnerabilities stemming from low bank capital, such as value decline - many of the lowest-capitalised banks in the sample were affected by a significant equity value decline (Table 5.3). Banks with leverage ratio of 25 per cent or higher at the end of 2006 experienced, on average, a lost equity value of more than 80 per cent (two of which are Irish banks – BOI that received capital injections in the form of state aid and liabilities guarantee by the Irish Government and Anglo Irish bank that was closed). Of the 14 banks that had a leverage ratio of 25 per cent or higher, 9 were bailed out during the GFC. In general, those with lower leverage ratios, experienced lesser declines in equity value. The leverage ratios of Spanish banks were generally in the third (BBVA) and fourth (Santander) (from the highest) quartile of the sample: below average, not the strongest capitalisation ratios, but high enough to avoid insolvency problems. The Spanish banks displayed financial leverage ratios 17 per cent lower than the sample average by 2006, and experienced value decline of an average of 58 per cent.

As Chapters 2 highlights, regulatory capital plays an important role in providing adequate buffers for banks, since it is the last line of defence against losses. Tier 1 capital represents a capital buffer for loss absorption and should correlate negatively with credit risk. Tier 1 capital ratios for the Spanish banks were in line with their European peers, although they were lower than their Irish counterparts (Table 5.4). Capital ratios of Spanish banks were in the third (from the highest) quartile of the sample: below average, not particularly strong, but high enough to avoid insolvency

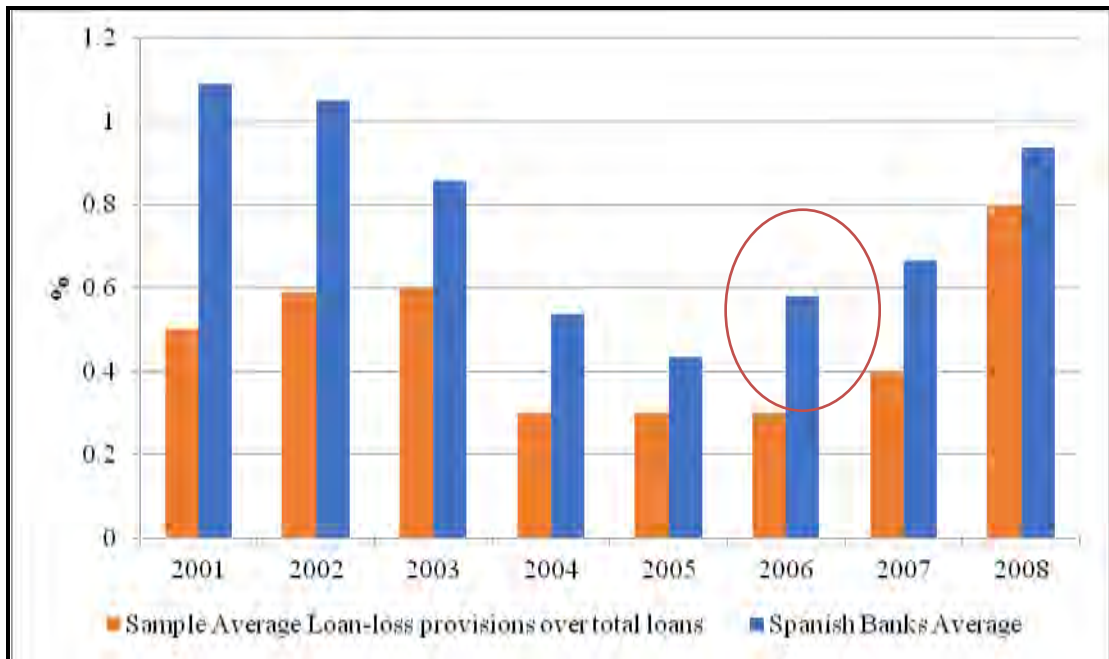
problems. Given the high level of value destruction across the sample of banks, it seems likely that of the sample of European banks examined here, a number (in particular the Irish banks) were highly capitalised before the crisis, but quickly used capital buffers as a result of significant exposure to troubled assets. Of the 14 banks in the sample with a Tier 1 capital ratio of 8 per cent or higher (3 of which were the Irish banks), 7 required a bailout. In short, although the Irish and Spanish banks, and indeed many of the banks in the sample, had high capital ratios on the eve of the GFC, they experienced significant distress, reflected in the level of equity price decline. This would indicate that the quality, not the quantity, of capital determined bank soundness. While Spanish banks fulfilled Basel capital ratio requirements, the level of common equity capital within regulatory capital decreased (reflected in the high leverage ratios) at a time when the average risk of the assets in their balance sheet increased. These findings suggest that improvements are warranted in the quality and quantity of required capital ratios. This observation would support findings in Chapters 4 and 6.

#### ***5.4.4 Main Findings with Respect to Pre-Crisis Conditions: Asset Quality***

Poor asset quality (generally because of inadequate management of lending policies) is a major cause of bank failure. Making bad loans that are never repaid generates losses for banks and erodes their capital. While the loan-loss provisions ratio measures the credit risk from a bank's portfolio generated within one year, the share of non-performing loans represents the stock of non-performing loans in the loan book. Both indicators should correlate positively with credit risk, since higher newly expected losses and a higher stock of non-performing loans increase bank's vulnerability and default risk. Comparing the asset quality indicators of the main Spanish banks to their Irish and other European peers (Figure 5.25) reveals several observations. As expected given the positive economic environment, the stock of non-performing loans on the loan book of the banks considered was low, in particular the Irish (average of 0.7 per cent) and Spanish (average of 1 per cent) banks were well below the average of 1.7 per cent for the sample. Also, as expected, the loan-loss provisions ratio is low for the Irish and indeed all banks in the sample by the end of 2006, indicating low credit risk generated across bank's portfolios. This low figure reflects the fact that GDP growth had been moving in a positive trajectory for all countries in the sample. A low level of non-performing loans to total loans signals improvement in the quality of credit portfolios and, in turn, financial institutions cash flow, net income and solvency (IMF 2009). The Spanish banks had much higher provisioning levels. Figure 5.25 below reflects this

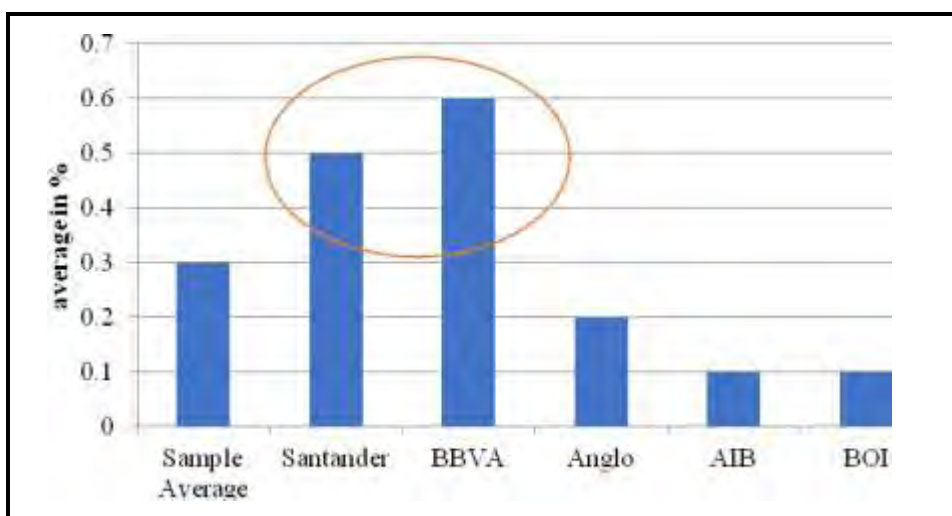
pattern, showing that Spanish banks entered the financial crisis with substantial reserve cushions. They were also substantially higher than their Irish peers (Figure 5.26). The pattern of provisioning for the Spanish banks compared to their European counterparts reflects a key difference.

**Figure 5.25: Summary loan loss provisions over total loans, average in percent**



Source: Bloomberg and author's calculations

**Figure 5.26: Ratio of loan-loss provisions to total loans as at 31 December 2006**



Source: Bloomberg and author's calculations

#### ***5.4.5 Main Findings with Respect to Pre-Crisis Conditions: Management***

Analysis of cost management via the cost-to-income ratio is often used to assess management, as controlling overhead expense is a fundamental task for profit-conscious bank management.<sup>59</sup> Cost efficiency is represented by a simple ratio of operating expenses to total revenues, denoted as efficiency ratio, which measures management flexibility to adjust costs to changes in the business development signalled by revenues. The higher is the efficiency ratio, the higher is the default risk. By 31 December 2006, the sample mean for the cost-to-income ratio for the full sample was 57 per cent (see Table 5.5). The Spanish banks had efficiency ratios that were not only lower than the sample average but also marginally lower than the two main Irish banks. While AIB and BOI displayed rates of 53 per cent and 56 per cent respectively, Anglo was much lower, with an average ratio of 36 per cent. Salaries represent the largest cost items for banks due to the people-intensive nature of banking. As Anglo did not have an extensive distribution network, similar to AIB and BOI, it would be expected to have a much lower cost-to-income ratio, which, all other things being equal, would have been indicative of efficient cost management. These ratios suggested that costs were being managed effectively in both Irish and Spanish.

#### ***5.4.6 Main Findings with Respect to Pre-Crisis Conditions: Earnings Performance***

Likewise, analysis of earning-potential figures do not point to any significant features for the Spanish institutions. The return on equity (ROE) and return on assets (ROA) ratios can serve as indicators of current financial-sector profitability. Review of the ROE and ROA ratios of the Spanish banks finds that they were in line with the sample average, and slightly behind their Irish counterparts. A higher ROE or ROA indicates better profit prospects for growth and resilience to shocks, and thus associated with lower credit risk. Within the banking industry, quality levels for these ratios are at least 1 per cent for ROA and 15–30 per cent for ROE (Waymond 2007). If ROE or ROA measures are higher for a bank relative to peers, as was the case for the Irish banks, it would indicate that these banks were actually performing better than their Spanish peers. These strong, positive earnings ratios were a clear indication that the Spanish and Irish banks' management were taking on more risk, but also pricing assets and funding

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<sup>59</sup> In a recent study on troubled banks, the efficiency ratio was used to establish failure or improvement in a bank's condition. The study sample included some 3,747 US banks, 25 percent of which recovered, 6 percent merged with a bigger bank, 55 percent remained a problem and 3 percent failed. In that study, the ratio was 93 percent for the entire sample. A larger percentage of banks that recovered experienced improvements in their efficiency ratio in the sample period, and the study concluded that a lower efficiency ratio was better.

liabilities better than many of their peers. The strong earnings ratios were also indicative of good yields on loans, lower cost rates, effective use of earnings and good returns from interest-bearing assets. Following the level of value destruction (reflected in share price decline) resulting from credit losses accruing to many of the banks in the sample and the government intervention, there would now appear to be little support for ROE ratios of well above 20% (as displayed by the Spanish and Irish banks), as these have mostly proved to be unsustainable.

#### ***5.4.7 Main Findings with Respect to Pre-Crisis Conditions: Liquidity***

Turning to liquidity/funding ratios, the empirical analysis indicates that Spanish banks did not have diverse funding structures compared to their European peers prior to the GFC. The LTD ratio reflects a bank's dependence on funding over and above its deposit base as a measure of funding structure. Since deposits are viewed to be more stable and usually cheaper sources of funding, greater dependence on wholesale funding may signal higher funding risk and higher riskiness for a bank. A review of the liquidity ratios indicates that banks' reliance on wholesale funding (a higher loan-to-deposit ratio), short-term wholesale funding combined with high wholesale borrowing (wholesale funds to total liabilities ratio) all positively related to higher equity price declines. By the end of 2006, Spanish banks had higher LTD ratios, slightly lower levels of short-term funding and higher long-term funding than many of their European peers. AIB, BOI and Anglo Irish bank were some of the most vulnerable banks in the sample, all displaying high LTD, but also high short and long term funding ratios like their Spanish peers. Short-term borrowing to total liabilities and liquid assets to total assets measure the degree to which banks can withstand a sudden liquidity distress. A bank with a higher share of short-term borrowing would be more vulnerable in the event of a bank run. Overall this empirical analysis finds that in the lead-up to the 2007 GFC, Spanish banks had liquidity fundamentals not unlike their peers in Ireland and elsewhere in Europe in that they displayed high loan-to-deposit ratios, reflecting an over-reliance on wholesale funding. Similar to outcomes for the Irish banking system, wholesale funding of loans created a liquidity gap that increased the exposure of all Spanish banks to the business cycle and posed systemic risks, especially as they directed a large quantity of these funds towards long-term maturity assets such as real-estate assets. As in Ireland, the structural dependence on international wholesale markets, built in 2000–2007, resulted in liquidity problems for all Spanish institutions when the GFC began and in the stagnation of the bank credit and economy activity. This analysis

indicates that an effective freeze on wholesale funding in the aftermath of the GFC would have inflicted financial distress on the Spanish banks that relied heavily on wholesale, similar to their Irish peers. A large proportion of short-term borrowing represented liquidity risk, because this kind of “mobile” money is very sensitive to interest rates and the borrower’s perceived credit risk. Mobile money is usually the first to dry up at the slightest appearance of financial difficulty.

### *Summary*

This section reviewed some of the key bank-specific financial ratios of the main Spanish commercial banks at the end of 2006 to capture balance sheet conditions prior to the start of the GFC in mid-2007. The empirical evidence suggests that the Spanish bank’s pre-crisis regulatory capital levels, earnings potential, funding model, balance-sheet liquidity and overall leverage levels were not significant determinants of crisis performance. Spanish banks, like the majority of their European peers, held a heavy reliance on short-term funding, coupled with a large share of domestic asset portfolios comprising of real estate that would prove to be illiquid and of poor credit quality. The one key difference the analysis highlighted was that Spanish commercial banks stood out among their global peers in terms of their pre-crisis loan loss provisioning model, which ultimately gave them more resilience at the onset of the GFC. This study also highlighted in Section 5.3.3 how Spanish banks’ continued focus on expanding their geographic footprint in the leadup to the crisis served as an additional source of strength. This analysis is not an exhaustive list of factors contributing to Spanish commercial banks’ performance during the crisis. Rather, it has highlighted some characteristics of the pre-crisis balance sheets of Spanish commercial banks that helped them fare better than their peers elsewhere. A more in-depth analysis might address the influence of firm-specific characteristics that the variables in this analysis do not reflect. The next section discusses the lessons and policy implications arising from Sections 5.3 and 5.4.

## **5.5 Spanish Bank Performance and Regulation – Lessons from the Financial Crisis**

This section discusses the main policy implication that this study identifies, arising from Spanish commercial banks’ performance and regulatory experience. It places this recommendation in the context of banking and financial reforms in both Ireland and the EU since the GFC, as well as forthcoming reforms.

## **Reduce procyclicality by encouraging countercyclical capital and provisioning buffers**

Irish regulatory policy should balance the procyclical tendencies present in the financial system by adopting countercyclical measures in regulating capital and provisioning to avoid allowing changes in problem loans to drive procyclical lending theories as they did in the lead-up to the crisis. The introduction of countercyclical capital and provisioning practices is desirable from a macro-prudential and macroeconomic perspective, as well as reducing the risk of bank failure. By restraining credit expansion, it would reduce the dangers of market over-reactions during the recession. Section 5.4 highlighted how essential it is that a bank maintains capital to absorb unexpected credit losses, to provide safety for depositors and creditors and to satisfy regulatory authorities' concern for a stable banking system.

### ***5.5.1 Adequacy of Policy Responses***

The Central Bank of Ireland has responded to the effects of the financial crisis in Ireland at both the domestic and EU level. A full discussion of the array of reforms followed that deal with macro prudential policy, aimed at mitigating systemic risks or failures of micro prudential regulation and supervision, is beyond the scope of this chapter, given their scale. Therefore, this section focuses exclusively loan loss provisioning reform post the crisis to date.

FCAG recommended exploring alternatives to the incurred loss model that would use more forward-looking information in 2008. In August 2009, BCBS's *Guiding Principles for Replacement of IAS 39* stated that loan-loss provisioning should be vigorous and based on sound methodologies that reflect expected credit losses in the banks' existing loan portfolio over the life of the portfolio and permit a timelier recognition of expected loss. Specifically, any new policy recommendations by the International Accounting Standard Board (IASB) must provide a more transparent and timely provisioning regime that will allow for expected credit loss over the life of an asset (IASB 2009).

Since 2009, the IASB has been working on IFRS 9 as a successor to IAS 39. At this stage, it is not possible to estimate the full effect of IFRS 9, for three reasons. Firstly, the accounting standard has not yet been published and is still subject to EU endorsement. Secondly, the most recently exposed draft contains a number of complex,

subjective areas (for example, interpretation of “significant” deterioration in credit quality) which could generate a range of outcomes and where likely or acceptable market practice or norms are difficult to determine. Finally, the adoption of IFRS 9 will involve complex and time-consuming implementation, requiring integration of business, finance, and risk. The banking sector estimates an overall assessment and implementation period of at least two years, with IFRS 9 requirements being fully effective from January 1 2018.

In 2016, the Bank of Spain reformed provisioning requirements to align the Spanish banks’ accounting system with that of other European countries and the European Banking Authority (EBA) criteria (based on IFRS 9), and therefore foster comparability. Since October 2016, dynamic provisioning has no longer been in place. The new regime suggested under IFRS 9 provides users of financial statements with more up-to-date and transparent information about an entity’s expected credit losses on financial institutions’ assets; this is in keeping with one DP. Recognition of anticipated credit events, including expected losses and other changes in expectations, allows banks to update credit losses at each reporting date to reflect changes in credit quality. More timely information about expected credit losses will enable regulators to act.

The Spanish example has shown that any solution to the procyclicality problem of loan-loss provisioning needs to uphold the balance between making regulation more anti-cyclical, while at the same time reinforcing transparency of banks’ accounting statements. This study has shown that, in the lead-up to the GFC, the delayed recognition of credit losses on loans (and other financial instruments) was identified as a weakness in existing accounting standards. As part of IFRS 9, the IASB has introduced a new, expected-loss impairment model that will require more timely recognition of expected credit losses. Specifically, the new Standard requires entities to account for expected credit losses from when financial instruments are first recognised, and to recognise full lifetime expected losses on a timelier basis.

As observed throughout this thesis, banking crises are the result of procyclical financial system behaviour and regulation, as well as poor risk management in financial institutions. This implies that both aspects need to be addressed in ongoing reforms. These new measures under IFRS 9 are a step in the right direction. Spain’s example

highlights that no prudential rules or regulations can help save a banking system if there is failure of corporate governance.

## **5.6 Conclusion**

In spite of many similarities between the Irish and Spanish commercial banks, the Spanish commercial bank, while confronted with volatile markets and a subpar economic environment, proved resilient throughout the GFC of 2008. The focus of this chapter was to investigate the difference in banking performance of the main commercial banks in Spain and Ireland during the GFC, with a view to drawing useful lessons for both Irish and international financial regulatory reform in the post-crisis environment. This chapter examined the underlying causes of the greater resilience of the Spanish commercial banks, by presenting an analytical framework to consider the significant differences between the two retail banking systems in the build-up to and during the GFC. The analytical framework in Section 5.3 highlighted two key differences. Firstly, international diversification of balance sheets proved a key area of distinction between the Spanish and Irish commercial banks. The main Spanish commercial banks were large, internationally active banks and well diversified in their geographic footprints. When the Spanish economic crisis hit, the diversified portfolio of the two financial groups provided a critical cushion against the downturn. Secondly, the positive performance of the Spanish commercial banks in the initial stages of the crisis was also related to the implementation in 2000 of DP, which established a countercyclical capital regime for banks. This method allowed for the creation of a buffer in the form of a reserve deducted from capital in good times and released in times of downturn, and gave Spanish banks a countercyclical mechanism that helped them navigate the first phase of the crisis.

This chapter also reviewed a selection of key pre-crisis financial ratios of the main Spanish commercial banks and compared them to a subset of their international peers to establish which fundamentals contributed to their resilience. Empirical results indicated that they did not stand out markedly from their Irish and European peers, except in one area – their provisioning levels, which ultimately gave the Spanish commercial banks more resilience at the onset of the GFC. The Spanish regulator's use of DP has highlighted how future regulatory policy should balance the procyclical tendencies present in the financial system by adopting countercyclical measures in regulating capital and provisioning. This chapter has highlighted how Spain's unique

implementation of DP, despite mandating additional provisions against new loans, did not in and of itself prevent credit booms. The Bank of Spain could also have increased the capital requirements of the banks or tightened the credit flow in other, more innovative ways. Provisioning charges on new loans cause a decline in banks' capital, which for a given or desired leverage will restrain credit growth to a limited extent. However, attempting to contain a credit boom primarily through DP would require setting prohibitively high provisioning rates. Therefore, as provisions and capital assume complementary roles as buffers for expected and unexpected losses, respectively, capital requirements also need to become more forward looking, if procyclicality is to be reduced significantly.

## **Chapter Six: Building a Stable Retail Banking System: Lessons from Canada's Experience**

[Canadian] financial institutions, while confronted with volatile markets and a subpar economic environment, have proven resilient through the recession, thanks to rigorous regulation and prudent bank practices (IMF 2009a, p.1).

### **6.1 Introduction**

The focus of this chapter is to investigate the discrete elements of the Canadian banking system that informed its sound performance before the GFC with a view to identifying transferable lessons for both Irish and international financial regulatory reform in the post-crisis environment. Both countries had relatively highly concentrated, retail bank dominated banking sectors, governed through principles-based regulation in common and both banking sectors experienced significant growth in mortgage credit in the run up to the credit crisis. Both countries also enjoyed low unemployment rates, high economic growth, and healthy fiscal and current account balances in the years preceding the GFC. The performance of the Canadian banking system during the GFC was relatively strong: Canadian banks did not, for example, require any capital injections, nor did deposit guarantees have to be expanded. This chapter assess some of the factors that contributed to this favourable outcome in Canada, with a view to drawing useful lessons for Irish policy and regulatory reform. The explanation for the different financial performance of each banking system is deeply rooted in different regulatory institutions and governance structures. Canada's success during the GFC is attributable to more effective regulation and conservative banking practices, including stricter limits on bank leverage and mortgage lending. An understanding of the factors underlying Canada's success is likely to prove useful in informing future policy choices.

The Canadian financial system did not, however, emerge from the GFC unaffected. The funding profile of Canadian banks deteriorated as liquidity in most global financial markets dried up, leading the central bank and federal government to take measures to inject liquidity into the financial system. Nevertheless, the period of increased global uncertainty during the GFC was characterised by a strong relative performance on the part of Canadian banks. While the Irish Government was forced to extend an unlimited depositor guarantee to all domestic banks, no Canadian banks required State Aid. Domestic demand remained buoyant, primarily because a resilient financial system kept

bank credit flowing. These are several important similarities and shared experiences between the Canadian and Irish retail banking systems before the GFC.

This chapter is structured as follows: the next section provides a comparison of macroeconomic, retail banking sector and housing market experiences in Ireland and Canada, before and during the GFC. Section 6.3 presents an analytical framework to explain differences in the Irish and Canadian retail banking system experiences during the financial crisis. Two key areas of difference are examined that highlight factors that likely influenced the positive Canadian outcome: (i) banking regulation and (ii) rules/absence of incentives guarding against the occurrence of a construction bubble. Section 6.4 tracks the pre-crisis balance sheet fundamentals of Canadian banks and compares them to a subset of their peers, establishing which fundamentals contributed to the resilience of Canadian banks during the crisis, with particular reference to Ireland. The results are discussed with specific reference to the main Canadian banks. Section 6.5 presents a discussion of the lessons and policy implications arising from the Canadian bank performance and regulatory experience. These transferable regulatory reform and other lessons are in turn placed in the context of relevant banking or financial reforms in Ireland or the EU since the GFC to date, as well as forthcoming Basel III and European Banking Union reforms. Section 6.6 concludes.

## **6.2 A comparison of macroeconomic, housing market and retail banking sector experiences in Ireland and Canada before, during and after the GFC**

This section provides a comparison of macroeconomic, retail banking sector and housing market experiences in Ireland and Canada before, during and after the GFC, highlighting several structural factors that likely influenced outcomes.

### **6.2.1 *Macroeconomy***

In the period from 2000 until the outbreak of the financial crisis in 2008, Ireland enjoyed low unemployment rates, and healthy fiscal and current account balances, securing the country high financial ratings. Ireland accumulated substantial fiscal surpluses between 2000 and 2007 – reducing its public debt to 25 percent of GDP in 2007. In terms of foreign trade, Ireland experienced Chinese-level trade surpluses averaging 13.7 percent of GDP between 2000 and 2007. In addition, average unemployment during the same period was 4.4 percent.

When the GFC struck Ireland's GDP contracted by 3 percent during 2008 and a staggering 7.5 percent in 2009. The severity of the crisis in Ireland translated into unemployment figures which in 2009 reached 11.9 percent of the workforce. In 2009, Ireland's public deficit reached 14.3 percent of GDP, the highest in the EU, and its public debt had sky-rocketed to 64 percent of GDP. The country was eventually bailed out by the troika of the IMF, the EU and the European Central Bank (ECB) in late 2010.

Canada also enjoyed low unemployment rates, high economic growth, and healthy fiscal and current account balances in the years preceding the GFC. However, Canada's economy did not escape economic downturn. The Canadian economy, similar to all developed economies, is linked with international economy and a sharp drop in exports and a decline in commodity prices had a negative impact. Household wealth declined, the rate of unemployment rose, and the economy grew at a rate below the average rate posted prior to the crisis. When the crisis struck, Canadian GDP dropped by 3.9 to 2.7 percent in 2008, stopped contracting by the second half of 2009, and recovered its pre-crisis level by the end of 2009, growing by 3.4 percent (IMF 2009a). Growth was particularly strong in late 2009 and early 2010, which led to a faster recovery than most of its international peers. Domestic demand was buoyant, primarily because a resilient financial system ensures a ready supply of credit remained. Residential and business investment regained momentum in Canada on the back of favourable financing conditions (IMF 2010). Having the advantage of a large budgetary margin at its disposal, the Canadian government was able to implement measures to support the economy during the recession. With strong domestic fundamentals and a well-functioning financial system, even as pressure on the export-oriented manufacturing sector increased, domestically oriented sectors such as services and construction remained robust (Carney 2012).

Ireland's membership of the Eurozone meant that its monetary policy instruments were not available to the Central Bank of Ireland when crisis struck. The Bank of Canada had monetary policy tools at its disposal in the lead up to and during the crisis. Lombardi and Siklos (2014) argue that the implementation of exchange rate policy and monetary policy by the Bank of Canada during the 2000s delivered price stability throughout the period. An unwavering commitment to low inflation targeting and a flexible exchange rate, combined with a sound fiscal position, allowed the Canadian authorities and economy to respond quickly to the GFC and mitigate its impact. Santor and Schembri

(2011) argue that the resilience of the Canadian banking system helped to limit the fallout of economic activity by providing continued credit throughout the economic downturn and thereby facilitating the transmission of the stimulative monetary policy enacted by the Canadian Government in the wake of the crisis.

### ***6.2.2 Financial System Performance***

The relative strong performance of the Canadian economy during the GFC was due to the fact that it did not experience a banking crisis. Although historically Canada has never experienced a banking sector crisis, there were still some important negative shocks. These include the failure of two smaller banks in the 1980s (the first failures since 1923), and substantial problems in the housing sector in the early 1980s and again in the 1990's. During the mid-1980s, two Alberta-based banks—the Canadian Commercial Bank (CCB) and the Northland Bank (OSFI 2013)—collapsed. Both banks had become over exposed to the oil industry, primarily funded via expensive wholesale funding. In the context of the worldwide recession of the early 1980s and collapsing real estate and oil prices, both banks faced runs. The Bank of Canada made unprecedented compensation to both insured and uninsured depositors. As discussed in more detail in Section 6.3.1, these events created a significant impetus for action to reform the Canadian regulatory framework and ensure the development of more enhanced institutional risk management in Canada, which allowed for a more a more appropriate response during the GFC of 08/09 (OSFI 2013).

### **Banking system similarities**

Both the Canadian and Irish banking systems shared important similarities such as being relatively highly concentrated, retail bank dominated financial sectors that were governed by a principles based regulatory regime. In both countries, the banking sector was the dominant source of finance and retail banks in both countries dominated the residential and commercial mortgage market. Both banking systems were highly concentrated, with the 5 bank concentration ratio consistently capturing over 85 percent of the overall market throughout the 2000s (World Bank 2013). The 5-bank asset concentration ratio, which is defined as assets of five largest banks as a share of total commercial banking assets, is useful for Ireland as it removes the IFSC which can skew figures. Comparing Ireland to the Canadian banking system shows similar structures, where the 5-bank concentration ratio was consistently over 80 percent throughout the 2000s (World Bank, 2013).

In Ireland, the largest retail banks by asset size in the lead up to the crisis were the domestically owned Allied Irish Bank (AIB), Bank of Ireland (BOI), Permanent TSB (PTSB), and KBC Ireland and Ulster Bank plc, who were owned by large international parent institutions. Similar to Ireland, in Canada, the domestically owned banks dominated the market in the lead up to the GFC. The six largest Canadian banks by assets were Royal Bank of Canada, the Toronto-Dominion Bank, the Bank of Nova Scotia, Bank of Montreal, Canadian Imperial Bank of Commerce and National Bank of Canada. These six banks dominated the market and accounted for over 90 per cent of bank assets. Banks in both countries operated on a nationwide branch basis, and many are engaged in commercial, retail, investment banking and wealth management. Combined with national branching, this wide range of activities allowed them to benefit from geographical diversification (more so an advantage to the Canadian retail banks) and economies of scale.

Both the Canadian and Irish banking systems adhered to a principle based approach to regulation. However, the regulatory regime in both countries was more than just a statement of principles. There were also regulations, rules and codes which were intended to govern the behaviour of banks. With principles based regulation (PBR), a regulator will set out basic desirable principles or outcomes in a number of areas, such as solvency, governance, and consumer protection. Both countries PBR approach relied on banks' boards and management to manage their business according to the principles they set out. The underlying idea was that the prudential regulator would not be prescriptive in terms of product design, pricing and the specific risk decisions adopted by a firm, as long as that firm had a robust governance structure, together with reliable oversight and control systems, especially systems for managing risks. Hence PBR referred not just to the principles but also to the various rules, codes and regulations that underpin financial regulation. This approach relied on entities behaving with institutional integrity, and it placed a much greater emphasis on internal supervisory systems within banks, ultimately calling on the moral suasion of the banking community.

### **Banking system key differences**

Both the Canadian and Irish banking systems also shared important differences. The Canadian financial system did not emerge from the financial crisis unscathed. Canadian financial markets and institutions were also affected by liquidity and funding pressures,

which led to supportive liquidity actions on the part of the central bank and federal government. The Bank of Canada responded with a variety of measures to inject liquidity into the financial system. To provide liquidity to the banks during the crisis, the Canadian Government introduced an insured mortgage purchase program (IMPP), which ultimately included \$125 billion to purchase securitised mortgages from banks. This provided much-needed liquidity to banks and ensured that banks were free to expand their provision of credit and to level the playing field relative to foreign banks receiving assistance from their governments (Porter 2010). The Canadian government also ensured that the yields of the mortgages they received from banks were greater than the cost of the government debt issued to buy them, making the programme profitable for the government. The landscape of the banking system did not change during or after the crisis and the six dominant banks maintained their market share.

In contrast, the Irish banking system undertook a transformation. In parallel to the steps taken at EU level,<sup>60</sup> the Irish government made a number of interventions to try to stabilise the Irish financial system and economy during and after the GFC, including, *inter alia*, liability guarantee schemes, an asset relief programme and bank recapitalisations (See Chapter 3 for more detailed discussion). These reforms ultimately resulted in the reshape of the Irish retail banking landscape; many banks were merged, nationalised or withdrawn from the market voluntarily by the parent bank (based on weak market performance) after receiving State Aid. As a result of these changes, Ireland exited the Programme of Support in December 2013 with a restructured banking system. BOI and AIB in particular emerged as the ‘pillar banks’, with PTSB serving as a smaller Irish contender. Additional competition in the sector continued to be provided, albeit on a smaller scale, by subsidiaries of foreign-owned banking groups including the Royal Bank of Scotland (via Ulster Bank plc) and KBC Ireland.

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<sup>60</sup> The EU’s response to the crisis was fragmented and occurred on a country by country basis in the early stages. In December 2011, the ECB offered banks a three-year ‘long-term refinancing operations’ (LTRO) at 1.0 percent interest. More than 500 banks signed up for €489 billion LTRO money in the first round. A second round of LTROs followed in February 2012, with 800 banks signing up for €529 billion. Both operations eased the stress in the European banking sector significantly and allowed a tentative reopening of the debt capital markets. In September 2012, the ECB announced a new programme, the outright monetary transactions (OMT), which pledged potentially unlimited bond-buying support in secondary sovereign bond markets to programme countries if certain conditions were fulfilled. The OMT has never been used but its existence and the promise of bond buying by the ECB has substantially lowered yields on European debt.

### **6.2.3 Housing market overview – Ireland and Canada**

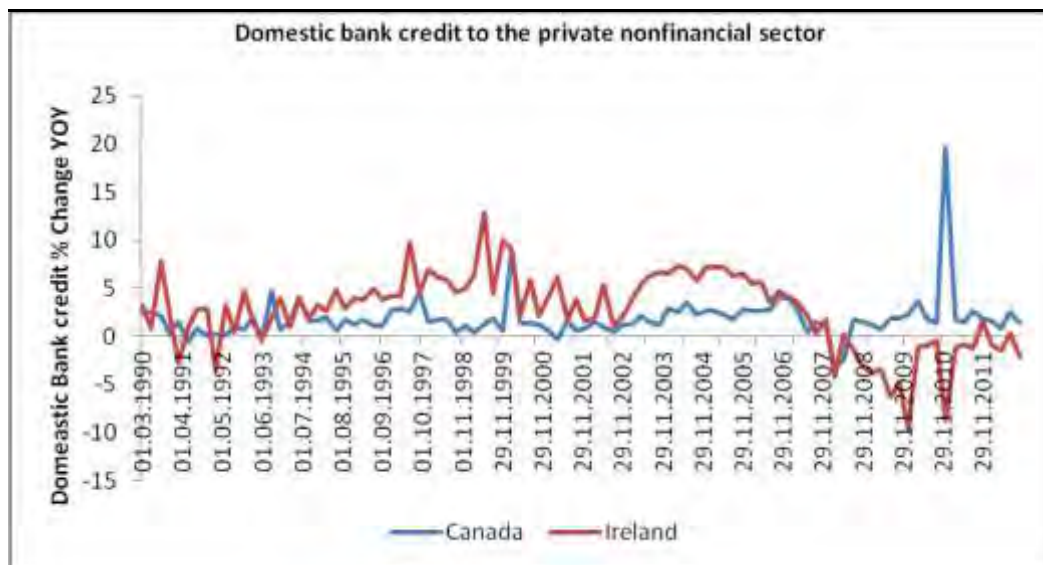
As already noted, both the Canadian and Irish retail banks dominate the residential and commercial mortgage market, so when both countries exhibited a shift towards home ownership from the late 1990's onwards, this was reflected in an upward trend in their lending patterns (Figure 6.1). As of 1996, 63.6 percent of Canadian households were home owners. By 2006, the share had increased to 68.4 percent.<sup>61</sup> The number of mortgage holders in Canada increased from 3.54 million in 1996 to nearly 5.42 million by 2010, an increase of more than 50 percent (Dunning 2010). Construction growth reflected this increase; building permits hit a record high in November 2005 and by September 2007 housing builds reached a level not seen in Canada since 1978 (Tsounta 2009). Increased house building in both countries was accompanied by increased prices (see Figure 6.2), residential mortgage credit, and consumer credit all grew rapidly in the 2000s in both countries. Mortgage credit expanded by almost 9 percent per year on average between 2000 and 2008 in Canada. Tsounta (2009) argues that this sustained period of increasing house-prices and supply in Canada during the 1990s and 2000s represented a catching up of prices with their long-term determinants, and that by 2010 they were broadly in line with fundamentals.

Canada and Ireland experienced significant increases in house prices and residential investment from 2000 to 2006, though prices in Canada appreciated more slowly. Figure 6.1 plots this price increase. The counterpart to rapid house price appreciation was an increase in the ratio of mortgage debt to disposable income. For the households sector, liabilities predominantly consist of loans, and more particularly mortgage loans for the purchase of houses – increasing household debt figures depict this increasing mortgage debt. Between 2002 – 2007, the ratio of household debt to disposable income in Ireland increased by c.82 percent. In Canada, the increase was roughly 18 percent, with the debt to income ratio moving from 113 percent to 134 percent. In Canada and Ireland, the ratio of mortgage debt to disposable income increased, but beginning in 2002 Ireland's levels increased at a much faster rate (see Figure 6.3 below).

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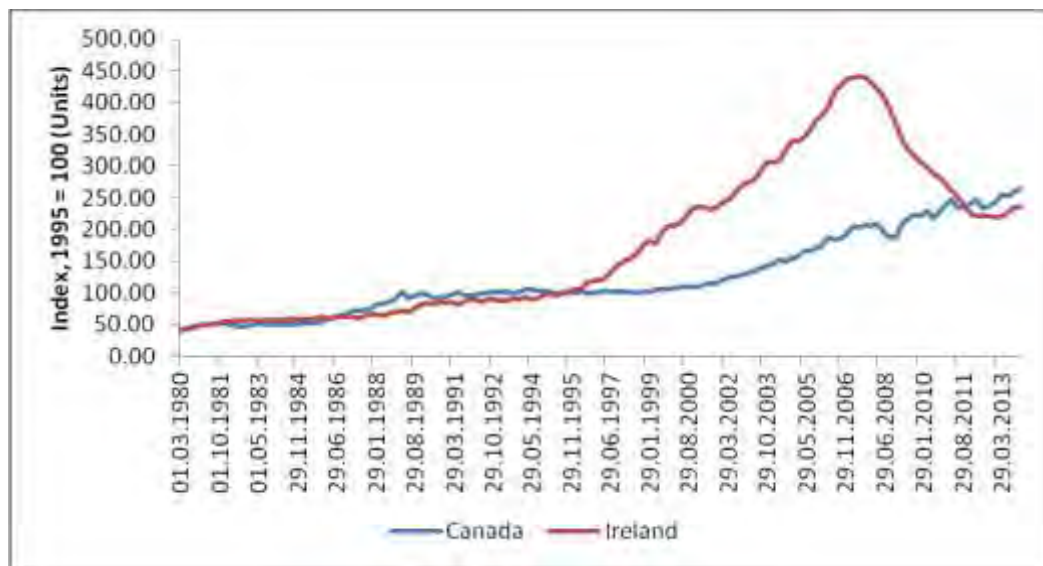
<sup>61</sup> By 2017 this share is over 70 percent: <http://www.statcan.gc.ca/daily-quotidien/130911/dq130911b-eng.htm>.

**Figure 6.1: Domestic bank credit to the private non-financial sector**



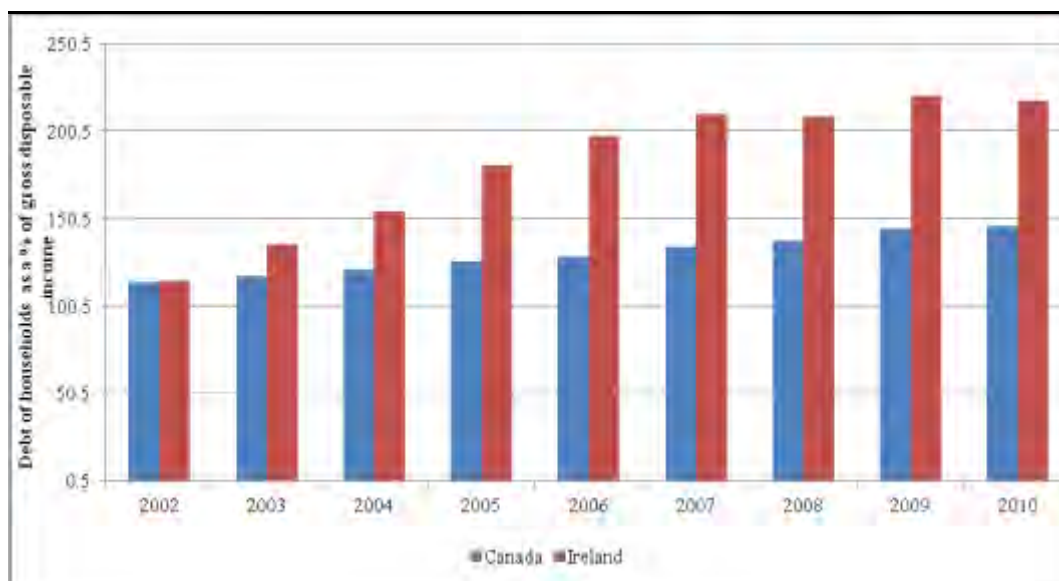
Source: Bank of International Settlements, long series on credit to the private non-financial sector: <http://www.bis.org/statistics/credtopriv/documentation.pdf>

**Figure 6.2: Residential property price**



Source: BIS Residential Property Price database, <http://www.bis.org/statistics/pp.htm>

**Figure 6.3: Household debt**<sup>62</sup>



Source: OECD (2012), National Accounts of OECD Countries, OECD Publishing

The potential risk of increased household mortgage debt depends critically upon its distribution across borrowers (MacGee 2009). To see the distribution of mortgage debt in the lead up to 2007 in both countries, the distribution of the ratio of the outstanding loan to house value (the LTV) of borrowers is examined. A high LTV implies that a small decline in the house price would leave the owner with negative equity. Negative equity is problematic as it removes the option for a homeowner who is unable to meet their mortgage payments to sell their home to repay the mortgage (Macgee 2009). As Figure 6.4 illustrates, Canada had significantly fewer households with LTV ratios above 80 percent than Ireland by 2006. By 2006, the distribution of the ratio of the outstanding loan to house value (LTV) of borrowers was very different for Ireland and Canada. Canada had significantly fewer households with LTV ratios above 80 percent than Ireland: roughly 52 percent of Irish households had mortgages with LTV ratios above 80 percent, while only 15 percent of Canadian households did. Among households with LTVs above 90 percent, the comparison is even more striking: roughly 12 percent in Ireland versus just over 6 percent in Canada.

<sup>62</sup> For the households sector, liabilities predominantly consist of loans, and more particularly mortgage loans for the purchase of houses – increasing figures indicate increasing mortgage debt.

**Figure 6.4: Distribution of mortgage loans by LTV 2006**



Source: Dept Environment, Heritage and Local Government House Prices, loans and profile of borrowers - Published August 2010; Bank of Canada Financial System Review December 2007 Canada Mortgage and Housing Corporation

With broadly similar trends in house prices and mortgage debt in Ireland and Canada, very different patterns of mortgage delinquencies and defaults emerged post GFC and by January 2010 less than 1 percent of retail mortgages in Canada were in arrears, compared to 10.4 percent in Ireland for the same period.<sup>63</sup> In Ireland, vulnerabilities within the mortgage market developed prior to the GFC (discussed in greater detail in Chapter 3) with increased housing values, over construction of houses, and household indebtedness. Mortgage financing arrangements drove these imbalances, allowing lending standards to become less stringent and sources of funding for banks to become more complex. Household debt grew to levels that were unsustainable, and when house prices began to drop, losses on mortgages posed severe challenges to banks, which in turn reduced credit extension to the broader economy. In contrast, the Canadian housing sector did not build up imbalances to the same extent before the GFC. While house prices, housing construction, and household debt all increased, actions by the Canadian Government and OSFI ensured that growth was not allowed to develop to the unsustainable levels Ireland experienced. Canada's mortgage market continued to function well; although mortgage arrears increased as the global economic slowdown spread, credit extension did not significantly slow and losses among Canadian lenders

<sup>63</sup> A number that would peak at 12.9 percent by September 2013 (CBI 2015a).

were low (Crawford et al 2013). House prices experienced a relatively mild drop in 2007 (Figure 6.2) but recovered quickly and continued to grow.

### **6.3 How to Compare the Canadian and Irish Banking Experiences during the Financial Crisis**

This section presents an analytical framework to explain differences in the Irish and Canadian retail banking system experiences during the financial crisis. Two key areas; (i) banking regulation and (ii) rule/absence of incentives guarding against the occurrence of a construction bubble are focused on. In relation to the latter, rules in relation to LTV ratios and mortgage debt-income ratios are examined, as well as tax incentives such as mortgage interest relief.

#### **6.3.1 Banking Regulation**

If we are to assume that Canada's better performance to Ireland stems mainly from banking regulation, the notable features of the Canadian system of prudential regulation that distinguished it from Ireland can be grouped into three categories: (i) the regulatory framework; (ii) principle-led, reliance-based supervision and (iii) risk-based prudential regulation. The subsections below will address each of these categories.

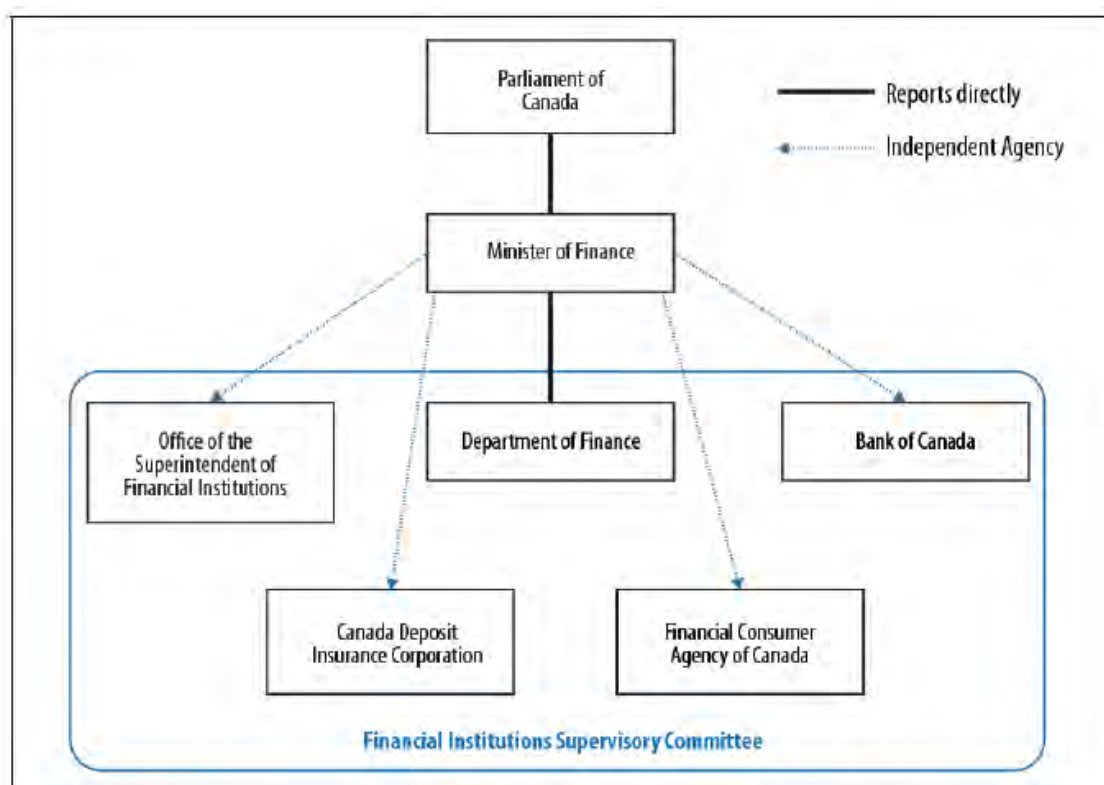
##### **(1) Canada's regulatory framework**

The country's longstanding financial stability was underpinned by traditionally strong prudential supervision and regulation (IMF 2014b).

Both the Canadian and Irish banking system had single bank supervisory authorities that were separate to the Central Bank in the years preceding the GFC. Historically there were some important negative economic shocks that influenced the shape of the Canadian regulatory framework. During the mid-1980s, two Alberta-based banks – the Canadian Commercial Bank (CCB) and the Northland Bank (OSFI 2013) – collapsed. Both banks had become over exposed to the oil industry, primarily funded via expensive wholesale funding. In the context of the worldwide recession of the early 1980s and collapsing real estate and oil prices, both banks faced runs. The Bank of Canada made unprecedented compensation to both insured and uninsured depositors. These events created a significant impetus for action to reform the Canadian regulatory framework. The Canadian government acted in 1987 to increase the oversight of the Canadian Regulator, and created the Office of the Superintendent of Financial institutions (OSFI).

The OSFI was established by the Office of the Superintendent of Financial Institutions Act (OSFI Act) and there was a conscious decision to include in the OSFI's mandate a focus on prudential issues and an emphasis on early supervisory intervention in problem banks to minimise potential losses to depositors (OSFI 2013). Under this legislation, the OSFI was responsible for the regulation and supervision of all Canadian federally regulated financial institutions, including banks, insurance companies, trust and loan companies and credit unions (OSFI 2013). The creation of a new OSFI represented a merger of the Department of Insurance (DOI; formerly called the Office of the Superintendent of Insurance), and the Office of the Inspector General of Banks (OIGB). The OSFI was to work in conjunction with the Bank of Canada, whose function was to promote the economic and financial welfare of Canada, the Canadian Deposit Insurance Federation, which provided deposit insurance to the general public and the Financial Consumer Agency of Canada, which acted as a consumer rights watchdog (see Figure 6.5 below). In addition, this legislation established the Financial Institutions Supervisory Committee (FISC). FISC was created to ensure clear governance structures and to facilitate the exchange of information among its members on all matters related to the supervision of financial institutions. The FISC ensured that the OSFI met regularly with key federal partners to address issues and challenges facing the financial sector, and to refine regulatory requirements that promoted sound practices and procedures to manage risk (OSFI 2015). The FISC (Figure 6.5) members were the OSFI, the Bank of Canada, the Department of Finance, the Canada Deposit Insurance Corporation and the Financial Consumer Agency of Canada. The FISC met regularly (generally quarterly) to facilitate the timely flow of information amongst the various agencies and together, these organisations constituted Canada's network of financial regulation and supervision.

**Figure 6.5: The regulatory environment**



Source: OSFI 2014

The clear governance structure and transparent lines of authority within the Canadian regime were vastly different from the Irish regulatory framework ((See Honohan 2010 for detailed discussion of the evolution of the Irish regulatory regime). In 2003, the Irish government undertook to consolidate the prudential and customer protection regulation of all financial institutions with a Financial Regulator's (FR) office located in a restructured Central Bank (CB). The former would hold a dual mandate to protect consumer interest and to build up a regulatory framework that protected the stability of the banking sector (prudential regulation) while the latter would retain responsibility for monetary policy functions, financial stability, economic analysis, currency and the investment of foreign and domestic assets. The new institutional arrangement divided responsibilities between the FR and the CB under the overall name of the Central Bank and Financial Services Authority of Ireland (CBFSAI). The FR was established as autonomous, but it implemented all its decisions legally in the name of the CBFSAI. The CB provided all of the FR's resources and services. The division of responsibilities between the CB and the FR was unclear. As Kennedy and McKenzie (2010) note, and as all three Irish government-commissioned reports extensively document, the separation of the Irish institutional apparatus between the FR and the CB was, at best,

poorly implemented and under resourced. The complex organisational structure did not lend itself to effective supervisory oversight.<sup>64</sup>

### **Supervisory Framework**

From 1987 onwards the OSFI evolved in various ways; but two of the most important developments were the introduction of Guides to Intervention (the Guides) in 1997, and the introduction of a new comprehensive, risk-based methodology Supervisory Framework in 1999 (OSFI 2013). The ‘early intervention mandate’ contained in the revised OSFI Act of 1997 set the framework for how OSFI should respond to institutions once a diagnosis was made of their condition; the 1999 Supervisory Framework set the approach for making that diagnosis. The Guides incorporated financial indicators and ‘soft’ indicators, such as the strength of internal controls, internal policies on risk management and whether or not these were being followed, as well as figures on business growth in assessing financial health (Black 2004 p.8). The Guides set out five different potential diagnoses of an institution (i.e. Stages), with corresponding responses (OSFI 2000). The OSFI Annual report (2000 p.13) explains how there were five potential assessments and five corresponding sets of supervisory action. At Stage 0, there were no potential problems and monitoring continued as normal. If an institution was assessed to be at Stage 1, ‘early warning’, this meant there were deficiencies in policies or practices, or other practices existing which if allowed to continue could lead to the problems identified at Stage 2, but those problems could still be remedied. The firm was notified of OSFI’s concerns, monitoring was enhanced and the firm’s auditor may have been appointed to perform a particular investigation of the firm’s financial position. At Stage 2 there was a risk to the viability or solvency of the institution. Here the firm was placed on a watch list, restrictions on business may be imposed, and the minister was notified. At Stage 3 a firm’s financial viability or solvency was in serious doubt. Monitoring would intensify, external inspectors may be appointed, business restrictions imposed, possible restructuring of the institution included seeking a buyer, and contingency plans were formed. At Stage 4 the firm was financially non viable or insolvency was imminent. Here meetings and monitoring further intensified, there may be further restrictions on business, and if the statutory conditions were met, control may have to be taken of the firm’s assets. As Black (2004 p.9) explains, the Guides took the outcome of each set of assessments and stipulated what supervisory action should be considered with respect to each Stage.

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<sup>64</sup> See Honohan (2010) for more discussion on the CBFSAI.

There were two key elements of the revised Supervisory Framework introduced in 1999; first, the OSFI's supervisory process would use, where appropriate, the work of the institution's internal management and control functions. Second, it introduced a 'dynamic risk assessment process, this involved assessing the risks inherent in the firm's significant activities and the quality of its risk management, to arrive at an assessment of net risk for each of its significant activities. Net risks across all significant activities were then aggregated to an Overall Net Risk (OSFI 1999). This was then set against a firm's capital and earnings to arrive at a composite risk rating (CR). The CR was then linked to the Guides to Intervention, and the regulatory response tailored accordingly. One of the key benefits of the revised 1999 framework was the greater emphasis on more timely identification of potential problems and early identification of emerging risks and system-wide issues (OSFI 1999).

## **(2) Principles-based Supervision**

As noted, both the Canadian and Irish banking system adhered to PBR. However, regulatory regimes in both countries was more than just a statement of principles. There were also regulations, rules and codes which were intended to govern the behaviour of banks. In Ireland, on moving to the FR framework in 2003, the micro-prudential regulatory practice to be taken by the FR was summarised as PBR. Crucially, the regulator's role would not be prescriptive in terms of product design, pricing or specific decisions on risk adopted by a firm (risk analysis). Such matters were now the preserve of the banks, provided firms had a robust governance structure, together with reliable oversight and control systems (Honohan, 2010b, p. 43). As understood by the newly founded FR, PBR relied very heavily on making sure that appropriate governance structures and systems were in place in banks. The FR articulated this belief regularly in its annual reports:

We adopt a principles-based approach to supervision, whereby the Board of Directors of a supervised entity is responsible for setting their own tolerance for risk and for ensuring that management establishes a framework for assessing the various risks. Our role involves oversight of the quality of the institution's corporate governance including risk management and internal control systems (FR 2005c, p.58)

The overall mission objective of the FR, as regularly stated from 2003 was:

Our mandate is to protect consumers by helping them to make informed financial decisions in a safe and fair market and to foster sound dynamic financial institutions. This means that consumer protection, prudential supervision and contributing to financial stability are interlinked in our overall approach. (FR 2004)

Within this overall objective were a series of high-level goals, one of which (number two) related to micro-prudential supervision:

Having a regulatory system that fosters safe and sound financial institutions while operating in a competitive and expanding market of high reputation.

In line with this stated goal, there were six set strategies to be followed, which included, adopting PBR; requiring financial service providers to assume their responsibilities; making the best use of supervisory resources and putting a comprehensive on-site review process in place (FR 2004). The FR (2006) annual report set out the nine principles that were introduced as guiding the FR's approach to regulation (see Appendix F.1).

Under PBR, the principles and associated regulations, rules and codes set out, were required to be followed by a regulated firm, breaches of which may lead to enforcement action by the FR. However, the FR's preferred approach to enforcement was to seek voluntary compliance with legislation, codes and rules (Honohan 2010b p. 43). A principles-based approach, with technical rules applied as appropriate, would encourage adherence to the spirit of sound regulatory standards, without being overly bureaucratic (FR 2006, p. 12).

A key element of the stated principles was the necessity of effective governance design to ensure that banks met specific obligations required of them. The principles reflected the belief by the FR that as long as good governance structures were present within institutions, the decisions of management within institutions could be trusted. Acknowledging the importance of effective corporate governance, the FR did make efforts to strengthen this regulatory approach and in 2005, the FR prepared a consultation paper entitled "*Corporate Governance Guidelines for Credit Institutions and Insurance Undertakings*". The paper was the first attempt to update the CB's 1995

*Licensing and supervision requirements and standards for credit institutions.* However the formal issuing of the final consultation paper never happened. The FR did succeed, however, in implementing an updated and modernised standardised approach to fitness and probity requirements for Directors and Managers within financial institutions. Two consultation papers were issued (FR, 2005b; FR, 2006c) before the new fit and proper requirements were issued effective 1 January 2007. These fit and proper requirements did not apply to existing Directors and Managers. Two essential elements to an effective PBR approach were not implemented, or were implemented too late to have had any impact.

As already noted, the OSFI supervised financial institutions in accordance with its Supervisory Framework, first introduced in 1999. The supervisory approach undertaken by the OSFI was described as PBR that was intended to be broad-based and adaptive in nature (OSFI 1999). The Framework described nine principles, concepts, and core process that OSFI used to guide its supervision of banks. These principles, concepts, and core process applied to all financial institutions in Canada. The 1999 OSFI framework stipulated that its approach to supervision involved:

Supervision involves assessing the safety and soundness of financial institutions, providing feedback as appropriate and using powers for timely intervention where necessary. Its primary goal is to safeguard depositors and policyholders from loss. As such, the focus of supervisory work is determining the impact of current and potential future events, both internal to a financial institution and from its external environment, on the risk profile of the financial institution. (OSFI 1999)

The principles based approach required the application of sound judgment in identifying and assessing risks by both banks management the OSFI, and determining, from a wide variety of supervisory and regulatory options available, the most appropriate method to ensure that the risks that a financial institution faced were adequately managed (OSFIc 2014).

As in the Irish case, a focus on risk management was a key element of OSFI's approach to prudential oversight in the lead up, during and post the GFC. However, in contrast to the Irish PBR regime, the OSFI further buttressed its stated principles that it used to guide its supervision regime with supervisory "guidelines" which established risk management principles that were to be applied by financial institutions. The OSFI

retained substantial discretion to enunciate principles in guidance without requiring new legislation or regulations to be introduced (Northcott et al 2009). The OSFI had no rule making powers but issued extensive guidance; the Basle capital rules, for example, were implemented through guidance. The OSFI defined guidelines as “best” or “prudent” practices that OSFI expects banks to follow (OSFI 2014). They addressed areas such as: solvency standards (for example, capital adequacy), prudential standards (for example, large exposure limits), accounting standards (for example, non-accrual loans) and corporate governance. Interim guidelines were usually used in the case of emerging issues or trends where the OSFI believed guidance was needed prior to the release of a final guideline. Unlike a draft guideline, an interim guideline comes into effect immediately. If institutions did not comply with the guidance, the OSFI had the necessary practical and legal powers to enforce compliance.<sup>65</sup> Northcott *et al.* (2009, p.47) point out that OSFI had substantial discretion to enhance principles via “guidance” and did so several times before the GFC. Guidelines that proved to be sources of strength included: the importance of stress testing to anticipate the implications of the adverse scenarios; the use of capital adequacy planning to raise capital when beneficial and to balance shareholder distributions and capital maintenance;<sup>66</sup> and requiring liquidity policies, including contingency plans for banks. OSFI could issue guidance without the extensive consultations that new legislation or regulations would require, but it could nonetheless enforce compliance legally. This allowed the OSFI to issue and interpret timely guidance to restrict undesirable activities and ensure adherence to the principles by financial institutions.

Under the PBR approach, the OSFI adopted a supervisory philosophy of holding the board of directors and senior management accountable for ensuring that a bank was operated in a safe and sound manner, complying with relevant laws and regulations. This approach was complemented by a revised Corporate Governance Guidelines issued in 2003, which focused on two fundamental components of corporate governance for banks: the role of the Board of Directors (Board) and risk governance. This guideline provided information to boards of directors and management of banks about the expectations of the OSFI on corporate governance and the factors it consider important in assessing the quality of governance of each institution (OSFI 2003). As the revised code stated “Effective corporate governance is an essential element in the safe and

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<sup>65</sup> A good discussion on the OSFI’s regulatory approach is provided in Northcott, Paulin and White (2009, 46–50).

<sup>66</sup> Notably none of the big six had to reduce dividends during the GFC.

sound functioning of financial institutions”. Because these corporate governance guidelines were issued as a guideline, banks management and Board were legally required to comply with the guidelines.

### **(3) Risk-Based Prudential Regulation**

Risk-based capital adequacy – that is, the amount and quality of capital and the level of risk and leverage – was a key area of difference for the Canadian banking system. Banks were required to meet supervisory targets on the level and quality of capital, which exceed international minimums. The OSFI had a particular focus on compliance with regulatory capital guidelines, having adopted capital guidelines set by the Basel Accords. The OSFI adopted capital adequacy standards for Canadian Banks that exceeded the minimum capital standards required under the various Basel accords. Capital requirements for Canadian banks were higher than international minimum standards and actual capital ratios pre crisis were higher than many of their international peers. While Basel II required banks to hold minimum Tier 1 and total capital ratios of 4 percent and 8 percent respectively, Canadian credit institutions had been operating with higher requirements since 1999. In particular, the OSFI required banks to meet or exceed 7 percent Tier 1 and 10 percent total capital ratios (FSB 2012). In addition, common equity was a predominant component of Tier 1 capital, typically accounting for 70–75 percent of the total. The OSFI also had the power to direct a bank to increase its capital by imposing additional institution-specific capital charges under Pillar 2 of Basel II. This continued focus on both the quantity and quality of capital adequacy ensured that banks with greater risks entered the turmoil with greater cushioning against unexpected losses. These higher levels proved a key source of strength in the Canadian banking system in the lead up to the GFC (Northcott *et al* 2009).

In addition to risk-based capital adequacy, Canadian banks were also subject to leverage restraints. Canadian banks were required to meet a leverage (assets to capital multiple) test, that typically ensured a ratio of total assets to total capital of no more than 20 times. This rule was first introduced in 1982 to help prevent an unsustainable build-up of leverage in the Canadian retail banking sector (FSB 2012). This measure of leverage was the ratio of total balance-sheet assets and certain off-balance-sheet items<sup>67</sup> to total regulatory capital (Bordeleau *et al* 2009 p.3) The leverage requirement was retained

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<sup>67</sup> The off-balance-sheet items in this measure cover all direct contractual exposures to credit risk – including letters of credit and guarantees, transaction-related contingencies, trade-related contingencies, and sale and repurchase agreements.(Bordeleau *et al.* 2009 p.3).

even after implementation of the risk-adjusted measures under Basel I and Basel II. The OSFI felt that the leverage ratio provided an objective measure to complement the risk-weighted Basel capital requirements (Dickson 2009). This strict management of leverage restricted the growth of assets on the balance sheets of Canadian banks.

Finally, although the OSFI did not have a set minimum liquidity ratio,<sup>68</sup> Canadian banks did not face significant funding pressures during the crisis, an outcome primarily driven by two factors. First, their holdings of liquid assets<sup>69</sup> heading into the crisis were high. Second, retail deposits had traditionally driven their non-capital funding (around 80 percent of their total funding), which provided a stable source of long-term funds and helped to moderate the impact of the crisis on short-term funding markets.

### **Summary**

Ultimately, the regulatory frameworks of both countries shared the same basic approach: to identify and assess risks that were posed by the financial institutions being regulated. The motivations for developing the revised regulatory frameworks in both countries were strikingly similar. The agenda for each was set in part by political and public pressures – in Canada following the collapse of two banks, and in Ireland in the wake of public disquiet over various financial scandals involving banks.<sup>70</sup> Each of the new regulators were either a new creation (i.e. the FR in 2003) or a merger of several regulatory bodies into one institution (i.e. OSFI in 1987). In both the OSFI and FR there was extensive and organisational restructuring to try and implement the supervisory frameworks under the various regimes. In the FR, there was a clear shift in the deployment of resources between different areas of its responsibilities (away from prudential regulation to conduct of business regulation). Honohan (2010) noted that while prudential supervision accounted for an increasing share of overall resource allocation within the FR over the period 2004-08, the proportion allocated to banking supervision actually declined over the period, reflecting the stronger growth of prudential resources applied to other responsibilities such as insurance and reinsurance and conduct of business regulation. As Viñals and Fiechter (2010) note, a critical element of effective supervision is the “ability” to supervise, which requires appropriate resources - it is generally felt now that the total number of supervisory staff allocated to

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<sup>68</sup> Although OSFI did not set a liquidity ratio, there was a strong emphasis on prudent stress-testing and contingency planning.

<sup>69</sup> These primarily consisted of cash and government securities.

<sup>70</sup> The “Implementation Advisory Group on the establishment of a Single Regulatory Authority” published a report (herein called the McDowell Report) in 1999 that argued for regulatory reform.

the supervision of the 80-odd credit institutions in Ireland was inadequate. The OSFI, on the other hand was sufficiently staffed (OSFI 2014b).

One key difference between both regimes was the risk based capital adequacy approach. The regulation of capital and liquidity in both countries was mainly found in international requirements stipulated via the Basel Accords. In Ireland these took the form of EU directives and regulations. Similarly the OSFI's capital requirements were based on the Basel Accords. Although, importantly, the OSFI adopted capital adequacy standards for Canadian banks that not only met, but *exceeded* the minimum capital standards required under the various Basel accords. Capital requirements for Canadian banks were higher than international minimum standards and actual capital ratios pre crisis were higher than many of their international peers. The OSFI also held a particular focus on leverage and Canadian banks were subject to a leverage ratio that helped to restrict unsustainable growth of Canadian Banks balance sheets in the lead up to the crisis – a regulatory requirement Irish banks were not subject to.

Another key area of difference between the frameworks was the criteria for assessing risks. The OSFI's objectives were relatively focused, ensuring, to a reasonable degree, the financial soundness of financial institutions in a competitive market place. The OSFI's mandate did not include market conduct, ensuring public access to financial services, nor the development of the financial sector, avoiding the potential of conflicts with prudential considerations or a diversion of resources away from an emphasis on a safe and sound financial system. However in the FR's case, the statutory objectives were wider; as well as ensuring financial soundness, its objectives were also consumer protection and promoting consumer understanding. Having a narrow and clearly focused mandate assigned to the OSFI meant there was less potential for confusion regarding its roles and responsibilities. Whelan (2013 p.12) highlights how the FR had also been tasked during this period with promoting Ireland's financial services industry and presentations from this period to international investors highlighted the "user-friendly" nature of the regulatory and supervisory approach. This broader set of objectives inevitably provided a greater degree of complexity to the FR's regulatory structure in comparison with the OSFI.

The operation of the regulatory frameworks in both institutions was strongly linked to a stated philosophy of PBR. The FR and the OSFI were both clear in their belief that the

integrity of a PBR regulatory regimes rested on the “ethical behaviour” and “transparency in business dealings” of Board members at banks (p.9). As Black (2008) notes, PBR relies on a strong relationship between regulator and regulate, with banks willing to go beyond minimum criteria required by the regulatory requirements, and regulators setting clear and concise outcomes. However, in practice the PBR regime of both countries was quite different. The Canadian Supervisory Framework was supported by the OSFI’s Guides to Intervention, and further complemented by the 2003 Corporate Governance Guideline, which focused on two fundamental components of corporate governance: the role of the Board of Directors (Board); and risk governance. The Supervisory Framework and the Guides to Intervention were intended to guide supervisors’ work. The regime in place meant that supervisors were expected to tailor the intensity of their supervisory work, allocation of resources, as well as their intervention actions, to an institution’s nature, size, complexity and risks as well as the potential consequences of its failure. This approach aided effective allocation of staff resources, and sufficient staff resources were in place to ensure this process worked effectively (OSFI 2013).

This was the most fundamental flaw with the PBR regulatory regime in Ireland—Despite the stated principles by the FR, as noted by Honohan, (2010b p.46), these nine principles were not the focus of any systematic checks, either desktop or on inspection; and unlike the FR’s principles for the protection of consumers (established within the Consumer Protection Code), they were never incorporated into a unitary Code - although there were stated principles – they were not subject to official checks. Hence breaches of the stated principles for financial institutions were not subject to any potential Administrative Sanctions Procedure.<sup>71</sup> The FR’s enforcement strategy relied mainly on moral suasion and placed considerable reliance on the boards of bank fiduciary duties to its shareholders. The Canadian PBR approach, however, was buttressed with the use of supervisory guidelines that established risk management principles that ensured banks management had effective risk management practices to ensure adherence to principles.

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<sup>71</sup> In October 2005 statutory guidelines to the Administrative Sanctions Procedure were issued. These guidelines were issued for staff of the FR on the detail in the 2004 Act on how the Administrative Sanctions Procedure were to be operated. Actions that could have been taken ranged from no action, to administrations sanctions settlements to criminal prosecution. See Outline of the Administrative Sanctions Procedure 2005 (FR 2005b) for a full discussion.

### **6.3.2 Rules / requirements guarding against the occurrence of a housing bubble**

This section discusses how the Canadian government actively encouraged the stability of the financial sector through the key role of government-backed Mortgage Insurance (MI). The Bank of International Settlements (BIS) defines MI as a credit risk mitigant that protects mortgage lenders (originators, and/or underwriters) by transferring mortgage risk from lenders to insurers for high-LTV mortgages (BIS 2013). This in turn increases the availability of mortgages to purchasers that are creditworthy and have the capacity to service a loan, but lack the deposit to meet a high LTV threshold. It also protects the lender in the event of default.

The Canadian Government was actively involved in the housing market through the Canada Mortgage and Housing Corporation (CMHC). An important feature of the Canadian domestic house finance system was that banks had to insure against default when the LTV of a mortgage exceeded 80 percent. The majority of insurance was issued by one of two private firms or the government-backed CMHC. The Canadian Government guaranteed 90 percent of the MI obligation of the two private insurers and 100 percent of obligations of the CMHC.<sup>72</sup> From a regulatory perspective, Canadian banks could not underwrite mortgages with an LTV greater than 95 percent in order to qualify for MI, borrowers could not have a gross debt service-to-income ratio<sup>73</sup> greater than 32 percent and total debt service<sup>74</sup> could not exceed 40 percent of gross household income (FSB 2012). The lender purchased insurance on mortgage loans, passing the cost on to the borrower either as an upfront fee or as an add-on to the mortgage principal. While MI was mandatory in Canada on high LTV loans, there was also an indirect incentive for banks to insure loans below the 80 percent LTV threshold as insured mortgage loans carried lower risk weights than uninsured loans (BIS 2013).

Uninsured mortgages with an LTV less than 80 percent had a capital risk weight of 35 percent. However CMHC-insured mortgages maintained a capital risk weight of zero, and mortgages insured by private insurers had a slightly higher risk weight (5 percent in

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<sup>72</sup> See Kiff *et al* (2009, pp. 53-56), who provide a detailed overview of the CMHC.

<sup>73</sup> The CMHC insisted that monthly housing costs shouldn't be more than 32 percent of gross monthly income. Housing costs include monthly mortgage payments (principal and interest), property taxes and heating expenses. This is known as PITH for short — Principal, Interest, Taxes and Heating.

<sup>74</sup> The CMHC defined Total debt service as ones entire monthly debt load should not be more than 40 percent of your gross monthly income. One's entire monthly debt load includes your housing costs plus all your other debt payments (car loans or leases, credit card payments, lines of credit payments, etc.).

the case of Genworth, the main private insurer in Canada, given the 90 percent government guarantee for private investors (BIS 2013).

The Canadian government in turn had the power to influence mortgage lending standards through the rules governing MI. Many commenters (see IMF 2011a; Power 2014) have argued that the use of MI in Canada meant that from the perspective of the lending institutions, the insurers and the regulators, underwriting criteria were stricter and more prudent than they would have been without it. MI ensured that there was oversight over the mortgage-lending process at all stages and lending based on low or vulnerable affordability metrics was avoided. In Ireland, Mas and MacDonnell (2014) note that based on figures provided by the largest mortgage insurer operating in Ireland between 2001 and 2011, approximately 70,000 high LTV loans taken out with some of the main Irish lenders have been insured with MI, and over €70 million of claims have been paid out to these lenders. This number represents only about 5.5 percent of the overall number of residential mortgages originated in Ireland during this period. If these figures are extrapolated based on a universal MI model, it is estimated that lenders' losses on high LTV mortgages could have been reduced by around €300 million in the form of claims payments in the period between 2009 and 2014. There are several reasons identified by the CBI (2015b) in explaining why the use of MI, through private providers, never really took off in the Irish mortgage market in the year's preceding the crisis. Concerns raised by mortgage providers included the cost of such insurance to the borrower, the large counterparty risk a lender would have to take on in the absence of a government scheme in the Irish market, and the difficulty in claiming against these policies. Lenders felt that it would be more efficient to mitigate the risk of higher LTV loans through pricing than to insure against it (Hallissey 2015)

These rules were relaxed by the CMHC during the 2000s, which made high LTV mortgages more affordable and supported the strong growth in mortgage credit that had begun in Canada from the late 1990s onwards (IMF 2014). Measures relaxed included a broadening of the eligible sources of funds for the minimum down payment; increasing the maximum LTV ratio that triggered mandatory insurance to 80 percent, and increasing the maximum LTV ratio for any new government backed insured loans to 100 percent for good-quality borrowers; increasing the maximum amortisation period from 25 to 40 years; and providing insurance on interest-only mortgages and on mortgages to the self-employed. Together with lower interest rates, these measures

boosted mortgage credit and housing prices. However, as house prices and mortgage credit surged, the government's focus changed to containing the growth of imbalances in the housing market and rolled back some of these relaxations of requirements after 2007 to cool an overheating housing market. Since late 2007, four rounds of measures to tighten MI rules were undertaken by the Canadian Government to reverse the loosening of criteria in the mid-2000s. Key measures included: (i) reducing the maximum amortisation periods back to 25 years; (ii) imposing a 5 percent minimum down payment; (iii) introducing a maximum total debt service ratio of 44 percent; (iv) tightening LTV ratios on refinancing loans and on loans to purchase properties not occupied by the owner.<sup>75</sup>

The Canadian government policy also influenced the housing market indirectly via minor 'tax relief' to support private home ownership. Some of the main measures included a partial refund of the federal "Goods and Services Tax" (GST) on the purchase price (or cost of building) of a new house or of a substantially renovated house and the Home Buyers' Plan (HBP), which allowed first-time home buyers to withdraw up to CDS\$20,000 from their Registered Retirement Saving Plans (RRSPs) without income taxation on these withdrawals (Tractlet 2006). Housing was treated as a consumer good when used for owner-occupancy purposes in Canada: there was no taxation on capitals gain in the case of a principal residence sale. But no tax on imputed rental income, and property taxes and mortgage interest payments were not deductible from income. The government did not provide upfront subsidies to first-time or other buyers, subsidies to buyers through savings account contributions or through preferential fees, or subsidies to selected groups, such as low-and middle-income buyers. In Ireland, mortgage interest payments were deductible for tax purposes, and as Honohan (2010) notes, by 2006 Ireland was one of only four OECD countries which allowed income mortgage interest tax deductibility while not taxing imputed rental income or capital gains for owner-occupiers. Ireland also had no property tax. The reduced demand for longer-term mortgages in Canada due to the lack of mortgage interest deductibility, as well as the prevalence of deposit financing over more expensive wholesale funding made banks reluctant to offer longer maturities, which reinforced stability and indirectly enforced sound funding practices (IMF 2009a, p.15). The next section tracks the pre-crisis balance sheet fundamentals of Canadian banks and

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<sup>75</sup> See Fortin, M. (2014) for further detail.

compares them to a subset of their peers, establishing which fundamentals contributed to the resilience of Canadian banks during the crisis, with particular reference to Ireland.

#### **6.4 Risk-based Prudential Regulation**

This section seeks to understand the key sources of Canada's banks' resilience to the GFC. These sources of resilience would be useful for countries, such as Ireland, seeking to learn from Canada's experience. This chapter reviews the pre-crisis fundamentals of Canadian banks and compares them to a subset of their international peers to establish which fundamentals contributed to the resilience. The impact of four balance sheet fundamentals, previously highlighted in Section 6.3 as areas of regulatory strength are focused on – capital, liquidity, leverage and funding.

##### ***6.4.1 Sample Selection***

This section will compare the performance of the top three retail banks by asset size in Canada against the top three banks in Ireland, the UK, the US and Spain for the end of 2006 to capture conditions prior to the start of the GFC in mid-2007 (see Table 6.1 for a list of the relevant banks). Our focus on lessons for Ireland justifies our selection: The UK is a major trade and financial partner for Ireland and has been one of the major financial centres at the centre of the turmoil. The Spanish banking system, as outlined in Chapter 5, shares remarkable similarities with the Irish banking system, as beginning in 1990, each had fast-growth economies, credit booms with large increases in mortgage lending, and rapid housing price increases (in real and nominal terms, and relative to income per person). The US is included as one of the countries at the epicentre of the GFC and as Canada's most important trade and financial partner; it bears directly on this discussion.

Bank-level financial data was obtained from Bloomberg, which provides data that is presented in a standardised format, after adjusting for differences in accounting and reporting standards across countries. Consolidated statements were used as much as possible to reflect the overall capital, liquidity leverage and funding positions of the individual banks. Remaining data gaps were filled using banks' annual reports.

**Table 6.1: Sample of banks**

| Bank                                   | Country | Asset Size €m | Share price decline<br>January<br>2007–January<br>2009 |
|--|---------|---------------|--|
| Citigroup Inc                          | USA     | 1,430,762,657 | 93.6   |
| Bank of America Corporation            | USA     | 1,108,378,304 | 87.5   |
| JP Morgan Chase & Co.                  | USA     | 1,026,209,136 | 49.9   |
| Barclays Plc                           | UK      | 1,485,729,593 | 85.3   |
| HSBC Holdings Plc                      | UK      | 1,412,873,549 | 41.3   |
| Royal Bank of Scotland Group Plc (The) | UK      | 1,298,885,630 | 96.1   |
| Banco Santander SA                     | Spain   | 833,872,688   | 53.5   |
| Banco Bilbao Vizcaya Argentaria SA     | Spain   | 411,916,313   | 61.5   |
| Banco Espanol de Crédito SA, BANESTO   | Spain   | 105,347,602   | 62.7   |
| Bank of Ireland                        | Ireland | 188,813,000   | 96.2   |
| Allied Irish Banks plc                 | Ireland | 158,526,000   | 94.5   |
| Permanent TSB                          | Ireland | 76,136        |  |
| Royal Bank of Canada RBC               | Canada  | 370,197,605   | 44.3   |
| Toronto Dominion Bank                  | Canada  | 269,568,950   | 43.0   |
| Bank of Nova Scotia (The) - SCOTIABANK | Canada  | 259,194,870   | 41.5   |

Source: Bloomberg and author's own calculations

#### **6.4.2 Assessing Pre-Crisis Bank Conditions**

The choice of measures to assess banks' pre-crisis condition is guided by the previously highlighted key factors in Section 6.3 – capital, liquidity, leverage and funding. The impact of these ex-ante fundamentals on bank performance during the crisis is assessed by establishing share price decline from January 2007 to January 2009. As noted by Ratnotvsky and Huang (2009), share price decline is appropriate as it is a summary measure of value destruction resulting from credit losses, write down on securities, and dilution from new equity issuances, including government capital injections. Individual variables reflecting pre-crisis conditions are constructed as follows (these variables are also lined out in Appendix F.2)

*Capitalisation:* Capital ratios are considered prior to the GFC. Capital ratios are one of the main indicators of a bank's solvency and indicate the ability of a bank to meet its

long-term debts. Deterioration in capital levels affects the amount of reserves (i.e. capital) that banks must set aside in the event of loss. As noted in Chapter 2 and 4, regulatory capital plays an important role in providing adequate buffers for banks since it is the last line of defence against losses. A bank holding insufficient capital will not have sufficient buffers – liabilities will quickly exceed assets, rendering banks insolvent. As with previous studies (see for example Ötoker-Robe and Podpiera 2010, Arjani and Paulin 2013) this chapter uses Tier I regulatory capital to measure capital adequacy. Tier I capital ratio consists of several capital components (shareholders' capital, reserves, and hybrid capital to certain limits) divided by risk-weighted assets. Table 6.2 compares the capital ratios of each bank. A second ratio used is the total equity over total assets ratio. This leverage-based measure is not risk weighted and does not consider off-balance sheet exposures, nonetheless is suitable for comparison across countries (see for example studies, such as Ratnovski and Huang (2009, p.6) use the equity to asset ratio to establish a bank's overall financial strength and a test of the soundness of the capital structure of a bank.) A higher equity ratio (i.e. a higher contribution of shareholders to capital) indicates a company's better long-term solvency position. A low equity ratio, on the contrary, suggests higher risk to the creditors.

**Table 6.2: Capital ratios as at 31 December 2006**

| Bank Name                              | Country | Total Equity/<br>Total Assets % | Tier 1 capital ratio % | Share Price decline January 2007–January 2009 |
|--|---------|---------------------------------|------------------------|---|
| Barclays Plc                           | UK      | 2.75                            | 7.7                    | 85.3  |
| Permanent TSB                          | Ireland | 3.15                            | 10.40                  |   |
| Bank of Ireland                        | Ireland | 3.22                            | 7.5                    | 96.2  |
| Banco Espanol de Crédito SA, BANESTO   | Spain   | 4.15                            | 7.4                    | 62.7  |
| Royal Bank of Canada RBC               | Canada  | 4.45                            | 9.6                    | 44.3  |
| Bank of Nova Scotia (The) - SCOTIABANK | Canada  | 4.74                            | 10.2                   | 41.5  |
| Royal Bank of Scotland Group Plc (The) | UK      | 5.22                            | 7.5                    | 96.1  |
| Banco Bilbao Vizcaya Argentaria SA     | Spain   | 5.42                            | 7.8                    | 61.5  |
| Banco Santander SA                     | Spain   | 5.65                            | 7.42                   | 53.5  |
| Toronto Dominion Bank                  | Canada  | 5.84                            | 12                     | 43.0  |
| HSBC Holdings Plc                      | UK      | 6.18                            | 9.4                    | 41.3  |
| Allied Irish Banks plc                 | Ireland | 6.25                            | 8.2                    | 94.5  |
| Citigroup Inc                          | USA     | 6.36                            | 8.59                   | 93.6  |
| JP Morgan Chase & Co.                  | USA     | 8.57                            | 8.7                    | 49.9  |
| Bank of America Corporation            | USA     | 9.27                            | 8.64                   | 87.5  |

Source: Bloomberg and author's own calculations

*Liquidity:* Banks and bank analysts monitor LTD ratios, i.e., the bank's total loans divided by its total deposits expressed as a percentage, as a general measure of liquidity. This ratio relates loans (as the least liquid of assets) to deposits (as the primary source of funds). A high ratio indicates illiquidity; because if a bank is fully 'loaned-up' relative to its stable funding (i.e. deposits) then new loans must be financed with large purchased liabilities. A low ratio suggests that a bank has additional liquidity, as new loans can be financed with existing deposits. More specifically, the LTD ratio provides a broad structural characterisation of a bank's main funding risks. Given that customers deposits are a largely stable funding source, those banks that finance most, or all of their credit from deposits should, *ceteris paribus*, be less exposed to liquidity risk (Bonfim &

Kim 2011). The second liquidity ratio used is the deposit to asset ratio. More stable financial institutions, (*ceteris paribus*) tend to have higher deposit-to-asset ratios and lower loan-to-deposit ratios (IMF 2013).

**Table 6.3: Liquidity ratios as at 31 December 2006**

| Bank Name                              | Country | Banks' loan to deposit % | Banks Deposits/ Assets % | Share Price decline January 2007– January 2009 % |
|--|---------|--------------------------|--------------------------|--|
| Permanent TSB                          | Ireland | 204.2                    | 38.04                    |  |
| Banco Santander SA                     | Spain   | 176.3                    | 34.08                    | 53.5   |
| Bank of Ireland                        | Ireland | 164.6                    | 38.04                    | 96.2   |
| Allied Irish Banks plc                 | Ireland | 144.0                    | 47.23                    | 94.5   |
| Banco Espanol de Crédito SA, BANESTO   | Spain   | 139.2                    | 42.18                    | 62.7   |
| Banco Bilbao Vizcaya Argentaria SA     | Spain   | 137.0                    | 46.70                    | 61.5   |
| Royal Bank of Scotland Group Plc (The) | UK      | 127.4                    | 25.76                    | 96.1   |
| Barclays Plc                           | UK      | 111.2                    | 25.76                    | 85.3   |
| Bank of America Corporation            | USA     | 101.9                    | 47.51                    | 87.5   |
| Citigroup Inc                          | USA     | 101.6                    | 37.79                    | 93.6   |
| HSBC Holdings Plc                      | UK      | 98.3                     | 48.20                    | 41.3   |
| Bank of Nova Scotia (The) - SCOTIABANK | Canada  | 77.8                     | 69.63                    | 41.5   |
| JP Morgan Chase & Co.                  | USA     | 75.6                     | 47.26                    | 49.9   |
| Toronto Dominion Bank                  | Canada  | 62.1                     | 66.40                    | 43.0   |
| Royal Bank of Canada RBC               | Canada  | 61.1                     | 64.00                    | 44.3   |

Source: Bloomberg and author calculations

*Leverage:* The long term debt to equity ratio is used to determine a company's leverage. The ratio is calculated by taking the company's long-term debt and dividing it by the total value of its preferred and common stock. The greater a company's leverage, the higher the debt to equity ratio. Generally, companies with higher ratios are perceived to be more risky because they have more liabilities and less equity. A further measure of

leverage is total equity as a function of total assets, reflecting the fact that a lower equity-to-asset ratio means higher leverage, which generally makes the bank less resilient to shocks (such as a sudden decline in the value of the bank's assets).

**Table 6.4: Leverage ratios as at 31 December 2006**

| <b>Bank Name</b>                       | <b>Country</b> | <b>Bank's Equity/ Assets</b> | <b>Banks' Long-Term Debt/ Equity</b> | <b>Share Price decline January 2007– January 2009</b> |
|--|----------------|------------------------------|--------------------------------------|---|
| Citigroup Inc                          | USA            | 6.4                          | 208.69                               | 93.56   |
| Bank of America Corporation            | USA            | 9.3                          | 95.22                                | 87.49   |
| JP Morgan Chase & Co.                  | USA            | 8.6                          | 139.75                               | 49.91   |
| Barclays Plc                           | UK             | 2.7                          | 156.31                               | 85.28   |
| HSBC Holdings Plc                      | UK             | 6.2                          | 123.31                               | 41.27   |
| Royal Bank of Scotland Group Plc (The) | UK             | 5.2                          | 205.94                               | 96.15   |
| Banco Santander SA                     | Spain          | 5.6                          | 463.65                               | 53.54   |
| Banco Bilbao Vizcaya Argentaria SA     | Spain          | 5.4                          | 457.32                               | 61.52   |
| Banco Espanol de Crédito SA, BANESTO   | Spain          | 4.2                          | 449.87                               | 62.70   |
| Bank of Ireland                        | Ireland        | 3.2                          | 827.89                               | 96.21   |
| Allied Irish Banks plc                 | Ireland        | 6.3                          | 175.49                               | 94.49   |
| Permanent TSB                          | Ireland        | 3.1                          | 986.07                               |   |
| Royal Bank of Canada RBC               | Canada         | 4.5                          | 36.76                                | 44.30   |
| Toronto Dominion Bank                  | Canada         | 5.8                          | 33.96                                | 43.05   |
| Bank of Nova Scotia (The) - SCOTIABANK | Canada         | 4.7                          | 16.80                                | 41.55   |

Source: Bankscope and author calculations

*Funding:* Funding structures matter for financial stability because a healthy funding structure lowers the probability that a bank will fall into distress (Oura et al. 2013). This chapter uses three different characteristics of bank funding: First, the loan-to-deposit (LTD) ratio roughly corresponds to a wholesale funding ratio, because it measures the deposit funding gap to be filled by debt (or equity). More specifically, the ratio between

credit granted (loans) and deposits taken provides a broad structural characterisation of a bank's main funding risks. Given that customers deposits are a broadly stable funding source, those banks that finance most or all of their credit with deposits should, all else being equal, be less exposed to liquidity risk. In contrast, banks that show a large funding gap, i.e., a very high loan-to-deposit ratio, will be more exposed. Second, the short-term debt funding ratio is the share of debt expiring within the year, as a share of total bank debt. The ratio is formulated as the ratio of banks' short-term funding to total funding. The numerator is taken from Bloomberg and is designed to capture all non-deposit funding liabilities expiring within one year. The denominator is compiled using Bloomberg data, and is calculated as the sum of total customer deposits, short-term funding and long-term funding. A third ratio is the total deposit to asset ratio which highlights a bank's dependence on deposits and potential funding gaps. Where there are not sufficient deposits to cover credit extension, banks will engage in more expensive wholesale funding.

**Table 6.5: Funding ratios as at 31 December 2006**

| <b>Bank Name</b>                       | <b>Country</b> | <b>Banks' loan to deposit</b> | <b>Bank's Short-Term debt/Total Debt</b> | <b>Banks' Deposits/Assets</b> | <b>Share Price decline January 2007–January 2009</b> |
|--|----------------|-------------------------------|--|-------------------------------|--|
| Permanent TSB                          | Ireland        | 204.2                         | NA                                       | 38.04                         |  |
| Citigroup Inc                          | USA            | 101.6                         | 35.62                                    | 37.79                         | 93.6   |
| Bank of America Corporation            | USA            | 101.9                         | 35.05                                    | 47.51                         | 87.5   |
| Allied Irish Banks plc                 | Ireland        | 144.0                         | 34.83                                    | 47.23                         | 94.5   |
| Royal Bank of Scotland Group Plc (The) | UK             | 127.4                         | 27.04                                    | 25.76                         | 96.1   |
| Bank of Ireland                        | Ireland        | 164.6                         | 23.53                                    | 38.04                         | 96.2   |
| HSBC Holdings Plc                      | UK             | 98.3                          | 18.60                                    | 48.20                         | 41.3   |
| Barclays Plc                           | UK             | 111.2                         | 16.93                                    | 25.76                         | 85.3   |
| Banco Bilbao Vizcaya Argentaria SA     | Spain          | 137.0                         | 16.46                                    | 46.70                         | 61.5   |
| Bank of Nova Scotia (The) - SCOTIABANK | Canada         | 77.8                          | 14.93                                    | 69.63                         | 41.5   |
| Toronto Dominion Bank                  | Canada         | 62.1                          | 14.55                                    | 66.40                         | 43.0   |
| Banco Espanol de Crédito SA, BANESTO   | Spain          | 139.2                         | 11.78                                    | 42.18                         | 62.7   |
| Banco Santander SA                     | Spain          | 176.3                         | 8.92                                     | 34.08                         | 53.5   |
| Royal Bank of Canada RBC               | Canada         | 61.1                          | 8.86                                     | 64.00                         | 44.3   |
| JP Morgan Chase & Co.                  | USA            | 75.6                          |  | 47.26                         | 49.9   |

Source: Bloomberg and author calculations

#### ***6.4.3 Main Findings with Respect to Risk-Based Prudential Regulation***

The equity to total asset ratio (also known as the capitalisation ratio) appears to be a good predictor of bank performance during the turmoil; it points to vulnerabilities stemming from low bank capital, such as value decline - many of the lowest-capitalised banks in the sample were affected by a significant equity value decline (Table 6.1). Banks with equity to asset ratios of 4.15 per cent or less at the end of 2006 experienced, on average, a lost equity value of more than 80 per cent (two of which are Irish banks that received capital injections in the form of state aid and liabilities guarantee by the Irish Government). In general, those with higher capitalisation ratios, experienced lesser

declines in equity value. This observation is in keeping with earlier studies, such as Vazquez and Federico (2012), who find that banks with higher equity-to-asset ratios before the 2008–09 crisis had lower crisis failure probabilities. In short, a high level of capitalisation of itself did not ensure financial survival.<sup>76</sup> Looking at the higher capitalisation ratios of Allied Irish Bank (AIB) (recapitalised and provided with an asset guarantee), Citigroup (recapitalised and received an asset guarantee) and Bank of America (a bank that received capital injection in the form of State aid and asset guarantees via government intervention), we can see there was over a 90 percent drop in share price. This would indicate that of the sample of banks examined here, a number were highly capitalised before the crisis, but exhausted capital buffers quickly. Although low capitalisation is a clear handicap, a number of banks in different countries (including Ireland) experienced significant distress despite being relatively highly capitalised and interestingly, the difference in the pre-crisis regulatory capital levels between institutions that experienced high and low levels of piece equity loss is negligible, and the ratios would appear to lend support to regulatory reform efforts aimed at improving the quality and reliability of this ratio as an indicator of bank soundness discussed in the next section. Although it is not interpreted that regulatory capital does not matter for bank soundness, but rather that improvements in the quality and quantity of the Basel capital ratio appear are warranted. It is clear from the sample banks that, even a relatively high share of customer deposit funding could not have remedied banks' exposures to significant losses on bad assets.

The empirical analysis shows that the Canadian banks had very diverse funding structures when compared to their international peers prior to the GFC. The LTD ratio reflects a bank's dependence on funding over and above its deposit base as a measure of funding structure. The reliance of banks on wholesale funding (a higher loan to-deposit ratio), short-term wholesale funding combined with excessive leverage (higher long term debt to equity ratios), all positively related to higher equity price declines. Canadian banks had lower LTD ratios and lower levels of short term funding and long-term funding than their peers. AIB, BOI and PTSB were three of the most vulnerable banks in the sample, all displayed much higher LTD ratios, but also higher short and long term funding ratios than their Canadian peers. The overall LTD ratio appears a stronger predictor of resilience to the turmoil than the capital ratio. The results suggest that high LTD ratios were an important predictor because they had a negative impact on

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<sup>76</sup> This observation is supported in studies by Bordeleau *et al* (2009) and Poghosyan and Čihák (2009).

performance of share price and increased the likelihood of receiving government assistance. One reason Canadian banks appear to have healthier LTD and funding ratios is that their retail funding supply and retail loan demand were well-matched and reduced the banks' need to engage in excessive wholesale borrowing (Northcott 2009). The performance of Irish banks revealed the risks to financial stability arising from banks reliance on certain types of wholesale funding. More equity and less debt (in particular less short term debt), lower loan to deposit ratios, and more diversified funding structures improve banks stability. The Canadian banks relied more on deposits (i.e. lower loan to deposit ratios) and less on debt, resulting in lower funding gaps (reflected in the lower loan-to-deposit ratios), all of which are desirable features for a more resilient bank. Results clearly indicate that funding played a key role in determining banks' default risk. This suggests that the weaker deposit base of Irish banks, in comparison to Canadian banks, negatively affected the likelihood of banks' failure. In particular, a higher level of LTD ratio appears to have increased significantly a bank's chance of failure either (reflected via equity price value decrease). This would highlight the benefits of the seemingly more balanced funding structure of Canadian banks.

Analysis indicates that the effective freeze on wholesale funding in the aftermath of the GFC inflicted greater financial distress on banks that relied heavily on wholesale financing than those banks mostly financed by retail deposits. A large proportion of short-term borrowings and other purchased funds represent liquidity risk, because this kind of 'mobile' money is very sensitive to interest rates and the perceived credit risk of the borrower. This funding is usually the first to dry up at the slightest appearance of financial difficulty. In this sample, the Canadian banks are clear outliers and customer deposits represented a high percentage of total funding. The reliance of Irish banks on short-term wholesale funding combined with excessive leverage has been extensively documented as a key factor in the Irish banking crisis. (Honohan 2010b; Regling and Watson 2010; Nyberg 2011; Vazquez and Federico 2012). In 1999, Irish customer deposits provided just 45 per cent of domestic bank funding; by 2008, this had dropped to 22 per cent, and heavy foreign borrowing by Irish banks filled this shortfall (Connor *et al* 2010). As Kelly (2009b) notes, the business model of Irish banks in the lead up to the Irish banking crisis consisted of "borrowing heavily in wholesale markets to lend in Irish property markets" (p.19). In our sample, the Canadian banks are clear outliers to Irish practices with customer deposits representing a high percentage of total funding.

Canadian banks did not have high levels of wholesale funding or highly leveraged balance sheets before the crisis. These facts contributed positively to the better performance of Canadian banks during the crisis. The results support the view that overall, the Canadian banking-sector stability was based on stable, deposit based funding that was diversified, and involved less leverage. The limited mismatch between loans and deposits, which reduced the need for wholesale funding, was key—a finding that is in line with the literature on this topic (see for example IMF 2013). More specifically:

- Better capitalisation (a higher equity-to-asset ratio) contributes to bank stability, although for the systemically important banks in this sample, the effect of better capitalisation is less obvious.
- Higher reliance on wholesale funding (a higher loan-to-deposit ratio), is linked to higher bank distress (in the form of equity price decline), and suggests that banks need to seek a balanced funding mix.
- Canadian banks, (holding all else constant) tended to have higher deposit-to-asset ratios and lower loan-to-deposit ratios

The analysis shows that Canadian banks relied more on equity, had higher Tier 1 capital ratios and less debt (especially short-term debt) and more deposit based funding structures (displaying lower loan-to-deposit ratios). This would suggest that adequate capital buffers reduce a bank's probability of default and support financial stability. The new Basel III capital regulations that aim to raise the quantity and quality of capital should continue to be a mainstay of the reform efforts. Liquidity regulations will also play a role by reducing banks' over-reliance on less stable short-term wholesale funding, which has proven detrimental to financial stability.

Our analysis concludes by focusing on the major Canadian banks in the context of the results above. We find that Canadian banks stood out among their global peers in terms of their pre-crisis funding model and balance-sheet liquidity, as measured by this study. This analysis is not an exhaustive list of factors contributing to Canadian banks performance during the crisis. Rather, it has highlighted some common characteristics identified in the pre-crisis balance sheet of Canadian banks that fared better during the crisis against those that did not. It is acknowledged that banks' performance during the crisis would also have been influenced by other firm-specific characteristics not

explicitly captured in the analysis, as well as by different structural, legal and regulatory characteristics applying to each jurisdiction that may not be reflected in our key measured variables. The next section presents a discussion of the lessons and policy implications arising from the Canadian bank performance and regulatory experience

## **6.5 Canadian Bank Performance and Regulation – Lessons from the Financial Crisis**

This section presents a discussion of the lessons and policy implications arising from the Canadian bank performance and regulatory experience. These transferable regulatory reform and other lessons are in turn placed in the context of relevant banking or financial reforms in Ireland or the EU since the GFC to date, as well as forthcoming Basel III and European Banking Union reforms.

### **Measures for a conservative housing market**

Future policy reform will need to encourage a more conservative housing mortgage market framework. The success of the Canadian example suggests that proportionate loan-to-value (LTV) and loan-to-income (LTI) limits on Irish mortgages present a number of options to consider for policy makers to create a conservative mortgage market. Such policies include: a ban on mortgages with an LTV exceeding a certain prudent level, a prohibition on lending products such as 100 percent LTV mortgages, and quantitative limitations on lending to sectors such as the property sector. By lowering the LTV limit of mortgages during housing price boom periods and increasing the limit once house prices become depressed, the utilisation of LTV ratios can prove a useful countercyclical tool to policy makers.

The Canadian example also supports the creation of a universal MI model in Ireland. The introduction of a mandatory requirement for all lenders providing high-LTV mortgages to put MI in place could benefit the economy in two ways. First, it would force financial institutions to insure the portion of the high-LTV mortgage above a certain level, such as 75 percent. This would mean that financial institutions would not have to hold expensive capital and thereby would be in a position to offer lower interest rates to borrowers—a helpful feature to the current project of rebuilding a functioning property, construction, and mortgage sector (Government of Ireland 2014). Second, it would give the insurer a role in assessing the mortgage credit, thereby creating better oversight and higher lending standards enforced through the higher level of oversight.

## **Measures for the design and implementation of capital, liquidity, funding, and leverage financial regulation**

Banks and supervisors should engage in stronger monitoring of both the quantity and quality of banks' capital, liquidity, and funding model management. All were important elements of the Canadian success story, which shows that sound balance sheet fundamentals are essential elements that allow banks to weather financial crises.

- 1) *Capital: increase minimum capital requirements and capital quality.* Future policy needs to ensure more vigorous capital management by banks. The Canadian example reveals the importance of a focus on the quality and quantity of capital. While Basel II required Tier 1 and total capital ratios of 4 percent and 8 percent respectively, Canadian banks were required by the OSFI to hold 7 percent and 10 percent respectively. As common equity is permanent and absorbs losses, the OSFI required that it was the predominant component of Tier 1 capital. Given that it can be more difficult and expensive to raise common equity during economic downturns, the OSFI's pre-turmoil requirement that common equity was 75 percent or more of Tier 1 capital ensured better quality capital for Canadian banks leading into the GFC.
- 2) *Liquidity: tighten liquidity management.* Canadian banks were clear outliers, displaying healthier LTD ratios than their peers and financing new loans with stable deposits. Retail funding supply and retail loan demand were well matched and reduced the banks' need to engage in excessive wholesale borrowing. Canadian banks were unusual among OECD banks in the share of depositary funding to total assets that they maintained heading into the crisis. Although the OSFI did not have a set minimum liquidity ratio, retail deposits had traditionally driven bank's non-capital funding. The Canadian example has highlighted importance of banks holding a sufficient buffer of "high quality" liquid assets to cover liquidity outflows.
- 3) *Leverage:* Authorities would do well to consider the successful use of a leverage ratio by the Canadian authorities. As part of the capital adequacy regime, Canadian banks have been subject to a regulatory ceiling on the unweighted leverage ratio since 1980s. This ratio was maintained even after the implementation of the risk-adjusted measures under Basel I and II. The leverage ratio was computed as shareholders' equity over total assets and was introduced to ensure a hard minimum capital level, regardless of the structure of risk

weights in bank balance sheets. A leverage ratio could also be an effective means to prevent an inadequate level of capital emerging during economic upturns, when assets are rising quickly.

- 4) *Measures to make regulation less countercyclical*: Canadian banks entered the GFC with higher capital buffers than many of their international peers. While Canadian banks did not have a counter cyclical capital regime in place, the higher capital requirements that banks were required to hold has highlighted the importance of banks having sufficient capital levels heading into an economic crisis. One area that merits further consideration is the potential role for countercyclical capital buffers. The introduction of a counter cyclical capital requirement could help prevent bank failures by placing some limit on over rapid credit expansion and reduce the dangers of market over-reactions during economic downturns. Capital, which is intended to guard against unexpected losses, should be increased during times of economic upturn to create buffers that can, if market pressures allow, be drawn down under more difficult conditions. An important issue to consider would be establish what variable(s) might be used to trigger the need to increase capital. If variables are to be used, credit growth and assets prices should be among those variables receiving consideration.

### **Measures for more effective supervision**

The Canadian example provides one significant insight for the CBI: it must have sufficient supervisory powers, including sanctions, to ensure the compliance of financial institutions with the applicable rules, and financial stability analysis must be more strongly integrated into supervision.

#### **6.5.1 Adequacy of Policy Responses**

The CBI has responded to the effects of the financial crisis in Ireland and this change has been driven at both the domestic and EU level. There has been an array of reforms that have dealt with macro prudential policy aimed at mitigating systemic risks or failures of micro prudential regulation and supervision, too many to discuss within the scope of this chapter. As such, this section focuses exclusively on which elements of the lessons and policy implications arising from the Canadian bank performance and regulatory experience identified in the previous section have appeared in some form under financial sector regulatory reforms to date in Ireland and Europe.

### **6.5.1.1 Domestic reform - Conservative Mortgage Market**

The CBI has taken steps to encourage a more conservative housing mortgage market framework. Two specific steps include:

#### **The introduction of LTV and LTI limits**

In early 2015, following a CBI consultation process (see for example CBI consultation paper 2014), the CBI announced the introduction of new regulations that applies proportionate limits to mortgage lending by mortgage providers in the Irish market. The key objectives of these regulations was to increase the resilience of the banking and household sectors to the property market and to reduce the risk of bank credit and house price spirals from developing in the future (CBI 2015a). The measures introduced by the CBI included proportionate limits for loan to value (LTV) and loan to income (LTI) measurements for both primary dwelling and buy to let mortgages. In summary, the measures set out were:

- Restrict new lending for principal dwelling houses (PDH) above 80 percent LTV to no more than 15 percent of the value of all new PDH loans;
- Restrict new lending for PDHs above 3.5 times LTI to no more than 20 percent of the value of all new PDH loans; and
- Restrict new lending to buy-to-let above 70 percent LTV to no more than 10 percent of the value of all housing loans for investment purposes.

These requirements are similar in nature to the LTV and LTI requirements stipulated by the Canadian government via the CMHC, where Canadian banks could not underwrite mortgages within a certain LTV limit in order to qualify for MI, and borrowers could not have a gross debt service-to-income ratio past a certain set percentage. LTVs impose a deposit requirement by capping the size of mortgage loans relative to the value of the property associated with the loan. The limits on LTI restrict the size of the debt service repayment to a fixed share of household income. Recent IMF research (Jácome and Mitra 2015) points to the usefulness of LTV and LTI limits, in an analysis of recent studies, where LTV and LTI measure were introduced, they were found effective in reducing loan-growth and improving debt-servicing performances of borrowers, although not always in curbing house price growth. The introduction of such limits by the CBI is acknowledgement that these limits can help to create buffers and curb excessive private sector leverage and this helps mitigate the effects of shocks on the

housing sector, and thus on economic and financial stability (IMF, 2013 2014a, and 2014b).

### **Consideration of MI at Government level**

There has been consideration given to the idea of the introduction of a universal MI regime in Ireland, although there have been no actions taken by the CBI to introduce such a model to date; it remains a policy for serious future consideration and research.

- In May 2014, the publication of *Construction 2020* by the Irish government (Government of Ireland, 2014) saw an expressed commitment by the Irish government to consider a universal MI scheme. Action point 51 of *Construction 2020* (see page 51) recommended that consideration be given to the concept of a MI scheme and noted the power of such a scheme to encourage banks to adopt standardised, prudent lending practices, opening up new and lower-cost funding sources for banks. The report also noted that the regulator could change the conditions of such a regime to smooth the business cycle.<sup>77</sup>
- In July 2014, Power presented a research paper which discussed the potential of MI in the Irish market. His research concluded that the creation of a universal MI model could impose a mandatory requirement, or heavily incentivise lenders providing high LTV mortgages to put MI in place. Under such a model, the insurer would have an external role in assessing the mortgage credit, thereby creating better oversight; lenders would not have to hold expensive prudential capital and could offer lower interest costs; higher lending standards would be enforced through the higher level of oversight; the solvency of the financial system would be helped through greater risk diversification (Power 2014, p3)
- As part of a CBI consultation process in 2014 on the introduction of macro-prudential policy for residential mortgage lending, banks were also to consider whether suitably insured mortgages with high LTVs should be exempt from the proposed LTV limits. This exemption was to be considered in light of the trade-off between improving credit underwriting quality that MI would require and protecting lenders from default on the one hand, and against the potential for

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<sup>77</sup> Power (2014) argues that requiring MI helps ensure a more prudent, stable and liquid housing and mortgage market. The most comparable example for Ireland is the UK housing market, in which the state directly insures lenders for the risk in that part of the mortgage between 80-95 percent LTV, with lenders retaining a maximum of 0.75 percent exposure on the loan. This has to date proved very successful in reinvigorating the UK housing market and provides a crucial example for Irish reform. However, the UK Government is carrying some of the risk.

such a scheme to weaken the effectiveness of the macro-prudential measures in achieving the objective of dampening the procyclicality of mortgage lending on the other (Hallissey 2015). As part of the consultation process, a range of views on MI were elicited, with similar numbers agreeing and disagreeing as to whether insured mortgages should be exempted from the LTV measure. The final policy did not provide for an exemption for insured mortgages, as outlined in CBI (2015a). Although it remains a serious consideration for future macro-prudential measures.

- In February 2015 the CBI published an economic letter (Hallissey 2015) that introduced some of the specific features of MI, including regulatory considerations, and its use in other countries. The letter also examined some of the factors that should be taken into consideration in assessing the appropriateness of MI schemes for individual countries, and discusses some of these from an Irish perspective. The economic letter concluded that the experience of other countries (including Canada) highlights that MI can play a role in supporting a well-functioning mortgage market by diversifying risks and bringing in new sources of capital.

From an Irish mortgage market perspective, under a MI model, the insurer would have an external role in assessing the mortgage credit, thereby creating better oversight; lenders would not have to hold expensive prudential capital and could offer lower interest costs; higher lending standards would be enforced through the higher level of oversight; the solvency of the financial system would be helped through greater risk diversification. It remains an area of serious consideration for future research.

#### **6.5.1.2 The restructure of the supervisory architecture**

Irish banking regulation has undergone considerable change since the start of the GFC. Some of the key areas for change pertinent to this study include, the reform of the Irish Central Bank, the creation of the Single Supervisory Mechanism (SSM) at EU level, enhanced powers have been provided to the CBI, new domestic rules including the Corporate Governance Code and Fitness and Probity Standards and the development of a new risk based regulatory framework – PRISIM. These reforms are discussed in turn in the following paragraphs.

## **The Central Bank of Ireland and the Single Supervisory Mechanism**

The Central Bank Reform Act (The Reform Act), 2010, created a new single unitary body, the Central Bank of Ireland (CBI), responsible for both central banking and financial regulation. The new structure replaced the previous complex related entities, the CB and the FR. The CBI maintained sole responsibility for the regulation and supervision of banks operating in Ireland. Then, at an EU level, in 2012, EU heads of States and governments agreed to transfer the responsibility for supervising banks to European level with the establishment of the Single Supervisory Mechanism (SSM). The SSM came into power in November 2014. Under the SSM regime, all supervisory tasks, roles and responsibilities were based on the distinctions between “significant” or “less significant” banks. This distinction, which is reviewed annually, is based on the size of the bank, its importance for the EU or any participating Member State and the extent of its cross-border activities.

Under the SSM regime, the ECB is responsible for the direct supervision of up to 130 significant groups, which represent almost 85% of all banking assets in the euro area and which comprise around 1,200 individual credit institutions (Nouy 2014). Thus, the ECB has been directly supervising the largest European banks, (including Bank of Ireland, AIB, Permanent TSB and Ulster Bank in Ireland), with assistance of the CBI. Daily supervision of the larger banks is conducted by joint supervisory teams (JSTs), mostly made of CBI staff, but always headed by an ECB coordinator based in Frankfurt. Each significant bank has a dedicated JST. Banks that are not considered significant are known as “less significant” institutions. The less significant banks remain under the direct supervision of the ECB appointed National Competent Authority (NCAs). In Ireland, the CBI is the designated NCA. Although, at any time the ECB can decide to directly supervise any one of these banks to ensure that high supervisory standards are applied consistently.

The SSM brings with it many advantages and holds open the prospect of a clear and concise institutional framework, a broader skill set and more diversity of experience that should help insulate supervisors from the pressures – subtle and direct, cultural and political – that come from long-time and close proximity to their regulatory charges and their champions (Elderfield 2013). However there also are some important practical implementation challenges that flow from this new structure. Firstly, the fact that there will be a division of labour between national supervisory authorities and central SSM

staff at the ECB raises practical questions of organisation and decision making. This will need to be implemented with great care, to ensure that no duties fall between “two stools”. Second, it is important that supervisory practices and procedures converge quickly into a common approach. The SSM, has at minimum, 17 supervisors from different cultures to amalgamate together. Developing a common framework for risk assessment, with a common understanding for risk and common approaches to inspection and supervisory reviews, will involve some important early practical design questions. Third, it will be important to develop a common supervisory philosophy and risk appetite. Will the SSM under the ECB be a principles based supervisor, a rules-based one or some judicious mix of the two? It is important to articulate the essential elements of the supervisory approach so that front line staff – and the banks they supervise – have a clear understanding of senior management expectations and risk appetite.

### **Enhanced powers**

The Central Bank (Supervision and Enforcement) Act 2013 (the 2013 Act) substantially strengthened the CBI’s powers and has increased its possible enforcement remedies. The main tool of enforcement used by the CBI under the act is the power to impose significant monetary penalties on regulated firms and also persons concerned in the management of banks. Since the commencement of the 2013 Act, the Central Bank’s powers and range of sanctions have been strengthened significantly. The quantum of the financial penalties which may be imposed on both individuals and firms has increased; to €1 million for individuals and is now up to EUR 10 million or 10 percent of the previous year’s turnover for banks.

### **New domestic rules including the Corporate Governance Code and Fitness and Probity Standards**

Improving corporate governance was high on the revised supervisory agenda of the CBI and was noted as one of the key elements of raising supervisory standards (CBI 2011a). A revised Corporate Governance Code was introduced in 2011 and updated in 2013 (CG Code 2013). The revised Code came into effect on 1 January 2015. Under the Code, the governance structure of each credit institution was required to be “sufficiently sophisticated” to ensure that there was effective oversight of the activities of the institutions, taking into account the nature, scale and complexity of the business being carried out (CG Code 2013). The Code contained specific provisions relating to;

amongst other things, the composition of the Board; the Chairman; CEO and risk appetite of banks. Non-compliance with the Code by banks allowed the CBI the use of its enhanced regulatory powers under the 2013 Act, including the imposition of administrative sanction and prosecution of offences suspension, and the removal or prohibition of an individual from carry out a controlled function. A new Fitness and Probity Regime also came into effect on 1 December 2011 for all regulated financial service providers other than credit unions. This new regime was fully implemented by 1 December 2011 and by the 04 November 2014, the ECB was exclusively the competent authority for the fitness and probity assessments for the management board of significant credit institutions; and the management board of all credit institutions applying for authorisation.

### **A new risk-based regulatory framework – PRISIM**

The OSFI had a very clear, structured and systematic approach to assessing risk under its Supervisory Framework. This meant it had better ways of applying resources to dealing with potential risk within retail banks. Its framework was guided by impact; a higher level of engagement and scrutiny was applied to those banks identified as high impact banks. Following a similar approach, in December 2011 the CBI introduced its risk based supervision regime the Probability Risk and Impact System (PRISM). This risk-based supervision regime was based on the premise that all firms are of varying significance to the economy and that the CBI should focus its resources more on banks that are the most significant to the economy and on the risks that pose the greatest threats to financial stability. Under the PRISIM regime, Irish banks were divided into four categories: high impact, medium-high impact, medium-low impact and low impact, reflecting the level of risk a bank could cause to the financial system. The highest impacted banks were allotted dedicated supervision teams to ensure that the CB maintained a good knowledge of bank's strategy, business model and financials. All banks in the high, medium-high and low categories would have their risks assessed across ten risk categories and the CBI would issue each bank with a report card. Interestingly on review of literature, the only public available material on PRISM is the *PRISM explained* document on the CBI website (CBI 2011b).

The lack of detail on the PRISIM regime, and the regime that was in place prior to PRISIM under the FR, makes it difficult to develop a structured examination of the difference between the regimes. However, it would appear that one key advantage of the

PRISIM regime was that until it was introduced, there was no structured way of determining the amount of supervisory resource to dedicate to particular banks - or indeed the type of engagement the FR should have been carrying out. Under PRISIM for the first time supervisory tasks, roles and responsibilities for the CBI were based on the distinctions between “significant” or “less significant” banks. The PRISM framework provides a structure of both of these aspects of supervision, based on the particular impact and probability metrics of a firm. This was positive step forward for the Irish regime. As noted earlier, since November 2014, the PRISIM regime has now mostly been superseded by the SSM for the supervision of significant institutions and the PRISM regime has now been replaced by the prescriptions of the SSM Supervisory Manual, which is guided by a similar, if not a more, tough and intrusive ethos (Roux 2015). PRISIM prevails for the ‘less significant’ institutions regulated by the CBI.

In summary, as of 2015 much repair has been achieved at the European level. The SSM provides many opportunities, including the opportunity to benchmark and undertake peer comparisons among institutions and thereby improve the tools of supervisory risk assessments. Due to the combination of the ECB and the NCA’s, the SSM is best placed to assess, monitor, and address the risks faced by banks in a timely fashion and should help to improve financial stability in the euro area (Nouy 2014). At a domestic level, during 2014, the CBI Banking Supervision department was reorganised and further strengthened, a significant change was the introduction of increased headcount - approved headcount in the Banking Supervision department was brought up to 140 (Roux 2015). There are now three divisions: one is dedicated to ongoing supervision, one to specialist expertise, and a wholly new third division carries out onsite inspections year round. The CBI is better equipment than ever to carry out supervisory duties.

### **6.5.1.3 International change design and implementation of Capital, Liquidity, Funding, and leverage financial regulation: Basel III**

In 2010, the Basel Committee on Banking Supervision addressed the inadequacies of Basel II and replaced it with a third agreement (Basel III). Basel III forms the basis of the new prudential banking regulatory framework in Europe and enshrined in the fourth capital requirements directive (CRD IV) and the capital requirements regulation (CRR). They have been in force from 1 January 2014. While it is too early to evaluate the full impact of the new Basel requirements initial analysis would appear to suggest that the international regulator/policy agenda is moving in the right direction to make banks

more resilient to future financial shocks. This section examines forthcoming Basel III and European Banking Union reforms (these have also been discussed in Chapter 4). Some of the main areas of change that resonate with the Canadian example include:

- Sufficient levels of bank capital relative to assets was an important focus of the Canadian Regulator and has been recognised as important worldwide. The emphasis on common shares in Tier 1 capital has been seen as having contributed to the resilience of Canadian banks. Both the quantity and quality of capital that banks are required to hold are now increased under Basel III. Whereas up to the end of 2013, banks could operate with as little as 2 percent of capital, they need now at least 4.5 percent of a more tightly defined equity.
- Similarly, the importance of the Canadian use of a leverage ratio has become a focus for the Basel Committee and under the Basel III Accord; banks are now required to maintain a non-risk-based leverage ratio that includes off balance sheet exposures as a way to contain the risk-based capital requirement as well as a build-up of leverage. The leverage ratio is computed as shareholders' equity over total assets (off and on balance sheet) and was introduced to ensure a hard minimum capital level, regardless of the structure of risk weights in bank balance sheets (Vazquez and Federico 2012). The leverage caps banks assets to no more than 33 times Tier 1 capital and ultimately means that banks must raise more capital as they grow their balance sheet. As noted in Chapter 4, while leverage ratios can provide an extra safety net and potentially offer a reliable non-risk-based measure, they will not predict distress in the system on their own. Implementation of leverage ratios costs nothing, due to their simplicity, and they prevent banks from engaging in arbitrage by engaging with products that have leaner credit ratings.
- Basel III also acknowledges the importance of the relationship between banks' funding profiles and their risk of default, reflected in two prudential ratios that entail minimum binding liquidity standards: a Liquidity Coverage Ratio (LCR), aimed at promoting banks' resilience to liquidity risk over the short term, and a Net Stable Funding Ratio (NSFR), aimed at promoting resilience over a one-year horizon. The LCR will work by promoting short-term resilience by ensuring that banks have sufficient high-quality liquid assets (e.g., cash, sovereign debt) to allow them to meet all due net cash outflows over a period of 30 days given a particular stress scenario. The LCR is being phased in between

2015 and 2018 and banks are required to report this ratio to the CBI on a monthly basis. The net stable funding ratio (NSFR) aims to ensure that a bank has sufficient long-term stable funding (over a one year horizon) to support its customer business; it should improve structural asset and liability maturity. In the event of financial stress, an accumulated stock of high-quality liquid assets will help banks to absorb liquidity shocks. The Net Stable Funding Ratio comes into force on 1 January 2018.

- As already noted, while Canadian banks did not have a counter cyclical capital regime in place, the higher capital requirements that banks were required to hold has highlighted the importance of banks having sufficient capital levels heading into an economic crisis. Furthermore the new regulatory framework introduces the possibility for macro-prudential authorities to impose several additional capital requirements, known as capital conservation buffers, to all banks in their jurisdiction. The CBI has been designated as macro-prudential authority for this purpose since March 2014. This countercyclical buffer requires a further range of 0 - 2.5 percent of common equity when the CBI judges credit growth may lead to an excessive build-up of systemic risk.<sup>78</sup>

As also noted in Chapter 4, Basel III represents an important adjustment for both the global and Irish banking industry, with implications for borrowers and national economies more broadly. While higher capital and liquidity standards are designed to contribute significantly to financial stability, there will be costs involved, since equity is a more expensive form of financing than debt, and liquid assets typically yield lower returns. Nonetheless, when considering the costs associated with implementing Basel III, it is essential to keep in mind the enormous negative impact of financial crises.

## **6.6 Conclusion**

The focus of this chapter was to investigate the discrete elements of the Canadian banking system that informed its sound performance before the GFC, with a view to identifying transferable lessons for both Irish and international financial regulatory reform in the post-crisis environment. The lessons identified have provided a template of transferable lessons for banking regulatory reform after the GFC in Ireland, and also in relation to Basel III and in the euro area. The most technical and easily transferable

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<sup>78</sup> Banks that do not maintain the conservation buffer will face restrictions on dividend payouts, share buybacks and bonuses.

types of change are strong prudential regulation, adequate leverage and capital management and a conservative mortgage market. Canada had an exceptionally active approach to financial regulation and the analysis identified three key differences from Ireland's approach.

The first lesson identified was strong prudential regulation. The OSFI equipped itself with sufficient power to undertake effective supervision and regulation. It had the practical and legal power to issue guidance and interpretations of guidance, and to bring about compliance. Secondly, the clear structure of the OSFI fostered an environment that encouraged co-operation and communication between domestic regulators, resulting in clear delineation of responsibilities. This ensured adequate guidance and supervision for the financial system. Thirdly, the OSFI enforced standards such as capital adequacy requirements that exceeded minimum international standards. These included an assets-to-capital multiple test that set a cap on leverage: banks had to ensure a ratio of total assets, including specified off-balance sheet items, to total capital of no more than 20 times, which served as a risk-management element. In addition to these key regulatory differences, Canada had several measures in place to control potential risk from its mortgage market. Banks were required to have MI with strict criteria on mortgages. The Canadian Government also undertook ongoing review of the arrangements for housing finance to ensure financial stability, ensuring alignment between mortgage market dynamics and economic activity at all times and that mortgage interest payments were not deductible for tax purposes.

This chapter also reviewed a selection of key pre-crisis financial ratios of Canadian banks and compared them to a subset of their international peers to establish which fundamentals contributed to the resilience. The impacts of four balance sheet fundamentals were focused on – capital, liquidity, leverage and funding. Canadian banks had sound balance sheet fundamentals as the 2007 GFC approached: high liquidity, low loan-to-deposit ratios, and high customer deposit bases. The results suggest that high LTD ratios were an important predictor because they had a negative impact on performance of share price and increased the likelihood of receiving government assistance. One reason Canadian banks appear to have healthier LTD and funding ratios is that their retail funding supply and retail loan demand were well-matched and reduced the banks' need to engage in excessive wholesale borrowing. The Canadian banks relied more on deposits (i.e. lower loan-to-deposit ratios) and less on

debt, resulting in lower funding gaps (reflected in the lower loan-to-deposit ratios), all of which are desirable features for a more resilient bank.

## **Chapter Seven: Conclusions and Recommendations**

### **7.1 Introduction**

This chapter summarises the findings from the empirical investigation undertaken in this thesis, highlighting the key contributions of each chapter. The discussion draws out the conclusions, policy implications and suggestions for future research. The chapter is structured as follows: Section 7.2 reiterates the research questions and their objectives. Section 7.3 outlines key findings and policy recommendations derived from this study. Section 7.4 discusses domestic and international regulatory and supervisory reform since the crisis and evaluates their adequacy. Section 7.5 outlines recommendations for future research. The final section provides a concluding statement to the study.

### **7.2 Revisiting the Research Questions and Objectives**

This thesis addresses three key questions:

1. Could analysis of a comprehensive set of bank-specific financial indicators of the main Irish retail banks, in the lead-up to the GFC, have foretold bank management of the distress in which Irish banks found themselves?
2. Why did the Spanish commercial banks perform better than the main Irish commercial banks during and after the GFC?
3. What discrete elements of the Canadian banking system informed its sound performance before the GFC, and are there transferable lessons for Ireland?

Chapters 4 to 6 of the thesis examine the above research questions through seven research objectives:

- Using a systematic framework, such as the CAMEL framework, focus on the key bank-specific financial ratios in the dominant Irish commercial banks in the lead up to the Irish banking crisis (i.e. 2001 to 2008), to establish if there was statistical evidence to identify, before the crisis, structural differences between those banks that had to be bailed out (such as the Irish banks) and those that did not.
- Employ a PROBIT model to identify the most significant variables that will indicate to potential bank distress.
- Compare the main Irish retail banks to their European peers over the same period to provide a useful point of comparison.

- Use a systematic framework, such as the CAMEL framework, to establish differences between the main Spanish commercial and Irish commercial banks' performance during the GFC.
- Establish what lessons can be derived from the Spanish example.
- Use the CAMEL framework to employ a wide set of comparative financial indicators to establish if the Canadian banks were outliers when compared to their international peers before the GFC.
- Establish if there are transferable lessons to the Irish example that will help to reduce the exposure of its banks to systemic risk in the future.

Following on from a detailed review of the relevant literature and theories, the hypotheses (H1 – H5) emanating from the research objectives for research question 1 are presented in Chapter 4, while empirical testing of the hypotheses is also undertaken in Chapter 4. The hypotheses (H6 – H7) emanating from the research objectives for research question 2 are presented in Chapter 5 along with empirical testing. The hypotheses (H8 – H9) emanating from the research objectives for research question 3 are presented in Chapter 6 along with empirical testing. In summary, this study proposed the following hypotheses:

- H1: There is a negative association between high capital levels and bank distress.
- H2: There is a positive association between a risky asset portfolio and bank distress.
- H3: There is a negative relationship between banks' efficiency and bank distress.
- H4: There is a negative relationship between increasing levels of profitability and earnings and bank distress.
- H5: There is a positive relationship between banks relying more heavily on short-term sources of funding and bank distress.
- H6: The Spanish commercial banks were far more internationally diversified and their balance sheets thus provided greater access to capital to cushion the problems they faced when the Spanish real estate sector collapsed.
- H7: The unique loan loss provisioning regime undertaken by Spanish commercial banks meant that by the start of the GFC, Spanish banks were better positioned than their European peers to weather the crisis.

- H8: The Canadian retail banking system had sufficient and effective prudential regulation and supervision in the lead up to the GFC
- H9: The Canadian retail banking system had stricter limits on bank leverage and capital quality.

### 7.3 Findings and Discussions

This section will present and discuss the main findings from the current study's qualitative and quantitative research.

| <b>Hypotheses for chapter 4</b>      |  | <b>Outcomes</b> |
|--------------------------------------|--|-----------------|
| <b>Capital Hypothesis</b>            | <b>H1:</b> There is a negative association between high capital levels and bank distress.  | <b>Reject</b>   |
|                                      | <b>H1a:</b> There is a positive association between high leverage and bank distress.   | <b>Accept</b>   |
| <b>Asset Quality Hypothesis</b>      | <b>H2:</b> There is a positive association between a risky asset portfolio and bank distress.                                      | <b>Accept</b>   |
| <b>Management Quality Hypothesis</b> | <b>H3:</b> There is a negative relationship between banks' efficiency and bank distress.   | <b>Reject</b>   |
| <b>Earnings Potential Hypothesis</b> | <b>H4:</b> There is a negative relationship between increasing levels of profitability and earnings and bank distress.             | <b>Accept</b>   |
| <b>Liquidity Hypothesis</b>          | <b>H5:</b> There is a positive relationship between banks relying more heavily on short-term sources of funding and bank distress. | <b>Accept</b>   |
|                                      | <b>H5a:</b> There is a positive relationship between banks that have a high LTD ratio and bank distress.                           | <b>Accept</b>   |
|                                      | <b>H5b:</b> There is a negative relationship between banks that have high levels of liquid assets and bank distress.               | <b>Reject</b>   |

Chapter 4 presented strong evidence to support the capital, asset quality, earnings and liquidity hypotheses as the most statistically significant elements of the CAMEL framework to identify potential bank distress. Although bank capital (H1) was not a robust predictor of resilience, FinLev (H1a) was a significant predictor of probability of government assistance. This underpins the view that increasing debt is a significant predictor of potential bank distress. This simple measure of leverage appears to be a

good predictor of bank performance during the turmoil, because although banks continued to meet their regulatory requirements for stipulated capital ratios, the composition of this capital changed materially; in many cases, the lower the level of equity, the higher the risk of some sort of vulnerability in the case of an economic downturn. Therefore, this study rejected the H1 capital hypothesis, but accepted the H1a hypothesis.

Declining asset quality, reflected in increases of loan loss reserves to total loans, was found to be significant and indicative of impending banking turmoil. By contrast, the loan loss provisions ratio was found to be not significant in any of the model specifications. This unexpected outcome may be due to the fact that deteriorating asset quality is only appropriately accounted for by banks when the crisis materialises. Overall, given the significant results for loan loss reserves, this study found there was sufficient evidence to support the asset quality hypothesis and, consequently, H2 was accepted. Contrarily the efficiency ratio (H3), a widely used performance metric, was not shown to be negatively related to bank distress. The fact that it does not emerge as significant suggests that low costs do not indicate a better (or worse) likelihood of preventing bank distress. Indeed, some of the distressed banks had very good cost-to-income ratios, thus this study rejected H3.

The ROE and ROA ratios were both significant and H4 was accepted. This indicates that deteriorating profitability is a good predictor for potential bank distress. A high reliance on short term funding (H5) also was significant in predicting extreme stress. Results found that banks with higher levels of short-term funding experienced a higher probability of requiring government assistance due to financial distress. There was some weak evidence found in favour of the LTD ratio as a significant indicator of potential bank distress and H5a was accepted. Unexpectedly, the liquid assets ratio, a widely used performance metric, was shown to not be statistically significant and H5b was rejected. These results suggest several important areas of emphasis going forward. First, banks need to place a strong emphasis on their risk-management function, where the appropriateness of a bank's risk-management practices should not be assessed based on a bank's level of capital alone. The empirical results also emphasise the contribution that sound funding models and appropriate loan loss reserve management can give to weathering potential bank distress more effectively. What is less clear from the study is at what stage banks' management should have understood that the trend in these

indicators signalled impending problems. More research is required to explore these questions further.

| Hypotheses for chapter 5   | Outcomes      |
|--|---------------|
| <b>H6:</b> The Spanish commercial banks were far more internationally diversified and their balance sheets thus provided greater access to capital to cushion the problems they faced when the Spanish real estate sector collapsed. | <b>Accept</b> |
| <b>H7:</b> The unique loan loss provisioning regime undertaken by Spanish commercial banks meant that by the start of the GFC, Spanish banks were better positioned than their European peers to weather the crisis.                 | <b>Accept</b> |

Chapter 5 presented strong evidence to support H6 and H7. In relation to H6, the empirical research found that international diversification proved a key area of distinction between the Spanish and Irish commercial banks. The main Spanish commercial banks were large, internationally active banks and well diversified in their geographic footprints and business models, with only one-third of their net profits generated domestically by 2006. Interestingly, in relation to H7, while regulation in both Ireland and Spain was ill-equipped overall to deal with risks stemming from unsustainable and highly procyclical credit-extension increases from the late 1990s, there was one exception in the Spanish regulatory tool box – the introduction of a dynamic provisioning (DP) framework in July 2000. The use of this unique loan-loss provisioning approach in Spain meant that by the start of the GFC, Spanish banks had one of the highest ratios of loan-loss provisions to total loans in the world, about four times higher than in the other Euro area countries, including Ireland (IMF 2006).

However, given the magnitude of the problem that materialised in the Spanish example, in particular the collapse of all 45 cajas, it is clear that DP alone cannot prevent financial crisis. It failed to dampen the appetite of bank management to engage in excessive lending to the construction sector; prevent market practitioners from severely underestimating the risk of default, concentration, market and liquidity risk; or prevent the housing asset bubble. The Spanish example has shown that any solution to the procyclicality problem of loan-loss provisioning needs to uphold the balance between making regulation more anti-cyclical and at the same time reinforcing transparency of banks' accounting statements.

| <b>Hypotheses for chapter 6</b>   | <b>Outcomes</b> |
|---|-----------------|
| <b>H8:</b> The Canadian retail banking system had sufficient and effective prudential regulation and supervision in the lead up to the GFC. | <b>Accept</b>   |
| <b>H9:</b> The Canadian retail banking system had stricter limits on bank leverage and capital quality.                                     | <b>Accept</b>   |

Chapter 6 presents strong evidence to support acceptance of H8 and H9. The case study found that Canada had an exceptionally active approach to financial regulation, and the analysis identified three key differences from Ireland’s approach. The first was strong prudential regulation. The OSFI equipped itself with sufficient power to undertake effective supervision and regulation. It had the practical and legal power to issue guidance and interpretations of guidance, and to bring about compliance. Secondly, the clear structure of the OSFI fostered an environment that encouraged co-operation and communication between domestic regulators, resulting in clear delineation of responsibilities. This ensured adequate guidance and supervision for the financial system. Thirdly, and in support of H9, the OSFI enforced standards such as capital adequacy requirements that exceeded minimum international standards. These included an assets-to-capital multiple test that set a cap on leverage: banks had to ensure a ratio of total assets (including specified off-balance-sheet items) to total capital of no more than 20 times loan-to-value (LTV) greater than 80 percent, which served as a risk-management element. In addition to these key regulatory differences, Canada had several measures in place to control potential risk from its mortgage market. Banks were required to have mortgage insurance (MI) with strict criteria on mortgages. The Canadian government also undertook ongoing review of the arrangements for housing finance to ensure financial stability, ensuring alignment between mortgage-market dynamics and economic activity at all times and that mortgage interest payments were not deductible for tax purposes.

In relation to the acceptance of H9, a review of four balance-sheet fundamentals were focused on: capital, liquidity, leverage and funding. Canadian banks had sound balance-sheet fundamentals as the 2007 GFC approached – high liquidity, low loan-to-deposit ratios, and high customer deposit bases. One reason Canadian banks appear to have healthier LTD and funding ratios is that their retail funding supply and retail loan demand were well-matched and reduced the banks’ need to engage in excessive wholesale borrowing. The Canadian banks relied more on deposits (i.e. lower LTD ratios) and less on debt, resulting in lower funding gaps (reflected in the lower LTD ratios), all of which are desirable features for a more resilient bank. What is less clear

from the Canadian case study is if the different mixes of state and market influences in the Canadian financial system can function equally well in different countries, and requires future research. Further recommendations for future research are made in section 7.3.1.

### **7.3.1 Recommendations for Policy Makers**

The analysis summarised above justifies a number of recommendations relevant to policy-makers, bank managers, and regulators in Ireland. These findings and their implications are outlined below:

#### **Implications for the design and implementation of Capital, Liquidity, Funding, and leverage financial regulation**

Banks and supervisors should engage in stronger monitoring of the quantity *and quality* of banks' capital, liquidity, and funding model management. These were all important elements of the Canadian success story. The recommendations below seek to address this insufficiency in the Irish system.

- *Capital: increase minimum capital requirements and capital quality.* Future policy needs to ensure that banks undertake more vigorous capital management. This should focus on the quantity of capital and its quality. Section 4.4.1 highlighted how highly capitalised banks pre-crisis quickly eroded their capital levels.
- *Liquidity: tighten liquidity management.* Future policy should require more vigorous liquidity management by banks. Bank management should examine quality and maturity risk of assets as well as liquidity levels. Supervisors should examine such factors as dependence on short-term funding. The nature of assets and their holdings' time horizons should address the "mismatch ratio" or increases in liquidity ratios. Section 4.4.5 highlighted how banks with an over-reliance on external wholesale funding can run into serious difficulties when access to that funding dries up.
- *Funding Models: ensure robust funding models.* Canadian banks depended less on expensive alternative sources of funding to deposits, such as wholesale funding, than their international peers. This reflected the large and stable deposit base to which they had access. Irish banks could achieve similar stability through different funding models.
- *Leverage: use a leverage ratio.* Canadian authorities computed leverage ratio as shareholders' equity over total assets, which was introduced to ensure a hard

minimum capital level, regardless of the structure of risk weights in bank balance sheets. Policy-makers would do well to implement a non-risk-based leverage ratio that includes off-balance-sheet exposures as a way to contain the risk-based capital requirement as well as a build-up of leverage.

- *Reduce procyclicality: encourage the use of countercyclical capital buffers.* Irish regulatory policy should balance the procyclical tendencies present in the financial system by adopting countercyclical measures in regulating capital and provisioning, to avoid allowing changes in problem loans to drive procyclical lending theories as they did in the lead-up to the crisis. The introduction of countercyclical capital and provisioning practices is desirable from a macro-prudential and macroeconomic perspective; it also reduces the risk of bank failure. By restraining credit expansion, it would reduce the dangers of market over-reactions during recession. Policy-makers and regulators should consider DP as a tool that distributes loan losses evenly over the credit cycle and directly addresses a source of procyclicality in banking. Setting aside loan-loss provisions at the beginning of the risk-taking cycle to be drawn during a downturn has potential to reduce the procyclicality of both credit and leverage.

### **Implications for a conservative housing market**

A more conservative mortgage-market framework will provide more stability to Ireland's economy. Policies should aim at containing risks from leverage-induced real estate boom–bust cycles. The build-up of leverage in the household, corporate, and banking sectors from real estate booms leads inexorably to real estate busts; policy should aim to minimise booms and increase resilience to busts. The recommendations below seek to address this:

- Limits on LTV and loan to income (LTI) ratios are a useful demand-side macro-prudential measure to contain harmful boom–bust cycles in housing markets. Canada successfully used such limits to discourage loans with high LTV and LTI ratios. Ireland would do well to consider implementing new macro-prudential measures to enhance the resilience of the banking sector and households to housing market developments.
- Ireland should embrace Canada's approach of a universal mortgage insurance model. Requiring lenders to insure mortgages with LTV above a certain level, such as 75 percent, would free banks from high capital requirements and permit

lower interest rates. It would also give the insurer authority to assess the mortgage credit, providing more oversight and thereby imposing higher lending standards. A universal insurance model would support the Irish government's current aim of rebuilding the property, construction, and mortgage sector as a means of supporting economic activity, employment, labour market mobility, financial stability and sustainability, and social cohesion (Government of Ireland 2014).

## **Implications for supervision and regulation**

The recommendations below seek to address the insufficiency of supervision and regulation:

- The CBI must have sufficient supervisory powers, including sanctions, to ensure the compliance of financial institutions with the applicable rules.
- Financial stability analysis must be integrated more strongly into supervision. It needs to capture liquidity as well as solvency risks, and it must explore more extreme macro-financial scenarios for the economy.

### **7.4 Reform Since the GFC**

The crisis of 2007 has prompted a fundamental reconsideration of how regulatory authorities approach financial regulation and supervision. This section compares some of the main actions policy-makers have taken at international and domestic level, with recommendations outlined in the previous section. Table 7.1 summarises the changes that policy-makers have implemented to rectify the damage done to financial systems and economies, at both international and domestic level. Many of the changes will affect how bank management present and interpret their key risk indicators moving forward. The paragraphs after the table provide additional detail on these changes, and the remainder of this section discusses significant gaps that remain.

**Table 7.1: Summary of changes policy-makers have implemented at the international and domestic level**

| Implication   | Recommendations   | Domestic reform   | International Reform  |
|---|---|---|---|
| <b>Implications for the design and implementation of financial regulation</b> | Capital: increase minimum capital requirements and capital quality                          | <p style="text-align: center;"><b>Basel III</b></p> <ul style="list-style-type: none"> <li>• Stricter rules governing acceptable forms of capital.</li> <li>• Higher capital requirements and a capital buffer.</li> </ul>  |   |
|   | Liquidity: tighten liquidity management<br><br>Funding Models: ensure robust funding models | <p style="text-align: center;"><b>Basel III</b></p> <ul style="list-style-type: none"> <li>• Liquidity coverage ratio – to ensure high-quality liquid assets meet 30-day stress scenario.</li> <li>• Net stable funding ratio – requirement to fund assets with more stable sources of funding through minimum acceptable levels of stable funding based on the liquidity characteristics of an institution’s assets and activities over a one-year horizon.</li> </ul>   |   |
|   | Leverage: use of a leverage ratio   | <p style="text-align: center;"><b>Basel III</b></p> <ul style="list-style-type: none"> <li>• New risk-based leverage ratios to contain build-up of excessive leverage, introducing additional safeguards to guard against the potential for errors or manipulation in assigning risk weights.</li> </ul>  |   |
|   | Reduce procyclicality: encourage the use of countercyclical capital buffers                 | <ul style="list-style-type: none"> <li>• In December 2011 the CBI issued best-practice guidelines to banks, aiming to ensure that their provisioning methodologies reflect more conservative impairment triggers, resulting in earlier completion of impairment reviews and recognition of incurred loan losses as early as possible within the scope of existing (IAS 39) accounting standards.</li> <li>• Basel III capital requirements (which Ireland has embraced as CRD IV and the CRR) include a countercyclical capital buffer and a surcharge for</li> </ul> | <ul style="list-style-type: none"> <li>• Since 2009, the IASB has been working on IFRS 9 as a successor to IAS 39. The suggested IFRS 9 will use an “expected loss model” whereby expected credit losses, either 12-month or lifetime credit losses, would be recognised even if an actual loss event had yet to occur – effective date for IFRS 9 is January 2018.</li> <li>• Basel III: Higher capital</li> </ul> |

| Implication   | Recommendations   | Domestic reform  | International Reform  |
|---|---|--|---|
|   |   | systemically important financial institutions.   | requirements and a capital buffer requirement.  |
| <b>Implications for a conservative housing market</b> | Policies such as: <ul style="list-style-type: none"> <li>• a ban of mortgages with an LTV exceeding a certain prudent level</li> <li>• a prohibition on risky lending products like 100 percent LTV mortgages</li> <li>• quantitative limitations on lending to the property sector and other risky sectors.</li> </ul> | The Central Bank of Ireland (Central Bank 2015b) introduced proportionate LTV and LTI limits on Irish mortgages. | The SSM has publicly supported the implementation of proportionate LTV and LTI limits on Irish mortgages. |
|   | The creation of a universal mortgage insurance model  | There has been no further consideration of the implementation of MI at this stage.                               |   |

| Implication  | Recommendations   | Domestic reform  | International Reform |
|--|---|--|----------------------|
| <b>Implications for Supervision and Regulation</b> | <ul style="list-style-type: none"> <li>The CBI must have sufficient supervisory powers, including sanctions, to ensure the compliance of financial institutions with the applicable rules.</li> </ul>   | <ul style="list-style-type: none"> <li>The Central Bank Reform Act 2010 created a new single unitary body, the Central Bank of Ireland (CBI), responsible for both central banking and financial regulation.</li> </ul>  |                      |
|  | <ul style="list-style-type: none"> <li>Financial stability analysis must be integrated more strongly into supervision. It needs to capture liquidity as well as solvency risks, and it must explore various macrofinancial scenarios for the economy in a more contrarian way.</li> </ul> | <ul style="list-style-type: none"> <li>The implementation of SSM represents a major change to the banking landscape, including the Central Bank's role in supervising banks.</li> <li>The SSM requires more frequent inspections and at a deeper level of intensity than previously, with inspection teams being on site for significant periods.</li> <li>The ESRB (European Systemic Risk Board) has had a role in the strengthening of national macro-prudential frameworks.</li> </ul> |                      |

### 7.4.1 *International Reform*

As the literature review laid out, flaws and gaps in Basel II are a primary source of banks' vulnerability and procyclicality. This thesis has described the shortcomings in the areas of capital, liquidity, funding, and leverage that drove the crisis in the Irish banking system. The EU has taken a number of measures to address these problems to date, as described below.

- Basel III capital requirements include a countercyclical capital buffer and a surcharge for systemically important financial institutions. This is the first international attempt to institute a macro-prudential tool. Ireland has implemented these requirements as the Capital Requirements Directive (CRD) IV and the Capital Requirements Regulation (CRR).
- Capital *quality* has been made more prominent, with Basel III raising common equity requirements from 2 percent of banks' risk-weighted assets to 4.5 percent.
- The ECB has undertaken a concerted attempt to reduce the too-big-to-fail effect by identifying systemically important banks in the Irish system, higher capital adequacy requirements, and more intense supervision.
- Basel III has introduced the liquidity ratio (LCR) and the net stable funding ratio (NSFR), two new quantitative metrics that manage liquidity risk. The LCR will work by promoting short-term resilience by ensuring that banks have sufficient high-quality liquid assets (e.g., cash, sovereign debt) to allow them to meet all due net cash outflows over a period of 30 days given a particular stress scenario. The NSFR aims to ensure that a bank has sufficient long-term stable funding to support its customer business; it should improve structural asset and liability maturity. In the event of financial stress, an accumulated stock of high-quality liquid assets will help banks to absorb liquidity shocks.

The new Basel III regime clearly represents progress that will force banks to take better heed of fundamental ratios in the areas of capital, liquidity, solvency, and leverage. However, only the passage of time can reveal the impact of these regulatory reforms, and gaps remain. Gaps include the possibility that a capital buffer will not effectively smooth the credit cycle. The build-up of an additional capital buffer during a boom may reduce banks' desire to lend excessively, and in a downturn the release of the buffer may avoid a credit crunch by reducing the pressure on banks to deleverage to meet regulatory capital requirements. However, as a 2013 IMF paper notes, the effectiveness

of the buffer will depend on the level of capital that banks hold in excess of what the regulator requires. Issuing new equity is relatively cheap in a boom, reducing the effect of the buffer on credit expansion. More generally, the same IMF paper notes that the effects on overall credit and the real economy will depend on the extent to which non-financial firms can find substitute credit from non-regulated financial intermediaries and in markets.

The greatest source of caution should come from the fact that new requirements may affect the short-term dynamics of Irish banks. The proposed shift from short-term to long-term liquidity will increase the cost of funds. Banks may respond to regulatory tightening by raising lending rates to keep return on equity at an attractive level. Reducing the level of risky assets on banks' balance sheets may require them to reduce the supply of credit. In the current environment, a continued focus on the extension of credit to SMEs could have negative consequence.

The new, narrower definitions of capital also come with warnings, as the increased costs of capital and borrowing that will ensue for banks may drive increased borrowing costs. Lower return on equity (ROE) will divert shareholders away from banking equity and bonds. The new accord does not address these outcomes. Basel III's emphasis on optimisation of capital allocation may also require banks to focus on their core businesses and exit low-profit and low-growth businesses. As large and global banks seek to meet higher capital requirements ahead of schedule, a significant capital shock has occurred, prompting banks to hoard capital. The increased regulatory capital required under Basel III may increase barriers to entry into the sector, benefiting existing players but potentially exiling some borrowers to unregulated channels. New forms of systemic risk may arise if the migration to unregulated channels is significant, causing another source of potential systemic risk.

The Irish regulator's error in mistaking liquidity problems for solvency problems at the core of the crisis suggests that the introduction of two liquidity ratios may avert future problems. The LCR and NSFR will drive banks to either compete for more retail funding that affect their lending margins, or borrow in wholesale markets for terms longer than one year. During periods of rapid credit expansion, Irish banks will not have the same ability to expand domestic credit as they did in the years leading up to the crisis. To satisfy growing credit demand, banks will depend on customer deposits and

longer-term markets for funding. Increased demand will therefore drive higher lending rates, reducing excessive credit growth. However, these reforms fail to address significant gaps.

While leverage ratios can provide an extra safety net and potentially offer a reliable non-risk-based measure, they will not predict distress in the system on their own. Implementing leverage ratios costs nothing, due to their simplicity, and they prevent banks from engaging in arbitrage by engaging with products that have leaner credit ratings. Regulators should use leverage ratios to hedge their reliance on complex risk-based models and to assess banks' capital adequacy without relying solely on complex internal risk procedures. However, effective monitoring, evaluation, and analysis of intended prudential outcomes must accompany this measure if it is to improve financial market stability.

The RWA weighting system continues to suffer from the assumption of portfolio invariance – that is, linear weightings that do little to penalise concentration in portfolios. This may lead regulators to repeat their past mistakes by decreasing capital requirements during an upswing as the value of risk-weighted assets rises in an upswing.<sup>79</sup> Basel III ameliorates this problem with a countercyclical capital buffer, but the issue requires more study.

#### **7.4.1.1 Provisioning**

The IASB has been working on IFRS 9 as a successor to IAS 39 in the area of loan-loss provisioning since 2009, but the accounting standard has not yet been published and is still subject to EU endorsement. This section will therefore consider the most recent exposure draft, issued in March 2013. The designers describe IFRS 9 as an “expected loss model” that recognises expected credit losses, either 12-month or lifetime credit losses, prior to the event. In February 2014, the IASB tentatively decided that the effective date for IFRS 9 is 1 January 2018 (deferred from the original mandatory effective date of 1 January 2015 when the initial exposure draft was issued in 2011). Under new proposals, banks will be allowed to recognise expected losses from the point at which financial assets are originated. No threshold prevents the recognition of expected credit losses. Conforming to G20 and FCAG recommendations, the proposed

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<sup>79</sup> As intended by design, the gradual shift from Basel I to Basel II (particularly IRB approaches) enabled banks to benefit to some extent from lower RWAs, as they moved their portfolios to the advanced IRB.

expected credit loss model will be more forward-looking and consider a broader range of information than the existing incurred loss model.

It is not possible to estimate the full effect of IFRS 9 prior to its implementation, but the Spanish example suggests that any solution to the procyclicality problem of loan-loss provisioning needs to uphold the balance between making regulation more countercyclical while reinforcing the transparency of banks' accounting statements. Currently, different accounting practices across EU countries, especially as regards provisioning, significantly affect the uniformity of capital figures and should be a supervisory concern.<sup>80</sup> Again, the SSM must continue to contribute to convergence in the interpretation of international accounting standards.

As this thesis has described, banking crises are the result of procyclical financial system behaviour and regulation, as well as poor risk management in financial institutions. Therefore, reform should address both factors. New provisioning rules alone cannot prevent credit booms, without setting prohibitively high provisioning rates. Provisioning charges on new loans inevitably restrain credit growth by causing a decline in banks' capital.

#### **7.4.1.2 Supervision**

The implementation of the SSM represents a major change to the banking landscape, including the Central Bank's role in supervising banks. The creation of the SSM was an acknowledgement that both the economic and monetary union would require a single supervisory mechanism. Therefore, the ECB has directly supervised 128 banks in the euro area since November 2014, under the auspices of the SSM.<sup>81</sup> While the CBI will still undertake most supervisory work in the Irish banking system, the ECB will now set supervisory tasks and priorities for Significant Institutions. Joint supervisory teams (JSTs) consisting of ECB, CBI, and other NCA staff are now responsible for the day-to-day supervision of all domestic banks. This approach, which places emphasis on the more strategically important institutions, is similar to the Canadian approach to regulation, where clear delineation of responsibilities, and structured settings for discussion, were established, leaving no room for ambiguity for key stakeholders.

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<sup>80</sup> This point was raised in an opening address by Mr Luis M. Linde, Governor of the Bank of Spain, at the 10th Banking Industry/IESE (Escuela de Negocios de la Universidad de Navarra) See Linde 2012.

<sup>81</sup> This includes five banks that operate in Ireland: Allied Irish Banks plc; Merrill Lynch International Bank Limited; Permanent TSB plc; Bank of Ireland; and Ulster Bank Ireland Limited.

The creation of the SSM allows for a broader skill set and more diversity of experience that should help insulate supervisors from the pressures – including political pressures – that come from long-time interaction and closeness to regulatory charges such as financial institutions. However, insufficiently harmonised regulation across countries, which makes it harder to deliver consistent supervision and a level playing field, threatens effective implementation of the SSM. The current system provides options to each country's government in terms of the speed of phasing in Basel III definitions of bank capital, as well as different ways of treating deferred tax assets, goodwill, and equity holdings in insurance company subsidiaries.<sup>82</sup> As the head of the SSM noted in an interview with the *Financial Times* (2014), the SSM may have to ask the European Parliament for more harmonisation in regulation to eliminate national discrepancies.

The SSM will face a major challenge in creating a truly level playing field throughout the EU, given the wide diversity of banking models and legal systems in Europe. While the CRD IV and CRR have recently lessened the differences of regulatory frameworks, differences persist. Differences particularly include national discretions. On one hand, the CRR provides for a gradual transition to the new capital requirements, in line with the Basel III Accord. It allows countries some discretion in setting the pace of convergence towards the new requirements, which may give rise to temporary differences. For example, a country may decide to bring forward the application of the new capital conservation buffer, initially envisaged for 2016, or the deduction of certain capital components (Linde 2014). Moreover, the CRR provides for a series of national options that might give rise to permanent differences in the treatment of specific aspects. Thus, as the SSM works towards achieving a degree of harmonisation, it must restrict some national options with respect to permanent changes. Different accounting practices, especially as regards provisioning, also significantly affect the uniformity of capital figures and should be a supervisory concern.

Differences in accountancy practices are also a problem for the European Systemic Risk Board (ESRB). Based on a recommendation from the de Larosière report (2009), the EU established the ESRB in 2010, with a mandate to oversee risk in the financial system as a whole. Thus, the SSM supervises in cooperation with the European Banking Authority (EBA) and the ESRB. The ESRB was seen as a means of implementing supervisory arrangements that emphasise the stability of the financial system as whole,

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<sup>82</sup> See Nouy 2014.

in addition to supervising individual firms (via the SSM). The ESRB has a role in strengthening national macro-prudential frameworks in the EU, to contribute to preventing or mitigating systemic risks to financial stability that arise from developments within the financial system, taking into account macro-economic developments, so as to avoid periods of widespread financial distress. However, this is a difficult mandate to achieve, given the different accounting practices across Member States, especially as regards provisioning, which in turn also significantly affect the uniformity of capital figures and should be a supervisory concern.

#### ***7.4.2 Domestic Reform***

This section addresses four areas of domestic reform specifically geared towards the Irish banking systems: provisioning, keeping the housing market conservative, internal risk management, and supervision and regulation.

##### **Provisioning**

As a testament to its more intrusive regulatory approach, in December 2011 the CBI issued best-practice provisioning guidelines to domestic banks, aiming to ensure that their provisioning methodologies reflect more conservative impairment triggers, resulting in earlier completion of impairment reviews and recognition of incurred loan losses as early as possible within the scope of existing accounting standards. The guidelines also stated that banks should adopt a conservative and comparable approach to the measurement of impairment provisions across loan portfolios and improve the quality and quantity of their asset quality and credit risk management disclosures. In light of the increased scope for loan restructurings as banks increase arrears resolution, CBI updated these guidelines in May 2013. The revisions include clarified definitions of nonperforming and cured loans, and stipulate more stringent provisioning treatment of forborne exposures. The enhanced provisioning guidelines are an important element of the CBI's reinforced supervisory toolkit and promise to make provisioning guidelines more timely in advance of implementation of new IFRS rules in 2018 (ECB 2014, p.33).

##### **Conservative Housing Market**

In January 2015, the CBI announced the introduction of new regulations which will apply proportionate limits to mortgage lending by regulated financial services providers in the Irish market. The measures introduce proportionate limits for LTV and LTI ratios

for principal dwellings and for LTV ratios for buy-to-let mortgages. The key objectives of the new regulations are to increase the resilience of the banking and household sectors to the property market, to reduce the risk of bank credit and house price spirals developing in the future, and to dampen the procyclicality of property lending. Although the CBI has designed the regulations to be stable, built-in flexibility will address future developments in the economy or market.

LTV and LTI limits have become increasingly popular tools for responding to house-price volatility since the GFC. Indeed, as a number of studies note, limits on LTV and LTI ratios are a useful demand-side macro-prudential measure to contain harmful boom–bust cycles in housing markets (Crowe et al. 2011; Igan and Kang 2011; Wong et al. 2011).<sup>83</sup> Nonetheless, our understanding of the effects of these policies is uncertain (McDonald 2015). Limits on LTV and LTI ratios need to be designed carefully or complemented with other schemes to ensure an appropriate trade-off between financial stability benefits and societal preferences for home ownership (for example, Canada maintained a mortgage insurance programme complementing the LTV caps). It is not clear, however, if the effects of tightening and loosening of requirements in Canada will be symmetric in the Irish example, and there is a need to understand how their effectiveness varies over the cycle. This requires more research.

In May 2014, the Irish government published *Construction 2020*,<sup>84</sup> which stated that the government was committed to giving consideration to the concept of an MI (mortgage insurance) scheme, which would allow banks to share the risk of mortgage lending, either with the public sector or with private insurance companies. The report notes that MI, like a number of other measures, provides a mechanism to encourage banks to adopt standardised, prudent lending practices (e.g. income-to-loan ratios, high-quality documentation), opening up new and lower-cost funding sources for the banks. The report also notes that the government (or insurers if private provision) can change the conditions of MI to help avoid credit-fuelled property booms and busts.<sup>85</sup>

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<sup>83</sup> Duca et al. (2011) estimate that a 10 percentage point decrease in LTV ratio of mortgage loans for first-time buyers is associated with a 10 percentage point decline in the house price appreciation rate.

<sup>84</sup> See Government of Ireland (2014).

<sup>85</sup> The CBI consultation paper CP87 (CBI 2014) proposed the introduction of proportionate LTV and LTI limits on Irish mortgages, asking whether suitably insured mortgages with high LTVs should be exempt from the proposed LTV limit. This exemption would reflect the trade-off between improving credit underwriting quality and protecting lenders from default and the potential for such a scheme to weaken the effectiveness of the macro-prudential measures in dampening the procyclicality of mortgage lending. The final policy did not provide for an exemption for insured mortgages, as outlined in CBI (2015a).

Canada's success shows that MI can play a role in supporting a well-functioning mortgage market, for example by diversifying risks and bringing in new sources of capital. In support of this assertion, the IMF (2014b) highlights that the rules governing mortgage insurance, such as the maximum LTV ratio that triggers mandatory mortgage insurance and the maximum LTV ratio for government-backed insured loans, are important macro-prudential tools, and that Canada's strong control over the MI market made the tool particularly powerful. From a micro-prudential perspective, a strong prudential framework for the supervision of mortgage insurance companies would need to supplement mandatory MI. Despite such concerns, MI remains a serious potential prudential policy for future implementation.

### **Supervision and Regulation**

In the post-crisis environment, CBI quickly realised that an effective regulator makes well-defined and transparent regulation work (see Honohan 2010; Nyberg 2011). It has therefore worked since 2008 to reform the Irish regulatory and supervisory framework to ensure timely identification of risks to systemic financial stability.<sup>86</sup> The Central Bank Reform Act of 2010 ("the Act") created the CBI as a new single unitary body responsible for both central banking and financial regulation. The Act dissolved the Irish Central Bank, the Financial Services Authority of Ireland, and the Irish Financial Regulator in favour of the CBI. It also gave the CBI<sup>87</sup> powers that none of its predecessors had possessed, and developed an assertive and risk-based supervisory approach (see CBI 2013 for a more thorough discussion of the new regime).

The 2010 Act also strengthened the financial stability mandate of the CBI, which prior practice had required to *contribute* to the maintenance of financial stability,<sup>88</sup> by stating its objective as *ensuring* the stability of the financial system overall.<sup>89</sup> It also removed promoting the development of the financial services industry from the CBI's objectives. While this approach did not necessarily provide adequate regulation of the IFSC, it did require the CBI, as the key regulatory authority at the time, to understand the

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<sup>86</sup> See CBI strategic plan 2013–2015, <http://www.centralbank.ie/publications/documents/central%20bank%20of%20ireland%20strategic%20plan%202013%20-%202015.pdf>.

<sup>87</sup> The enactment in 2013 of the Central Bank (Supervision and Enforcement) Bill 2011 created a key tool to enhance proactive supervision and has strengthened the CBI's powers of enforcement. The Bill includes new powers to impose directions on credit and financial institutions, widens the existing range of powers for authorised officers, and will increase the current level of administrative sanctions and penalties.

<sup>88</sup> The Financial Stability Report 2007, p.13.

<sup>89</sup> Central Bank Reform Act, 2010, item 24.

requirements of both domestic and international financial services firms and ensure that undue regulatory requirements would not prevent firms from setting up in Ireland.

The CBI launched its new risk-based supervision framework in 2011, the Probability Risk and Impact System (PRISIM). Recognising the failings of the previous supervisory regime, which lacked a distinct macro-prudential view of the financial service sector, PRISIM supervises all financial institutions to make collective or individual failure less likely.<sup>90</sup> The new regime provides the CBI with a unified and systematic risk-based framework that resembles the Canadian regulator's approach prior to the GFC. Under the PRISIM framework the regulator has much better-resourced and informed staff who focus on the banks with the greatest potential impact on financial stability (ECB 2014). Systemically important banks receive the highest level of supervision under structured engagement plans (echoing sentiments of the OSFI regime), leading to early interventions to mitigate potential risks. This continuous engagement with systemically important institutions also resembles the Canadian regulatory regime.

The Central Bank (Supervision and Enforcement) Act in 2013 expanded the supervisory powers of the CBI. This law significantly enhanced the CBI's capacity to supervise regulated financial services providers and enforce financial services legislation, particularly by (i) increasing its powers to investigate, give directions and make regulations; (ii) consolidating and augmenting the authorised officer role; (iii) providing protection for whistleblowers; and (iv) increasing the level of sanctions it may impose.

In summary, the SSM and the newly established CBI clearly signal the adoption of a more thorough and stringent risk-management approach, indicating that the crisis has fundamentally changed financial regulation throughout the European Union and in turn Ireland. Many of the global policy changes since the GFC have dealt with both macro-prudential policy and micro-prudential regulation and supervision – mitigating systemic risks while addressing individual institutions in a way that reflects a consciousness of Canada's success with financial-sector regulation and supervision. Equally, the IASB's new international provisioning rules have resonated with Spain's experience and interests in more timely and realistic provisioning regimes for banks. On a domestic level, many elements of the Canadian success story have appeared in some shape or

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<sup>90</sup> <http://www.centralbank.ie/press-area/press-releases/Documents/1%20December%202011%20PRISM%20Explained%20-%20Booklet.pdf>.

form, with the introduction of a new regulatory and supervisory framework by the CBI. No regulatory system can, or indeed should, attempt to eliminate all possibility of failure, and regulation and supervision must be able to change with a constantly changing financial industry. The more assertive and risk-based system of prudential supervision that the CBI has implemented will help ensure that the banking system protects and promotes the health of Ireland's economy.

## **7.5 Limitations**

Despite the contributions outlined earlier, this research has a number of limitations, and it is important to highlight these for transparency. The present study's research-related limitations include the following:

- The qualitative data this study uses is drawn from a number of commissioned reports that explore the cause of the Irish financial crisis as well as all available data on the Irish banking crisis. While this represents secondary data, in that researchers did not gather it expressly for the purposes outlined in the chapters, it presents first-hand testimony of the witnesses central to the crisis and, more often than not, in a decision-making position. The numerical data was taken from various reputable databases, and in this respect the data sources can be characterised as proxy primary data – free from interpretation, bias and editing.
- Country-specific market structure decisions also provide context. For example, the Canadian regulator's principles-based approach to regulation relied heavily on close relations with bank boards and trust in banks' internal risk-management operations. Canada's highly concentrated banking system facilitated this arrangement; a less concentrated system may not facilitate as effectively.

## **7.6 Recommendations for Future Research**

Despite the impressive body of literature to date discussing the Irish banking crisis, and indeed despite the contribution of this thesis, research has not fully addressed some important features underlying the crisis. Opportunities for future research to fill these gaps include the following:

- Building on the insight this thesis has provided, further research might utilise an expanded CAMEL framework to include sensitivity (for example, sensitivity to market risk, especially interest rate risk).
- Future research might focus on the behaviour of senior bank management in the formulation of specific bank credit strategies in the lead-up to the crisis.
- This thesis took note of the increased competition in the Irish banking sector as a factor in the comfort of bank management and regulators in the lead-up to the crisis; future research might analyse this dynamic more directly.
- This thesis compared Ireland's banking system with Canada's and Spain's by examining each country's regulatory regime and their banks' performance in the GFC. Future research might interview bank management in relatively well-performing retail institutions in Canada, Spain, or elsewhere to generate significant cross-country comparative data. Comparative analysis of a relevant Canadian bank's loan-approval process could allow for superior assistance, training, and facilitation on the part of loan approvers in Irish banks to facilitate and support more appropriate loan approvals throughout the lending cycle.
- This research's treatment of countercyclical effects could be complemented by qualitative research to establish potential countercyclical effects with respect to the introduction of minimum requirements for mortgage insurance that could be used to smooth the mortgage credit cycle.
- An in-depth focus on the role that principles-based regulation played in the Canadian regimes might illuminate more clearly the dynamics of the elements of principles-based regulation.
- Future research might address the different mixes of state and market influences in the Canadian financial system to establish if they can function equally well in different countries.
- This study has drawn attention to the need for careful consideration of local contexts and differences in how national economic and financial systems cohere internally. Future research might address how policy ensures financial stability on the one hand and growth on the other, with reference to the effects of changes in the financial system on society as a whole. This consideration appeals for additional research in this area.

## 7.7 Conclusion

Lessons have been learned since the Irish banking crisis and important regulatory and supervisory actions have been taken at both the international and national level to help ensure more stable growth for Ireland's retail banking sector. However, more work is required to prevent mistakes being repeated. The extended fallout of the Irish banking crisis continues to affect Ireland's economic and financial landscape and 10 years on, the country's two largest domestic banks remain partially state owned. While there exists an extensive body of research investigating the Irish banking crisis, a number of lacunae remain. To address these gaps, this thesis built upon the existing literature in two ways. First, it developed a unique database of banks consisting of 28 large commercial banks from 12 European countries from 2001 to 2008. Employing PROBIT analysis, it systematically analysed a range of bank-specific financial indicators for the main Irish commercial banks in the lead-up to the GFC, and compared them to a sample of European peers to see if bank management could have foretold, in a timelier manner, the potential distress in which the Irish banks found themselves. This unique empirical analysis offered important learnings for future banking policy formulation. Secondly, using a case study approach and empirical analysis, it presented an original and detailed comparative analysis of the Canadian and Spanish retail banking systems as a source of regulatory and supervisory lessons. These countries' commercial retail banks, while confronted with volatile markets and a subpar economic environment, proved resilient through the GFC.

Overall findings suggest that there was statistical evidence to identify, before the crisis, structural differences between those banks that had to be bailed out (such as the Irish banks) and those that did not. Results indicated that funding structure was the most robust predictor of bank performance during the turmoil – banks with more depository funding experienced a lower probability of government assistance due to financial distress. The leverage variable was also a significant predictor of probability of government assistance. Low balance sheet liquidity did well in predicting extreme stress. ROA was also significant, indicating that deteriorating profitability is a good predictor for potential bank distress. The results indicate that banks' supervisors should engage in stronger monitoring of the quantity *and quality* of bank capital, liquidity, and funding model management.

The observed results in Chapters 5 and 6 further imply the need for bank supervisors to monitor capital, liquidity and funding model management in the post-crisis environment. Key findings in Chapter 5 highlighted the importance of counter-cyclical capital regimes for banks. Empirical results indicated that the key financial ratios of the Spanish commercial banks did not stand out markedly from their Irish and European peers on the eve of the GFC, except in one area – their provisioning levels. High provisions ultimately gave the Spanish commercial banks more resilience at the onset of the GFC. The Spanish regulator's use of DP has highlighted how future regulatory policy should balance the procyclical tendencies present in the financial system by adopting countercyclical measures in regulating capital and provisioning.

The lessons identified from the Canadian example provided a template of transferable lessons for banking regulatory reform after the GFC. The most technical and easily transferable types of change were strong prudential regulation, adequate leverage and capital management and a conservative mortgage market. The empirical results indicated that Canadian banks had sound balance sheet fundamentals as the 2007 GFC approached: high liquidity, low loan-to-deposit ratios, and high customer deposit bases. The results suggest that high LTD ratios were an important predictor because they had a negative impact on performance of share price and increased the likelihood of receiving government assistance. One reason Canadian banks appear to have healthier LTD and funding ratios is that their retail funding supply and retail loan demand were well-matched and reduced the banks' need to engage in excessive wholesale borrowing.

This study not only makes an important contribution to the Irish banking crisis literature, the results also have implications for policy. While it does not propose to answer all questions arising after the Irish financial crisis, it does add to the debate on how best to progress. The extended fallout from the financial crisis continues to affect many dimensions of the economic and financial landscape, from individual banks' business strategies to government sovereign debt problems, policy responses, and regulatory reform; this thesis has made recommendations to help ensure stable growth for Ireland's retail banking sector.

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## Appendices

### Appendix B.1: Procyclicality of Lending Behaviour Theories

| Author  | Theory                              | Definition  |
|---|-------------------------------------|---|
| Bernanke and Gertler (1990), Gorton and Ordonez (2014)        | Information Asymmetry               | Information asymmetry between banks and borrowers means that economic upturns lead to higher valued collateral; this makes access to finance easier and encourages banks to lend, in turn influencing their lending behaviour. Investors are willing to lend short term against collateral without producing costly information about the collateral backing the debt. When the economy relies on such informationally insensitive debt, firms or households with low quality collateral can borrow, generating a credit boom. Financial fragility builds up over time as information about counterparties deteriorates. A crisis occurs when a (possibly small) shock causes investors to suddenly have incentives to produce information. |
| Guttentag and Herring (1984)                                  | Disaster myopia                     | Myopia occurs when the information available to bank lending officers or financial decision makers is insufficient, which makes it impossible to determine the probabilities of future shocks. Disaster myopia emphasises that banks tend over time to underestimate the probability of low-frequency shocks.   |
| Borio <i>et al</i> (2001); Shiller (2005), Schoenmaker (2014) | Over optimism                       | Banks' lending behaviour is often based on the transmission of a misplaced optimism throughout the financial system. The role of risk assessment is important. While risk tends to be underestimated in good times (over optimism with 'low risk'); it is overestimated in economic downturns (distress with 'high risk').  |
| Janis (1982)  | Group think and the collective mind | Groupthink reflects a "mode of thinking that people engage in when they are deeply involved in a cohesive 'in-group', when the members' striving for unanimity overrides their motivation to realistically appraise alternative courses of action" (Janis 1982: 9).   |
| Rajan (1994); Haiss (2010)                                    | Herding                             | The concept of financial 'herding' assumes that the market is more forgiving of a bank's poor performance if the entire sector has been hit by a systemic shock. This theory also assumes that bank managers are concerned about the market's perception of their personal abilities; as they do not want to appear less capable than their peers, they will follow the herd. In such cases, adopting irresponsible lending policies may be seen as a survival tactic and a driver of procyclical behaviour.  |

| Author  | Theory  | Definition  |
|---|---|---|
| Jensen and Meckling (1976); Harm (2002); Jimenez and Saurina (2005); Williamson (1963)  | Agency theory   | Agency theory refers to a relationship in which one party (the principal) cedes responsibility for performing certain functions to another (the agent). Principle agency theory contends that bank managers must balance competing demands from shareholders and regulators (Harm, 2002) and this in turn can feed to loan growth rates (Jiménez and Saurina, 2005).  |
| Shrieves and Dahl (1995); Peek and Rosengren (1995), Lown and Morgan (2002), Berger <i>et al</i> (2001); Furfine (2001); Asea and Blomberg (1998) | Changes in supervisory toughness / Lending standards as drivers of procyclical bank lending behaviour | Bank supervisors are found to accommodate a decrease in lending standards as asset growth occurs. Empirical works, such as Asea and Blomberg (1998) have found that banks change their lending standards, from tightness to laxity, systematically over the bank lending cycle. Lax lending standards occur during expansion periods and affect aggregate economic activity. Peek et al. (2005) and Lown and Morgan (2002) empirically found that loan supply shocks as a result of changes in lending standards impact fluctuations in credit and GDP.   |
| Rötheli (2010), Simon (1982)  | Bounded Rationality   | The bounded rationality of banks contributes to the credit cycle. Contemporary finance theories posit that the decision-making agent is rational. Rationality in the behavioural economics literature suggest that when agents receive information, they compare against what is known, update that information if required and make decisions consistent with expected utility theory (Roubini and Mihm 2011; Shiller 2005; Simon 1997; Tversky and Kahneman 1986, 1992). However, what is now evident is that lending behaviour by banks during the crisis was inconsistent with the rational perspective and reflected a fundamental failure to engage in effective anti-cyclical decision making. |

| Author  | Theory   | Definition  |
|---|--|---|
| Krugman (2009) and Tett (2010)  | Risk Perception and Risk Propensity as drivers of procyclical lending behaviour  | <p>Risk perception is a subjective concept characterised by how an event is perceived (Rottenstreich and Tversky 1997). Krugman (2009) and Tett (2010), for example, argue that probability estimates are based on complex mathematical models and well-accepted theories of finance and economics, so rather than the absence of any in-depth cognitive assessment of risk, as March and Shapira (1987) contend, it is the over-reliance on theoretical models and the presence of considerable knowledge and cognitive ability that can unduly influence risk-taking and risk-seeking behaviour at the collective level.</p> <p>Risk propensity, or a general “behavioural tendency to take or avoid risk in specific domains” (Bresser-Pereira 2010, p. 518), reflects individuals’ or organisations’ tendency to pursue risk-seeking or risk-avoidance strategies in line with the institutional logics of their field and/or profession (Gärling et al 2009, p.4)</p>  |
| Berger and Udell (2003)   | IMH  | The institutional memory hypothesis accounts for misevaluation of credit risk and stresses that current loan officers ease credit standards over time. The previous loan bust is not remembered because of loan officer turnover.   |
| Berger and Udell (1994); Hancock and Wilcox (1994); Bouvatier and Lepetit (2008), Schoenmaker (2014), Furfine, (2001); Zicchino, (2005). Shrieves and Dahl (2002) | <p>Changes in Banking regulations as a key driver of procyclical lending behaviour</p> <ol style="list-style-type: none"> <li>1. Capital Regulation</li> <li>2. Provisioning Regulation</li> </ol> | <p>Capital requirements are relevant in explaining fluctuations in credit supply over a bank’s lending cycle. Recessions reduce banks’ capital buffers below minimum capital requirements, leading to a tightening of credit supply for the bank. Capital requirements play a role. Banks have to keep minimum capital against new loans. In good times, retained earnings boost capital, which enables banks to increase lending. In bad times, capital shrinks through losses, which may hamper the granting of new credit.</p> <p>During an upswing, banks tend to underestimate expected credit risk and then reduce non-discretionary loan loss provisioning. Banks’ incentives to grant new loans are therefore reinforced since lending costs are minimal. Conversely, unexpected identification of problem loans during a downturn constrains banks to make non-discretionary provisions, which reduces their motivation to supply new credits. In addition, this effect is stronger for poorly capitalised banks since these banks cannot use a capital buffer to face an upswing in provisions. Laeven and Majnoni (2003) and Bikker and Metzmakers (2005) show that the ratio of loan loss provisions to total assets exhibits a strong cyclicity.</p> |

| Author  | Theory             | Definition   |
|---|--------------------|--|
| Stigler (1971); Makkai and Braithwaite (1992); Edelman and Suchman (1997); Laeven and Majnoni (2003); Goodhart (2005); Hardy (2006); Baker (2010); Honohan (2010) | Regulatory Capture | Hardy (2006) posits that one element in understanding the development of a financial regulatory and supervisory regime is to acknowledge the possibility of regulated institutions exercising excessive influence on the Regulator – what is known as regulatory capture. Regulatory capture, as defined by Stigler (1971 p.3), occurs when regulation is “acquired by the industry and is designed and operated primarily for its benefit.” Goodhart (2005, p.15) posits that this pursuit of capturing a regulator will be further compounded by the fact that bankers are concerned for their own individual institutions and not for the welfare of the banking system as a whole. |

## Appendix B.2: Summary of International Reports on the Irish Economy 2000–2008

| Year | EC Reports | OECD Reports | IMF Reports  |
|------|------------|--------------|--|
| 2000 |            |              | <p><b>2000 Article IV Consultation conclusions:</b></p> <ul style="list-style-type: none"> <li>a. Commended the authorities for the performance of the economy over the past decade;</li> <li>b. Signs of overheating had become more pronounced (rapid price increases in non-tradables, labour shortages, physical bottlenecks, rising property prices and rapidly growing private sector credit);</li> <li>c. Expressed concern that rapid inflation could cause the social consensus underlying the wage agreement to erode and could lead to a difficult adjustment later, if the euro were to appreciate;</li> <li>d. Increasing public investments in infrastructure, tax reforms to improve labour participation and deregulation and privatisation to foster competition were needed, while a tighter fiscal policy would help dampen excess demand;</li> <li>e. Directors called on the authorities to resist tax reductions above those in the national wage agreement;</li> <li>f. Although Ireland had a sound and highly developed financial system, risks to financial sector stability could arise from rapid lending growth, in particular related to the domestic property boom;</li> </ul> <p>Directors expressed their concern that, after several years of rapid property price increases, housing demand might increasingly be driven by expectations of further price increases, a trend that could be abruptly reversed.</p> |

| Year | EC Reports | OECD Reports | IMF Reports  |
|------|------------|--------------|--|
| 2001 |            |              | <p><b>2001 Article IV Consultations conclusions:</b></p> <ul style="list-style-type: none"> <li>a. Directors commended the authorities for Ireland’s outstanding economic performance;</li> <li>b. The economic outlook remained broadly favourable, but authorities faced a number of challenges as growth adjusted to a lower, more sustainable trajectory;</li> <li>c. The deterioration in the global outlook;</li> <li>d. Directors stressed the difficulty of managing a countercyclical fiscal policy in a small open economy and considered that the authorities should aim for a neutral policy in 2002;</li> <li>e. Directors welcomed the efforts to improve the tax structure;</li> <li>f. A number of structural reforms were considered desirable to help secure continued vigorous growth over the medium term: <ul style="list-style-type: none"> <li>i. Wage reforms, private sector wages should be market-determined and public sector wages aligned with those in comparable private sector jobs;</li> <li>ii. Strengthening competition through privatisation and deregulation;</li> </ul> </li> <li>g. Directors called for further progress to improve the coverage and timeliness of data necessary to monitor short-term developments.</li> </ul> |

| Year | EC Reports   | OECD Reports | IMF Reports  |
|------|--|--------------|--|
| 2002 | <p><b>EC recommendation to Council of 30 January 2002:</b></p> <ul style="list-style-type: none"> <li>i. Concerns were expressed that the previous budgetary strategy of maintaining high surpluses and further reducing the debt ratio, which had been endorsed by the Council, were no longer being followed;</li> <li>ii. The fiscal targets implied that Ireland could cease to comply with the “close to balance” requirements of the SGP by 2003 but would still avoid breaching the 3 per cent of GDP threshold;</li> <li>iii. Regretted that the new update did not present any plans to introduce a medium-term framework to guide public spending or to improve expenditure control as requested in the BEPGs agreed for 2001;</li> <li>iv. Noted with satisfaction the broad-based strategy to prepare for ageing.</li> </ul> |              | <p><b>2002 Article IV Consultations conclusions:</b></p> <ul style="list-style-type: none"> <li>a. Again commended the authorities for the impressive economic performance;</li> <li>b. The Irish economy appeared to have weathered the global slowdown relatively well;</li> <li>c. The economic outlook was broadly favourable;</li> <li>d. Continued appreciation of the euro, combined with relatively high inflation and labour costs could adversely affect Ireland’s competitiveness and strength of recovery; these factors could also pose a risk – albeit likely to be a manageable one – to the financial sector;</li> <li>e. Directors expressed concern about the sharp deterioration in the structural fiscal balance in 2001, but agreed that measures to unwind the stimulus for 2002 were not advisable at that time;</li> <li>f. The fiscal position for 2003 should, at a minimum, be kept neutral;</li> <li>g. Capitalisation of the banking system appeared to provide an adequate cushion against possible risks to asset quality, but supervisory authorities should ensure that capital and provisions remained adequate in the event of a deterioration in unemployment, company finances or property prices.</li> </ul> |

| Year | EC Reports   | OECD Reports  | IMF Reports   |
|------|--|---|---|
| 2003 | <p><b>EC recommendation to Council of 30 January 2003:</b></p> <p>i. Although the 2002 budget was judged to be expansionary, in the event, policy was expected to be neutral in 2003 as a result of (1) a cut in capital expenditures, (2) a marked reduction in the growth rate of current expenditures and (3) an overall stabilisation of the tax burden;</p> <p>ii. The targets in the programme respected the safety margin against breaching the 3 per cent of GDP threshold for the deficit ratio;</p> <p>iii. Although Ireland was in a relatively good position considering its low debt level and gradual build-up of assets in the National Pensions Reserve Fund, the deficit position envisaged for 2005 did not seem to be ambitious enough.</p> | <p><b>1. 2003 Economic Survey conclusions:</b></p> <p>a. The 2001 economic slowdown in Ireland was closely linked to the bursting of the ICT bubble, but also reflected a deterioration in Irish cost competitiveness due to strong inflation in the sheltered sector of the economy, reflecting the combined influence of large wage gains emanating from the tradable sector, low productivity growth in the sheltered sector and the generally expansionary effects of very low real interest rates since Ireland joined the EMU;</p> <p>b. the policy challenge in the short term was to ensure that both income expectations and public finances adjusted to a slower growth environment, so as to safeguard against deterioration in international competitiveness and ensure fiscal sustainability and the maintenance of a growth-supportive tax environment;</p> <p>c. Over a longer term, the broad aim of the authorities should be to ensure that the economy continued to grow at a reasonably high rate and policies should be more clearly oriented towards protecting the interests of consumers rather than producers;</p> <p>d. Although GDP growth remained high</p> | <p><b>2003 Article IV Consultations conclusions:</b></p> <p>a. Directors commended the Irish authorities for their exemplary track record of sound economic policies, but saw signs of sustained slower growth in the period ahead, calling for a sharper policy focus on reducing inflation and improving competitiveness;</p> <p>b. Directors noted that there was a significant risk that house prices could be overvalued, although financial sector risks appeared to be manageable;</p> <p>c. Directors stressed the need for continued supervisory vigilance to ensure stability of the financial system;</p> <p>d. While high levels of capitalisation and profitability had strengthened bank balance sheets, credit risks related to investor-owned housing properties, concentration of commercial property exposure among a few institutions and the health of the insurance industry merited close attention;</p> <p>e. Directors emphasised the need of wage growth moderation in order to preserve external competitiveness and to avoid risks to employment;</p> <p>f. Directors welcomed the somewhat contractionary fiscal stance envisaged for 2003, stressing that spending should be held to budgeted levels and that any revenue shortfalls be offset by restraint with respect to the wage bill and transfers, whereas capital spending should be protected;</p> <p>g. Directors agreed that the authorities' medium-term fiscal target of overall structural balance was appropriate, but the authorities should not rely on continued strong output growth to eliminate the deficit.</p> |

| Year | EC Reports | OECD Reports  | IMF Reports |
|------|------------|---|-------------|
|      |            | <p>at 6 per cent in 2002, GNP growth was significantly lower (2 per cent), since much of the growth accrued to foreign owners in the biomedical and pharmaceutical sectors;</p> <p>e. The economy had lost momentum since late 2002, with a further slowdown in exports and a substantial weakening in business confidence;</p> <p>f. Demand for labour had slackened, leading to a rise in the unemployment rate;</p> <p>g. A weak trend was expected to prevail in 2003, but was forecast to give way to modest acceleration in 2004 on the assumed recovery in export markets. Construction activities were likely to remain a major source of buoyancy due to rapid development of the physical infrastructure and continuing strong demand for housing;</p> <p>h. While the 2001 and 2002 Budgets had substantially overestimated revenues and underestimated spending pressures, the 2003 budget seemed to be more consistent with slower underlying growth in the tax base: it relied on increased taxation and allowed for a smaller increase in spending that was allocated selectively to priority areas.</p> |             |

| Year | EC Reports  | OECD Reports | IMF Reports   |
|------|---|--------------|---|
| 2004 | <p><b>6. EC recommendation to Council of 28 January 2004:</b></p> <ul style="list-style-type: none"> <li>i. While there was little or no improvement in the budgetary position between 2004 and 2006, Ireland was on a sustainable path with some long-term risks;</li> <li>ii. Future age-related spending might become a problem, although the debt ratio was quite low and there was a gradual build-up of assets in the National Pensions Reserve Fund;</li> <li>iii. Commended the Irish authorities for the extension of multi-annual budgeting system to all capital spending.</li> </ul> |              | <p><b>2004 Article IV Consultations conclusions:</b></p> <ul style="list-style-type: none"> <li>a. Again commended Ireland’s impressive performance, which was based on sound economic policies, providing useful lessons for other countries;</li> <li>b. Economic recovery was expected to become stronger and broad-based in the short term, supported by external demand and a continued rebound in business investment;</li> <li>c. Core inflation was expected to remain moderate;</li> <li>d. The main risks to this outlook stemmed from the potential for further euro appreciation and the possibility of an abrupt unwinding of the housing boom;</li> <li>e. In the medium term, directors expected growth to be markedly lower, as many of the factors that accounted for the 1990s boom were one-off in nature;</li> <li>f. Growth would still remain high by international standards;</li> <li>g. The transition to slower growth would require adjustments in expectations in labour and housing markets and also in fiscal policy;</li> <li>h. Although inflation had decelerated – suggesting that expectations had adjusted to lower growth – the level of competitiveness had deteriorated;</li> <li>i. Directors called for an extended period of wage restraint as well as increased wage flexibility within the social partnership;</li> <li>j. While an abrupt unwinding of the housing boom was unlikely to cause concern about financial stability, the impact on employment and consumer spending could be significant;</li> <li>k. Many directors warned against providing additional incentives in the form of subsidies to home ownership and</li> </ul> |

| Year | EC Reports  | OECD Reports  | IMF Reports   |
|------|---|---|---|
|      |   |   | <p>urged the removal of interest-deductibility of mortgage payments on primary dwellings, as well as the introduction of a wealth tax on property;</p> <p>l. Although the overall outturn for 2003 and early returns in 2004 were better than expected, directors noted that this performance was in part due to one-off factors.</p>   |
| 2005 | <p><b>EC recommendation to Council of 2 February 2005:</b></p> <p>i. The macroeconomic scenario appeared plausible;</p> <p>ii. The budgetary stance seemed to be sufficient to maintain the SGP's medium-term objective of being close to balance or in surplus;</p> <p>iii. The risks attached to budgetary projections appeared broadly balanced as forecast receipts seemed plausible, contingency provisions were quite high, and Ireland had made encouraging progress in adhering to expenditure targets;</p> <p>iv. Ireland appeared to be in a relatively favourable position with regard to the long-term sustainability of its public</p> | <p><b>2. 2006 Economic Survey conclusions:</b></p> <p>a. As one of OECD's most open economies, Ireland was particularly exposed to external risks (declining exports and FDI);</p> <p>b. Domestic risks were important too, of which the most prominent was the risk of overshooting housing prices. Although a soft landing was considered the most likely scenario, a sharper fall could not be ruled out;</p> <p>c. The Irish Government should balance its Budget or even run a surplus, curtail tax breaks (especially in the housing sector) and push ahead with public management reforms to get better value for money from public expenditure; 70</p> <p>d. To prepare better for negative fiscal shocks the authorities should adopt a more top-down budgeting approach to help expenditure planning and control.</p> | <p><b>2005 Article IV Consultations conclusions:</b></p> <p>a. Commended Ireland's continued impressive economic performance;</p> <p>b. Directors concluded that economic growth was expected to be strong in the short term, driven by an acceleration of consumption and continued robust business investment;</p> <p>c. With a gradual cooling of the housing market, residential investment would likely decline modestly, starting in the following year;</p> <p>d. The main risks to the outlook were considered to be:</p> <p>(1) a further rise in oil prices,</p> <p>(2) an abrupt slowdown in global economic growth,</p> <p>(3) a sharp decline in the housing market and</p> <p>(4) rapid growth of aggregate demand giving rise to wage pressures, thereby undermining external competitiveness;</p> <p>e. Directors noted that the 2005 Budget imparted a considerable fiscal stimulus, while euro area monetary policy was very accommodative for Ireland;</p> <p>f. Directors underscored the importance of building a fiscal cushion in good times, in the event of downside risks</p> |

| Year | EC Reports  | OECD Reports | IMF Reports  |
|------|---|--------------|--|
|      | <p>finances with low debt ratios and accumulating reserves in the pension fund;</p> <p>v. Overall, economic policies were in line with 2003-2005 BEPG.</p>  |              | <p>materialising;</p> <p>g. The conduct of Ireland's fiscal policy had been laudable over the years and, while an enhanced public debate could help, no directors saw a case for a fiscal council.</p>   |
| 2006 | <p><b>EC recommendation to Council of 22 February 2006:</b></p> <p>i. Budgetary position was sound and the budgetary strategy provided a good example of fiscal policies in compliance with the SGP;</p> <p>ii. The EC invited Ireland to continue to implement measures to address the long-term budgetary implications of an ageing population.</p> |              | <p><b>2006 Article IV Consultations conclusions:</b></p> <p>a. Ireland was again commended, though growth had become increasingly unbalanced;</p> <p>b. Directors expected economic growth in 2006-07 to remain strong, driven by domestic demand and accompanied by a widening current account deficit and continued rapid credit growth;</p> <p>c. While the contraction of the construction sector to a more sustainable size over the medium term was likely to be smooth, directors noted that an abrupt correction could not be ruled out;</p> <p>d. While recognising that Ireland's fiscal position was sound, most directors considered that a modest fiscal tightening would be desirable in 2007, given the strength of domestic demand, potential risks of a hard landing and the need to prepare for population ageing, although a number of directors saw less merit in fiscal tightening at that juncture, pointing to the need for further spending to achieve social goals and the recent tightening of euro area monetary policy;</p> <p>e. Directors considered that continued wage moderation and labour market flexibility were essential to support competitiveness and broadly welcomed the new social partnership agreement.</p> |

| Year | EC Reports   | OECD Reports | IMF Reports   |
|------|--|--------------|---|
| 2007 | <p><b>EC recommendation of 7 February 2007:</b></p> <p>i. Medium-term budgetary position was sound and, provided the fiscal stance in 2007 did not prove to be procyclical, the budgetary strategy provided a good example of fiscal policies conducted in compliance with the SGP;</p> <p>ii. It would be prudent to maintain room for manoeuvre against any reversal of the current growth pattern which had been led by strong housing sector developments;</p> <p>iii. Ireland was invited to continue to implement measures to improve the long-term sustainability of its public finances.</p> |              | <p><b>2007 Article IV Consultations conclusions:</b></p> <p>a. Commended Ireland’s continued impressive economic performance, characterised by one of the highest growth rates of GNP per capita among advanced countries, underpinned by prudent fiscal policy, low taxes and labour market flexibility;</p> <p>b. Directors expected economic growth to remain robust over the medium term, but urged that careful attention be paid to a number of downside risks i.e. inflationary pressures, declining competitiveness, widening of the current account deficit, deterioration in global financial market conditions, the growth outlook of the US and the adjustment to a cooling of the housing market;</p> <p>c. While the slowdown of the housing sector had been gradual so far, a sharper correction in house prices could significantly slow economic growth;</p> <p>d. Ireland’s medium-term fiscal discipline was commended, but many directors saw the planned reduction in the 2007 fiscal surplus as an undesirable procyclical fiscal stimulus;</p> <p>e. Directors encouraged the authorities to restrain current expenditure growth and to continue to focus on improving the quality of public spending through cost-benefit analysis;</p> <p>f. Directors concurred that Ireland was well-placed to meet the fiscal challenges of increasing age-related spending over the long term;</p> <p>g. Although directors welcomed the indicators, including stress tests that confirmed the soundness of the Irish banking system, financial sector vulnerabilities required continued supervisory vigilance;</p> <p>h. Directors stressed that preserving and enhancing Ireland’s external competitiveness through wage moderation would be key to underpinning future growth prospects.</p> |

| Year | EC Reports   | OECD Reports  | IMF Reports |
|------|--|---|-------------|
| 2008 | <p><b>EC recommendation of 19 February 2008:</b></p> <ul style="list-style-type: none"> <li>i. Ireland was facing several macroeconomic challenges in its transition to a period of lower economic growth (mainly the return to more sustainable activity in the housing sector);</li> <li>ii. Slowing domestic demand had been accompanied by losses in recent years in export market shares as a result of price competitiveness challenges;</li> <li>iii. A notable deterioration of the fiscal position to a deficit over the period 2007- 2008 was envisaged; 67</li> </ul> | <p><b>3. 2008 Economic Survey conclusions:</b></p> <ul style="list-style-type: none"> <li>a. Economic fundamentals remained strong;</li> <li>b. In the short run, wage restraint and labour market flexibility were important to continue to attract FDI and to encourage foreign demand to offset the slowing down of domestic activity;</li> <li>c. In the longer run, stronger productivity growth, and continued increases in participation rates would be needed to sustain a fast pace of real income growth;</li> <li>d. Easing of activity had led to a slowdown in government revenues and a sharp drop in the fiscal surplus; at the same time Government was committed to a large infrastructure investment programme and there was a strong demand for better public services;</li> <li>e. Public finances faced serious pressures from the ageing of the population in the long run;</li> <li>f. Ireland was sensitive to weak US and UK demand for its exports and to lower FDI flows;</li> <li>g. Although Irish finances were in a relatively good position as the</li> </ul> |             |

| Year | EC Reports | OECD Reports   | IMF Reports |
|------|------------|--|-------------|
|      |            | country had achieved high growth rates in the past decade and a half, debt had diminished and the reserves in the pension fund had increased, public spending could increase and revenue growth had slowed down; therefore the Irish should commit to a more balanced fiscal policy. |             |

Sources: Wright Report (2010) - EC's recommendations to the Council on the Irish stability programmes from 1999 to 2010. OECD's economic surveys of 2003, 2006 and 2008 (these are published roughly every two and a half years). Executive Directors' conclusions from the bilateral article IV consultations procedure of the IMF 2000 - 2008

## Appendix D.1: Description of the Explanatory CAMEL Variables and Sources

| Variable Name                                | Definition  | Source    |
|--|---|-----------|
| <b>Capital Adequacy.</b>                     |   |           |
| Tier 1 Capital Ratio                         | Tier 1 or Core capital ratio. Tier 1 is used for commercial banks and core capital is used for savings and loans  | Bloomberg |
| Common Equity to Tot Assets (Leverage Ratio) | Used to determine the financial health and long-term profitability of a corporation. Calculated as:<br>Common Equity * 100 / Total Assets   | Bloomberg |
| <b>Asset Quality</b>                         |   |           |
| Loan loss provisions to total loans          | Ratio comparing the provision for loan losses over the year as a percentage of average total loan. This ratio gives an indication of the management's expectation of future loan losses. Calculated as:<br><br>(Provision for Loan Losses / Average Total Loan) * 100   | Bloomberg |
| Reserves for Loan Loss to Tot Loans          | Ratio used to measure a company's asset quality by comparing reserve for loan losses with total loans, in percentage. Calculated as:<br>(Reserves for Loan Losses / Total Loans) * 100  | Bloomberg |
| <b>Management quality</b>                    |   |           |
| Efficiency Ratio                             | Efficiency Ratio (also known as Cost to Income Ratio) is an efficiency measure commonly used in the financial sector. The Efficiency Ratio measures costs compared to revenues. Calculated as:<br>(Operating Expenses / ((Net Interest Income + Commissions & Fees Earned + Other Operating Income (Losses) + Trading Account Profits (Losses) - Commissions & Fees Paid) + Taxable Equivalent Adjustment | Bloomberg |

| Variable Name                                 | Definition   | Source    |
|---|--|-----------|
|   | or Net Revenue - Net of Commissions Paid) * 100  |           |
| <b>Earnings Potential</b>                     |  |           |
| Net Interest Income to Average Assets         | Net interest income to average assets in percentage.   | Bloomberg |
| Return on Assets                              | Indicators of how profitable a company is relative to its total assets, in percentage. Return on assets gives an idea as to how efficient management is at using its assets to generate earnings.<br>Calculated as: (Trailing 12M Net Income / Average Total Assets) * 100 | Bloomberg |
| Return on Common Equity                       | Net Interest Income/[(Total Assets + prior period's Total Assets)/2]*100   | Bloomberg |
| <b>Liquidity</b>                              |  |           |
| Loans to Deposit Ratio Percentage as Reported | Loans to deposits ratio, expressed in percentage, calculated by dividing the banks total loans over total deposits as reported by the company. This ratio is used to access a bank's liquidity.  | Bloomberg |
| ST Borrowings to Total Liab & Equity          | Ratio of short-term borrowings to total liabilities and equity, expressed in percentage.   | Bloomberg |

## Appendix D.2: Literature Review

| Author                | Method  | High-level results   | Level of analysis   |
|-----------------------|---|--|---|
| Altman                | This study uses the Z-score model, which is based on several financial ratios capturing asset quality, earnings performance, and liquidity. | Results found that when financial ratios are analysed collectively under the CAMEL grouping, results take on greater statistical significance than by analysing in isolation.  | The individual firm.  |
| Martin (1977)         | Martin's (1977), using discrete-response regression.  | He found that capital ratios, liquidity measures, and profitability were the most significant determinants of failure over his sample period. He also found that provision expense and loan concentration were significant indicators of potential failure.    | All American Fed-supervised institutions during a seven-year period in the 1970s.                                 |
| Sinkey (1978)         | This study uses discriminant analysis models. Weighted capital ratios were analysed to identify "problem" banks.                            | Sinkey found that bank capital and asset quality were important variables in an early warning analysis.  | 143 commercial banks on the problem bank list. These were compared with a random sample of 163 non-problem banks. |
| Thomson (1991)        | This study utilises a single-equation logit model to discriminate between samples of failed and non-failed banks in 1984–1989 in the US.    | Overall, the results indicate that up to 30 months before failure, solvency and liquidity are the most important predictors of failure. As the time to failure increases, asset quality, earnings, and management gain in importance as predictors of failure. | 1,736 non-failed financial institutions and c.194 failed institutions.  |
| Barr and Siems (1994) | This study utilises multiple input, multiple output data envelopment analysis (DEA) model.  | The results found that management as a variable is important to the successful operation of a bank. When the management variable was removed from the full model, the results of early-warning models became less accurate.                                    | The results from an analysis of 930 banks over a five-year period.  |

| Author  | Method  | High-level results   | Level of analysis   |
|---|---|--|---|
| González-Hermosillo (1999)                    |   | Shows empirical evidence that the CAMEL-type assessment is statistically significant only if non-performing loans and capital adequacy are simultaneously considered.          |   |
| Kick and Koetter (2007)                       | To estimate respective probabilities of distress, the financial profile of a bank is specified by means of CAMEL components as well as macroeconomic covariates lagged by one period.   | Their study found that the following variables are strong indicators of bank distress: capital adequacy, asset quality, cost efficiency, earnings, liquidity, and market risk. | Research based on a large sample of German banks during 1995–2004.    |
| Poghosyan and Cihak (2009)                    | This study uses financial data on 5,708 banks in the EU-25 countries in 1996–2007. To evaluate the impact of various financial indicators on the probability of bank distress use several versions of the logistic probability model.   | Their study found that bank distress is linked to capitalisation, asset quality, earnings, liquidity, market risk and the cost of funds.                                       | Working with a large sample of banks in Europe from mid-1990 to 2008. |
| Sagarra, Mar-Molinero & García-Cestona (2015) | The analysis was based on financial ratios calculated from items in the balance sheet and in the profit and loss account. The study sought to establish whether distress in the Spanish savings banks could have been predicted before the GFC. The study uses multivariate statistical methods, which included logit regression. | Their study shows that the savings banks that had to be rescued had low values of capital adequacy ratios, low performance ratios and poor asset quality ratios.               | The final data set included 43 Spanish domestic banks.                |

### Appendix D.3: Banks and Countries included in the Sample

The countries included in the sample are the following: Belgium, Denmark, Norway, Austria, Italy, France, Switzerland United Kingdom, Germany, Ireland, Spain, and Sweden. The following table provides details on the banks in the respective countries.

#### Countries and banks included in the sample

| Countries and banks included in the database | Country     | Bail out |
|--|-------------|----------|
| Allied Irish Banks plc                       | Ireland     | Yes      |
| Anglo Irish Bank                             | Ireland     | Yes      |
| Banco Bilbao Vizcaya Argentaria SA           | Spain       | No       |
| Banco Santander SA                           | Spain       | No       |
| Bank of Ireland                              | Ireland     | Yes      |
| Barclays Plc                                 | UK          | No       |
| BNP Paribas                                  | France      | Yes      |
| Commerzbank AG                               | Germany     | Yes      |
| Credit Suisse Group                          | Switzerland | No       |
| Danske Bank A/S                              | Denmark     | No       |
| Deutsche Bank AG                             | Germany     | No       |
| CreditAgricole                               | France      | Yes      |
| Dexia  | Belgium     | Yes      |
| DnB Nor ASA                                  | Norway      | No       |
| Erste Group Bank AG                          | Austria     | Yes      |
| Gruppo Monte dei Paschi di Siena-Banca       | Italy       | Yes      |
| HSBC Holdings Plc                            | UK          | No       |
| Intesa Sanpaolo                              | Italy       | No       |
| KBC Group                                    | Belgium     | Yes      |
| Lloyds Banking Group Plc                     | UK          | Yes      |
| Natixis                                      | France      | Yes      |
| Nordea Bank AB (publ)                        | Sweden      | No       |
| Royal Bank of Scotland Group                 | UK          | Yes      |
| Société Générale                             | France      | Yes      |

| <b>Countries and banks included in the database</b> | <b>Country</b> | <b>Bail out</b> |
|---|----------------|-----------------|
| Standard Chartered Plc                              | UK             | No              |
| Svenska Handelsbanken                               | Sweden         | No              |
| UBS AG  | Switzerland    | Yes             |
| UniCredit SpA                                       | Italy          | No              |

## Appendix E: Irish Provisioning Regime

In 2005, EU banks fully adopted IFRS.<sup>91</sup> The ensuing adoption of IAS 39 to regulate loan loss provisions led Ireland to drop the Statement of Recommended Accounting Practices for Banks (SORAP), while Spain maintained DP in addition to IAS 39. Below provides a brief comparison between IAS 39 and SORAP. For the purposes of this chapter, the fact that IAS 39 did not permit general provisioning for loan losses as SORAP did is crucial. IAS 39's requirement that objective evidence of a loss incurred before loan-loss provision could be made differed sharply from DP. Irish and other European banks apart from Spanish institutions thus could not provision for losses expected as a result of future events, no matter how likely. DP, by contrast, required a bank to provide for expected losses on credit expectations through an economic cycle at the outset of the loan. This key difference with respect to the timing of the provisioning meant that DP recognised credit losses from the point of purchase or origination of the financial instruments, while IAS 39 enforced a time threshold before banks could recognise expected losses.<sup>92</sup> The FSA (2009, p.9) stipulates that management must determine provisioning for loan losses according to their judgement, recognising the subjective nature of estimates of loan losses that have not yet been individually identified. Under IAS 39, the ability of Irish banks' managers to exercise discretion in determining general provisions became limited; finding objective evidence could have proved challenging for management, especially in an environment of such strong economic growth. During the expansionary phase of the Irish business cycle between 1992 and 2007, incurred losses were low and the two main Irish banks made lower charges to their profit and loss accounts than they had previously.

| Extracts from:  | IAS 39 and SORAP rationale and differences   | Key Difference  |
|---|--|---|
| <p><u>IAS 39</u><br/>           “Losses expected as a result of future events, no matter how likely, are not recognised” (paragraph 59, 2005 IAS 39).</p> | <p>(i) Under IAS 39, banks must determine whether an asset is impaired separately for each individually significant asset but can do so collectively for groups of similar assets that are not individually significant.</p> <p>(ii) If assets are individually significant and testing reveals no impairment, the institution must include them in a further, collective assessment (Ernst and Young 2004).</p> <p>(iii) The new requirement to subject individually assessed assets to a</p> | <p>Under IAS 39, a loan allowance can only be made when there are explicit adverse changes in the status of the borrower, or when economic conditions</p> |

<sup>91</sup> In March 2002, in line with the EU goal to achieve capital market integration and convergence of financial reporting not only across EU but also between Europe and the rest of the world, the European Parliament passed legislation requiring all firms listed on stock exchanges of European member states to apply IFRS when preparing their financial statements for fiscal years beginning on or after January 1, 2005

<sup>92</sup> The rules delayed recognition of a default, no matter how likely (PWC 2012).

|  |   |  |
|--|---|--|
|  | <p>second, collective assessment is designed to allow recognition of losses believed to exist in the portfolio but not yet evident. (This is sometimes referred to as latent loss.) This was the stated purpose of most banks' general provisioning in the past (Ernst and Young 2004, p.9).</p>  | <p>demonstrably correlate with defaults on the assets.</p> |
| <p><u>SORAP</u><br/> “[P]ast experience will provide some guide, but current economic and other factors affecting the business climate should be taken into account” (paragraph 18 SORAP).</p> | <p>The SORAP regime made assessing the appropriate level of general provision the responsibility of bank management and allowed a certain element of subjectivity. Traditionally banks made a 1 per cent general provisions charge per loan.</p> <p>General provisions were commonly created to provide for losses that were expected in the future. As this did not represent incurred losses, regulators tended to allow institutions to count them as capital.</p> |  |

### **Appendix F.1: Principles the FR expected financial service providers to abide by**

1. Conduct their functions in a transparent and accountable manner;
2. Act with prudence and integrity and in the best interests of their customers at all times;
3. Maintain at all times sufficient financial resources to meet all their commitments;
4. Have in place sound corporate governance procedures;
5. Have oversight and reporting systems that allow the board and management to monitor and control all operations;
6. Have in place internal controls that are adequate for the nature, scale and complexity of their operations;
7. Have risk management policies and risk control systems appropriate to the nature, scale and complexity of their operations;
8. Comply with any regulatory rules set down by the Financial Regulator in relation to, for example, solvency and capital adequacy, liquidity, segregation of client funds, consumer protection codes; and
9. Produce accurate, complete and timely information, when required.

Source: Financial Regulator annual report (2006 p.33)

## Appendix F.2: Variable Definition

| Variable  | Definition  | Data Source |
|---|---|-------------|
| Banks' loan to deposit                            | Total loans divided by total deposits.  | Bloomberg   |
| Bank's Equity/Assets                              | Total equity divided by total assets  | Bloomberg   |
| Banks' Deposits/Assets                            | Customer deposits divided by total assets   | Bloomberg   |
| Bank's Debt/Assets                                | Nondeposit liabilities divided by total assets (Notes: Non-deposit liabilities are defined as (total liabilities minus total deposits) divided by total liabilities.)   | Bloomberg   |
| Banks' Long-Term Debt/Equity                      | <p>In risk analysis, a way to determine a company's leverage. The ratio is calculated by taking the company's long-term debt and dividing it by the total value of its preferred and common stock. Put graphically:</p> $\text{Ratio} = \text{Long-term debt} / (\text{Preferred stock} + \text{Common stock})$ <p>The greater a company's leverage, the higher the ratio. Generally, companies with higher ratios are thought to be more risky because they have more liabilities and less equity.</p> | Bloomberg   |
| Bank's Short-Term Debt/Total Debt                 | The short-term debt funding ratio is the share of debt expiring within the year, as a share of total bank debt  | Bloomberg   |
| Tier 1 capital ratio                              | Tier I capital ratio consists of capital (shareholders' capital, reserves, and hybrid capital to certain limits) divided by risk-weighted assets and is a capital buffer for loss absorption. The highest quality (that with the highest loss-absorbing capacity) is common equity Tier 1 (CET1) capital, which is mostly in the form of common equity.   | Bloomberg   |
| Share Price decline - January 2007 - January 2009 | The fall in share price between January 2007 to January 2009  | Bloomberg   |