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THEMED PAPER

The financial crisis in Europe: evolution, policy responses and lessons for the future

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Abstract

Purpose – The purpose of this paper is to provide an account of the financial crisis in Western Europe, primarily from a country-level and banking sector perspective, from 2007 to the spring of 2009. It aims to detail measures enacted by governments and central banks to deal with impaired bank assets, recapitalize or otherwise resolve troubled banks, and inject liquidity into the banking system. It also aims to examine reform proposals aimed at creating a more secure and stable financial system.

Design/methodology/approach – The paper draws on factual material and analysis that is presented in central bank reports, other banking sector surveys and reports, media reports, and analysis by leading academics and practitioners sourced from published articles and books, working papers and blogs.

Findings – Recent firefighting measures to purchase impaired assets, recapitalize troubled banks, and inject liquidity have commanded widespread support, despite moral hazard concerns surrounding publicly funded bank bailouts. However, the roadmap to recovery remains uncertain. There is concern that significant volumes of impaired assets have been retained on many Western European bank balance sheets. Under the regulatory framework that is being shaped in response to the crisis, banks are expected to become leaner, more strongly capitalized and less highly leveraged, and to develop improved risk management practices.

Originality/value – This paper is written for a broad audience to provide a descriptive summary of the financial crisis in Western Europe, a survey of the debate concerning the implications for bank regulation and an extensive bibliography that will serve as a valuable resource for banking academics and practitioners.

Keywords Europe, Banking, Recession, Regulation

Paper type General review

Introduction

This commentary paper provides an account of the development of the financial crisis in Western Europe, primarily from a country-level and banking sector perspective, from 2007 to the spring of 2009. As in the USA, the policy response by European governments and central banks has been substantial and unprecedented. Measures enacted range from initiatives dealing with impaired bank assets, measures directed at recapitalizing or otherwise resolving troubled banks, and actions designed to inject liquidity into the banking system. This paper also considers longer-term supervisory

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and regulatory lessons from the crisis, with reference to the current academic and practitioner debate. The implications of this debate for the future architecture of financial services, financial markets and financial regulation are discussed.

The International Monetary Fund's (IMF's), (2009) reports an estimate of $2.7 tn for write-downs of the US-originated assets by banks and other financial sector institutions between 2007 and 2010. Estimated write-downs for all mature market-originated assets for the same period are in the region of $4 tn. The same report contains estimates of the implications of these write-downs for bank recapitalization. To restore bank capital-assets ratios to the average level before the crisis of 4 per cent, the required capital injections are $275 bn for banks in the USA, $325 bn for the euro area, $125 bn for the UK, and $100 bn for other mature European countries. To restore capital-assets ratios to the average level of 6 per cent that existed in the mid-1990s, the required injections are $500 bn, $725 bn, $250 bn and $225 bn, respectively.

Many of the major developments that have impacted upon European banking systems since 2007 have been triggered by events in the USA. These events are described elsewhere by Bailey *et al.* (2008), Caprio *et al.* (2008), Felton and Reinhart (2008), Flannery (2008), Hellwig (2008) and Caprio and Honohan (2009). For analysis of the causes of the financial crisis (Acharya and Richardson, 2009; Brunnermeier, 2009; Brunnermeier *et al.*, 2009; Calomiris, 2009; Milne, 2009).

The financial crisis in European banking

This section describes the key events affecting key Western European banking systems during the period from 2007 to April 2009. Individual subsections for the UK, Switzerland, Iceland, Germany, Spain and Benelux (Belgium, The Netherlands and Luxembourg) are followed by a summary description of events in other countries.

UK

The retail bank Northern Rock was the first major UK casualty of the financial crisis. On 13 September 2007 Northern Rock announced that it had received emergency financial support from the Bank of England. Following a run on Northern Rock's high-street branches, on 17 September the UK government announced a full guarantee of the bank's retail deposits. On 1 October, the UK authorities strengthened the deposit guarantee scheme, by eliminating a provision whereby deposits between £2,000 and £35,000 were only 90 per cent guaranteed. On 17 February 2008, having finally exhausted attempts to find a private sector buyer, the nationalization of Northern Rock was announced. On 21 February, new provisions were announced for faster intervention in cases of imminent bank failure, in recognition that authorities' powers to intervene had been inadequate in September 2007. Underlying causes of the Northern Rock failure included over-aggressive growth in mortgage lending, over-dependence on short-term wholesale funding and regulatory failure.

In April 2008, the Bank of England announced a special liquidity scheme, to allow banks to swap temporarily high-quality mortgage-backed and other securities for treasury bills. Swaps for up to three years, to the value of £50 bn, would be available. While the monetary authorities attempted to inject liquidity into the banking system, several major write-downs of non-performing assets were announced. In April, Royal Bank of Scotland (RBS) announced plans for a £12 bn rights issue. In July, Barclays announced that only 18 per cent of the shares in a £4.5 bn rights issue had

been taken up, and HBOS similarly announced that only 8 per cent of a £4 bn rights issue had been taken up.

On 17 September 2008, Lloyds TSB announced that it was to acquire HBOS for £12 bn, creating the Lloyds Banking Group, with a market share of around one-third in the UK savings and mortgage markets. The UK competition authorities deemed that the aim of preventing the collapse of HBOS overrode any competition policy concerns. On 29 September, after several months of uncertainty and a sharply declining share price, the UK government announced its acquisition of the mortgage-lending arm of Bradford and Bingley. The still-viable depositor base and branch network were sold to the Spanish Santander group. On 6 October, the UK government lifted the ceiling on the deposit guarantee scheme from £35,000 to £50,000, and on 8 October a blanket guarantee was announced for UK retail deposits in Icesave, the internet banking arm of the failed Icelandic bank Landsbanki.

In October 2008, the UK government announced the creation of a £50 bn fund for the recapitalization of ailing banks. The mechanics would involve government purchase of preference shares. At the same time, the special liquidity scheme was extended, making available on demand treasury bills to the value of at least £200 bn, to be swapped for illiquid high-quality securitized assets. Treasury guarantees would be provided on commercial terms for up to £250 bn of wholesale funding. On 13 October, capital injections were announced for RBS (£20 bn), and Lloyds (£17 bn), increasing the public ownership stakes in these banks to around 60 and 40 per cent, respectively. In return, commitments were made to lend at competitive rates to homeowners and small businesses, reschedule mortgage payments for homeowners facing difficulties, and exercise restraint over executive compensation.

Loan guarantees of up to £20 bn to small- and medium-sized firms were announced in January 2009, along with further measures to restore confidence. These included: an extension of the credit guarantee scheme; a new facility for asset-backed securities to be used as collateral for banks seeking funds to support mortgage lending; extended provisions for banks to swap illiquid assets for treasury bills (replacing the special liquidity scheme); a new Bank of England facility for purchasing up to £50 bn of high-quality assets; and a new capital and asset protection scheme for selected eligible bank assets. In February, a permanent special resolution regime was established, to strengthen provisions for intervention in the case of banks facing financial difficulties. Details of recourse to the capital and asset protection scheme by RBS and Lloyds were unveiled soon afterwards. RBS would participate in respect of £325 bn of assets, in exchange for a fee of £6.5 bn. The treasury also agreed to acquire a £13 bn equity stake, with an option for a further £6 bn. Exercise of this option would leave 95 per cent of RBS in public ownership. Lloyds announced subsequently that it had agreed to participate in respect of £260 bn of assets, increasing its public ownership stake from 43 to 65 per cent.

Switzerland

By international standards, the Swiss banking sector is large. In 2007, the ratio of total banking sector assets to gross domestic product (GDP) was 9.2 for Switzerland. The corresponding ratios for France, Germany, Italy and the UK were 3.1, 2.9, 1.6 and 3.6, respectively. Swiss banking is dominated by UBS and Credit Suisse, both of which provide services in investment banking, private banking and asset management.

The large relative size of the banking sector reflects Switzerland's importance as an offshore banking centre. UBS and Credit Suisse are less dominant in their domestic market, with a combined market share of around one-third. The rest of the Swiss banking sector comprises the semi-governmental cantonal banks, the Raiffeisen group consisting of a large network of local cooperative banks, and a number of regional banks specialising in lending and deposit business.

Offshore assets held by Swiss private banks were valued at $2 tn in 2008. A reputation for competence and discretion has been essential in attracting business from overseas clients. As part of the fallout from the credit crisis, however, the culture of secrecy that pervades offshore banking centres, including Switzerland, has become increasingly subject to critical scrutiny. Concerns have been raised in the USA and elsewhere that the balance struck between client privacy and matters of public interest leans too heavily towards the former, and that offshore banking centres offer safe havens for some clients with dubious motives, such as tax evasion, avoidance of divorce settlements or criminal activities.

Having invested heavily in US mortgage-backed securities during the run-up to the credit crisis, an area in which it had lagged previously, UBS has experienced heavy losses subsequently. Following a series of smaller write-down announcements, in April 2008 UBS announced a further write-down of SFr19 bn on its mortgage investments. A SFr15 bn capital injection, underwritten by a syndicate of banks, was accompanied by the departure of UBS's chairman. In October 2008, the Swiss Government injected SwFr6 bn into UBS through a convertible bond issue, giving the government an eventual ownership stake of up to 9.3 per cent. At the same time, SFr60 bn of troubled UBS assets were transferred into a new fund, managed and 90 per cent funded by the Swiss National Bank, with UBS providing the remaining 10 per cent funding. By the end of 2008, UBS had posted almost SFr50 bn in write-downs and losses, more than any other European bank. Credit Suisse's subprime exposure was less extreme than that of UBS. However, in October 2008, Credit Suisse was obliged to raise SFr10 bn through sales of assets including treasury shares and convertible bonds, representing about 12 per cent of the bank when the bonds convert to shares.

UBS has suffered considerable reputational damage, but has also drawn some praise for taking steps towards recovery faster and more decisively than many other European banks. UBS started to recapitalize relatively early, while some private finance was still available. The transfer of assets into what is effectively a publicly funded "bad bank" was a decisive step towards cleaning and shrinking UBS's balance sheet. Steps towards internal reorganization include the installation of new leadership, staff cuts and the separation of the investment banking, private banking and asset management functions into separate divisions. In future, UBS is committed to focusing primarily on its core asset management specialism. However, in February 2009, the bank became engulfed in fresh controversy when the US government demanded revelation of names of all 52,000 American UBS clients, alleging conspiracy to defraud the Inland Revenue Service and federal government of tax revenue. UBS's chief executive stepped down from his post one week later.

Iceland

Relative to the size of its economy – Iceland's population is just over 300,000 – the collapse of Iceland's banking system in autumn 2008 has been adjudged the largest

of all time by the IMF. Following financial deregulation in 2001, Iceland's three major banks, Landsbanki, Kaupthing and Glitnir, developed a business model that circumvented the constraints on growth implied by the small size of the Icelandic economy, by attracting funding from international capital markets. Between 2006 and 2008 Landsbanki and Kaupthing set up online banking operations offering high-interest internet accounts to depositors in the UK and The Netherlands in the case of Landsbanki's Icesave brand, and through subsidiaries trading under the Kaupthing Edge brand in nine European countries.

Prior to the banking crisis, Iceland's current account deficit was clearly unsustainable, having reached 25 per cent of GDP in 2006, and 15 per cent in 2007. Between January and September 2008, consumer price inflation was running at around 14 per cent, and domestic interest rates reached 15.5 per cent. Despite a 35 per cent decline in value against the euro during the first nine months of 2009, the krona was still significantly overvalued, bolstered by short-term capital inflows attracted by the high-domestic interest rate. When liquidity in the interbank markets dried up in mid-September 2008 following the liquidation of Lehman Brothers in the USA, the Central Bank of Iceland had inadequate reserves to be able to guarantee the banks' debts as lender of last resort. The European Central Bank (ECB), US Federal Reserve, Bank of England and the three Nordic central banks collectively declined to provide sufficient assistance to avert the imminent crisis.

On 29 September 2008, it was announced that the Icelandic government was to acquire a 75 per cent stake in Glitnir. This part-nationalization was not completed, however, and a few days later Glitnir was placed into receivership. Reports in the British press over the weekend of 4-5 October 2008 appear to have triggered a run on savings in Icesave by the UK and Dutch online depositors, and Landsbanki was placed into receivership on 7 October. Since Icesave was a branch (not a subsidiary) of Landsbanki, its UK depositors were not protected under the UK deposit insurance; however, on 8 October the UK government froze Landsbanki's UK assets, and announced it would compensate the UK retail depositors in full. A number of the UK local authorities and other governmental organisations, which had deposited spare funds with Icelandic banks, would not be guaranteed reimbursement, and the full extent of their losses remains unknown at the time of writing. Meanwhile on 8 October, the UK's Financial Services Authority placed Kaupthing's UK subsidiary into administration and sold its internet bank Kaupthing Edge to the Dutch group ING Direct. In Iceland Kaupthing followed into receivership on 9 October, and over the next few days Kaupthing's other subsidiaries were either wound up or taken into public ownership by the respective national authorities.

With the krona continuing to fall precipitously against the euro, the Icelandic government applied for IMF assistance in late-October 2008. In November, the IMF agreed to provide a $2.1 bn standby programme over two years, supplemented by assistance in the form of loans and currency swaps from the governments of the Nordic countries, Russia, Poland, the UK, The Netherlands and Germany, which brought the headline value of the full package to over $10 bn. The terms of the IMF package impose obligations on the Icelandic government in the areas of currency stabilization and inflationary control, bank restructuring and fiscal retrenchment. A sharp fall in GDP is anticipated in 2009, projected at around 10 per cent at the time of writing. Several years of austerity appear inevitable. A new Icelandic government elected in April 2009 is

committed to applying for full European Union (EU) membership and adoption of the euro as soon as possible. Membership of a global reserve currency is viewed as offering future protection against the exposure that destroyed the Icelandic banking system in 2008, and may alleviate the banks' difficulties in raising short-term foreign funds to cover their foreign debts.

Germany

Unlike many European countries, Germany ran a current account surplus during the 2000s, and avoided a housing market bubble of the kind experienced in the USA, the UK, Spain and Ireland. During the financial crisis, however, German banks have encountered difficulties similar to those experienced elsewhere. German banks subdivide into commercial, public and cooperative banks. Public banks include the Land banks (Landesbanken), which are owned by the state (Land) governments; and the savings banks (Sparkassen), predominantly owned by local government. The Landesbanken provide clearing and other forms of payment and settlement services, and pursue non-profit objectives related to regional development. The Sparkassen, which dominate retail banking in Germany, have a local or regional focus. Small member-owned and not-for-profit cooperative banks (Kreditgenossenschaften) focus on deposit-taking activities within narrowly defined local geographic areas. The highly fragmented structure of the German banking sector has been cited widely as a source of weakness, with many small banks operating below the minimum efficient scale. The pursuit of non-profit objectives related to regional development or financial exclusion resulted in the Landesbanken and many of the Sparkassen increasing the size of their balance sheets by creating high-risk assets. The counterpart of Germany's current account surplus was a high-domestic savings ratio, which provided the funds for German banks to increase their loans portfolios, including significant exposures in Central and Eastern Europe.

IKB Deutsche Industriebank was one of the first casualties of the credit crisis. In August 2007, IKB's structured investment vehicle (SIV) Rhineland Funding called on a €12 bn line of credit underwritten by IKB and several other banks. One of these, Deutsche Bank, exercised an option to cancel the commitment. IKB was bailed out by the public development bank Kreditanstalt fur Wiederaufbau. In August 2007 Sachsen LB, a small Landesbank with a large subprime exposure, entered into negotiations which led to its eventual acquisition by the largest Landesbank, Landesbank Baden Wurttenberg, with the first €12 bn of losses guaranteed by the Saxony state government. In January 2008 WestLB, a former Landesbank that had converted to a commercial bank in 2002, secured €5 bn of loan guarantees from the North Rhine Westphalia state government and a consortium of local banks. Hypo Real Estate, a holding company comprising a number of specialist property finance banks including the troubled Depfa Bank (a German bank headquartered in Dublin which specialized in financing infrastructure projects), was the most prominent German casualty of the liquidity crisis of autumn 2008. In October, an initial €50 bn rescue package was agreed, comprising a €20 bn credit line from the Bundesbank and €30 bn of support from other German banks. By April 2009, with total government support for Hypo Real Estate having exceeded €100 bn, a transfer into public ownership appeared imminent.

In October 2008, the Bundestag issued a policy declaration providing an informal guarantee for all non-banks' bank deposits, and established the Financial Market Stabilisation Fund (SoFFin). SoFFin was authorised to provide loan guarantees of up to

€400 bn for new debt and liabilities incurred up to the end of 2009. There were provisions for recapitalization of banks up to a normal limit of €10 bn per institution. To qualify for capital injections, commitments would be required to curb executive pay and suspend dividends. SoFFin was authorised to temporarily acquire risk exposures held by banks or their SIVs prior to 13 October 2008 of up to €5 bn per institution. SoFFin was authorised to raise finance of up to €100 bn to support these interventions. Commerzbank, Germany's second-largest bank, received €18.2 bn of support from SoFFin between November 2008 and January 2009, required partly to cover losses emanating from the acquisition by Commerzbank of Dresdner Bank in August 2008.

Spain

Two distinctive features of the Bank of Spain's regulatory approach in the run-up to the crisis have attracted particular scrutiny. The first concerns the dynamic provisioning regime introduced in 2000, requiring banks to harmonize loan-loss provisioning with the lending cycle, and achieve an accurate accounting recognition of *ex ante* credit risk. Under dynamic provisioning, the loan-loss provision is created at the inception of the loan, reducing the cyclical impact of provisioning, and correcting biases and volatility that would otherwise affect the bank's profit and loss account. The second aspect is the requirement that assets channelled through SIVs are subject to the same capital requirements as on-balance sheet assets. The opportunity for regulatory arbitrage through the creation of SIVs having been blocked, most Spanish banks abstained from creating these off-balance sheet vehicles.

During 2007 and 2008, the two largest Spanish banks, BBVA and Banco Santander, wrote off smaller proportions of their loans portfolios than many of their European competitors. However, a sharp downturn in the Spanish economy in 2008, coinciding with the collapse of a property market bubble, seemed certain to increase non-performing loans ratios and erode capital buffers. Having both made major forays into Latin American markets during the 2000s, BBVA and Santander were susceptible to recessions in several countries in this region in 2008 and 2009. The Spanish government bailout in March 2009 of a small mutually owned savings bank, Caja Castilla La Mancha, raised concerns that the fall-out from the property market collapse could yet impact severely on the banking sector. Mortgage lending to households appears to be of lesser concern than lending to builders and property developers, to which Spain's savings banks are heavily exposed.

Belgium, The Netherlands and Luxembourg

Prior to the credit crisis, Fortis Holdings was a large financial services conglomerate based in Belgium, The Netherlands and Luxembourg. In late-September 2008, Fortis' share price plummeted amidst rumours of difficulties in raising liquid funds through the interbank markets. On 28 September, it was announced that the three Benelux governments would acquire stakes in Fortis of €4.7 bn, €4 bn and €2.5 bn, respectively. On 3 October, however, in the face of Belgian accusations that the Dutch had reneged on their earlier commitment, the Dutch government announced the full €16.8 bn acquisition of the Dutch banking and insurance subsidiaries of Fortis. The Dutch government would also acquire the Fortis share of ABN AMRO's retail business. On 5 October, the press reported that the French bank BNP Paribas would acquire Fortis Bank, with the Belgian and Luxembourg governments reduced to minority shareholder status in exchange for shares in BNP Paribas. Subsequently, the breakup of Fortis was subject to

protracted litigation by disaffected shareholders. The sale of a 75 per cent stake in Fortis Bank to BNP Paribas was eventually approved in April 2009.

The governments of Belgium, Luxembourg and France contributed to a joint €6.4 bn recapitalization plan for the Dexia Group, announced on 30 September 2008. Dexia's difficulties appear to have originated in a large loan it had granted to the German-Irish Depfa Bank. The Belgian government also provided guarantees for new borrowing by Dexia, and a capital injection of €1.5 bn for the insurance company Ethias. In The Netherlands, a €20 bn bank recapitalization fund was established, and on 13 October the Dutch deposit guarantee scheme was extended to cover individual deposits of up to €100,000 in Icesave. On 19 October, ING Group accepted a €10 bn Dutch government recapitalization plan, in exchange for securities and government participation in operational and investment decisions. Smaller capital injections were provided to Aegon (€3 bn) and SNS Reaal (€750 mn). The Dutch government has provided guarantees for €200 bn of new bank debt, and €50 bn fund has been earmarked for the purchase of high-quality bank assets, either temporarily or permanently.

Other European countries

Rapid economic growth in Ireland during the period prior to 2006 coincided with a housing and commercial property market boom, with much of the bank lending for property development financed in the interbank markets. After the property bubble burst in 2007 and interbank lending dried up in 2008, it was clear that the Irish banks' liquidity and solvency would be severely tested. On 20 September 2008, coverage under the Irish deposit guarantee scheme was raised from 90 to 100 per cent of each individual's deposit, subject to a limit that was increased from €20,000 to €100,000. On 29 September, the government announced a two-year guarantee of all deposits and some categories of senior debt, for certain banks. This scheme took effect from 24 October for the three major domestic banks, Bank of Ireland, Allied Irish Banks (AIB) and Anglo-Irish Bank, three other domestic banks and one foreign-owned bank. On 15 January 2009, the nationalization was announced of the third-largest bank, Anglo Irish Bank, amidst allegations of inappropriate or fraudulent accounting practices involving the concealment of loans from shareholders. On 11 February, the government announced a €7 bn recapitalization package for Bank of Ireland and AIB. In return for capital injections of €3.5 bn each, the government received preference shares and an option to purchase 25 per cent of the ordinary shares of each bank. In April 2009, the Irish government announced its intention to set up an asset management company ("bad bank") to acquire non-performing bank assets. Publicly, however, there is considerable disquiet over the role of this organization.

In France, the banking sector entered the financial crisis in a relatively healthy condition following several years of sustained growth and strong profitability. Subsequently, however, Societe Generale has been hit by exposure to subprime lending losses, and an alleged fraud on the part of one of its traders that became public knowledge in early 2008. Both Credit Argricole and Caisse d'Espargne have sustained substantial losses. In October 2008, the French government announced that it was setting aside €40 bn for bank recapitalization and the purchase of assets. A fund to provide guarantees covering bank lending totalling €320 bn was also established. Between October 2008 and March 2009, two tranches of €10.5 bn were allocated to the six largest French banks in the form of subordinated debt, subject to obligations for the

banks to sustain growth in lending. €1 bn of public funds was contributed to the bailout of the Belgian Dexia Bank.

Having largely abstained from securitization and the creation of SIVs during the run-up to the credit crisis, Italy's banks faced a lower subprime exposure than those in some other countries. One exception, however, is Unicredit, which has experienced losses following its acquisition of the German bank HypoVereinsbank in 2005. No bank recapitalization fund has been publicly announced in Italy, although individual consideration will be given to cases requiring support. In October 2008, the government established a €40 bn swap facility for the conversion of bank debt into treasury bills. Five-year guarantees are available for all new bank bonds. In February 2009, a new measure was implemented for the government purchase of bank bonds.

In October 2008, Denmark introduced a two-year blanket guarantee scheme for bank liabilities. In January 2009, a DNK100 bn capital injection fund was established to provide hybrid capital in the form of loans of infinite maturity, subordinate to primary debt, convertible to equity if demanded by the regulator, or redeemable after three years. In October 2008, Norway allocated NOK 350 bn for a new swap facility, allowing the conversion of bank loans to government debt. In January 2009, NOK 50 bn was allocated for bank recapitalization, with terms to be negotiated on an individual basis. Carnegie Investment Bank, temporarily nationalized on 10 November 2008, was the first bank in Sweden to be bailed out during the present crisis. However, concerns have been raised over the size of the exposures of several Swedish banks, including Swedbank and SEB, in Eastern Europe, especially to the Baltic states. In February 2009, the Swedish Government announced the allocation of SEK50 bn for bank recapitalization.

In October 2008, Austria announced the allocation of €100 bn in response to the crisis: €15 bn for bank recapitalization; €10 bn for increased limits for deposit guarantees and €75 bn for guarantees on interbank lending. Austrian banks carry significant exposures in a number of countries in Central and Eastern Europe and South-Eastern Europe. Greece has set up a €28 bn fund for support of the banking system: €5 bn for bank recapitalization in the form of purchase of preference shares; €15 bn for guarantees of new bank debt and €8 bn for the issue of government debt deposited with Greek banks, enabling them to access liquid funds from the ECB. Concerns have been expressed over the exposure of Greek banks to loans written in South-Eastern Europe. Finally, in October 2008, Portugal announced a €20 bn package to guarantee new bank lending. The availability of public funds for bank recapitalization was announced in November, alongside plans to nationalize the troubled Banco Portugues de Negocios.

Policy lessons

This section provides a selective review of the academic and practitioner debate concerning policy lessons from the financial crisis, and the implications for the future architecture of financial services, financial markets and financial regulation.

Bank recapitalization, and cleaning bank balance sheets

During the crisis, national governments and central banks have adopted several alternative approaches to dealing with troubled assets on bank balance sheets, and banks in need of recapitalization. In October 2008, the US government earmarked $700 bn of public funding for the purchase of troubled assets, through the troubled assets relief program (TARP). A fundamental difficulty soon emerged, however,

in valuing illiquid troubled assets for purchase. With marked-to-market asset prices often having fallen below balance sheet valuations, many banks were reluctant to sell. TARP was quickly adapted into a vehicle for public-funded bank recapitalizations, including Bank of America and Citigroup. In March 2009, a revised variant of TARP was launched, involving joint private-public purchase of troubled assets, but it appears similar difficulties still arise in striking a fair price at which to trade (Hoshi and Kashyap, 2009; Ryan, 2009).

The UK has favoured retaining troubled assets within banks, and providing credit insurance guarantees for a fee. Since the Northern Rock debacle, the UK authorities have responded vigorously to subsequent episodes of bank distress; however, concerns have been raised that the UK approach risks repeating the experience of Japan during the 1990s, when troubled assets were retained on balance sheets and the banks deleveraged gradually by implementing restrictive lending policies. The Japanese economy entered a long-lasting deflationary spiral, and may have suffered more in terms of lost output over the past 20 years than any other financial crisis victim. The Japanese experience was in marked contrast to that of Sweden, which dealt with a banking crisis in the early 1990s by transferring troubled assets into a separate "bad bank", restoring the troubled bank that originated the transferred assets to "good bank" status with a cleaned-up balance sheet. As noted above, in the present crisis the "good-bank/bad-bank" model has been adopted by Switzerland in respect of UBS, while the Irish authorities are following a similar route, despite mounting public criticism.

Hall and Woodward (2009) argue against the presumption that the "good-bank/bad-bank" model must entail substantial and simultaneous publicly funded recapitalization. Following an approach attributed to Jeremy Bulow, they suggest dividing the balance sheet of the troubled bank by assigning the deposits and the performing assets to the "good bank", and the unsecured debt, equity and non-performing assets to the "bad bank". Provided the unsecured debt of the troubled bank exceeds the non-performing assets, the "good bank" is recapitalized through the creation of a new tranche of equity (the difference between its assets and liabilities), which is held by the "bad bank". The shareholders and unsecured debt-holders are left no worse off than they were previously, but the depositors are ring-fenced in the sense that the "good bank" is amply capitalized. The "bad bank" does not undertake any new banking activity; it is merely a holding company that manages and eventually runs down its portfolio comprising the troubled assets and the equity stake in the "good bank".

Following this approach, the shareholders and unsecured debt-holders of the troubled bank, who bear the ultimate responsibility for its reckless lending and investment practices, bear the full cost of writing down the troubled assets, and not the taxpayer as with publicly funded recapitalization. The moral hazard issues raised by publicly funded bank bailouts are mitigated. Buiter (2009a) argues that public recapitalization as practised in the USA, the UK and elsewhere constitutes surrender on the part of the authorities to lobbying for government bailouts by unsecured creditors, and that the risks of systemic failure are overstated. For example, pension funds are not highly leveraged, and can adjust to write-downs of their assets simply by reducing their liabilities. Orderly restructuring of an insurance company following insolvency need not entail the collapse of the entire financial system, as was suggested and feared at the time of the US bailout of AIG in October 2008.

Referring to concerns that the seeds of the next financial crisis are already being sown, through signals sent by the current round of bailouts that governments will always intervene *in extremis*, Philippon (2009) draws a telling analogy from an earlier episode in the history of crisis management:

> Sir Winston Churchill famously remarked that: "Britain and France had to choose between war and dishonour. They chose dishonour. They will have war." If in the hope of ending the crisis quickly, we choose to bail out the banks without making their managers, shareholders and creditors accountable, then we choose dishonour, and we will have more devastating crises.

Capital and liquidity regulation

Current arrangements for capital provisioning have been subject to intense scrutiny during the crisis. Under the risk-weighted capital regulation regime of Basel 2, the use of backward-looking models for risk assessment creates a destabilizing tendency for capital provisioning to amplify the economic cycle. In good times, observed rates of borrower default decline, and bank assets in all risk classes are assessed as being in need lower provisioning. Existing capital buffers can support increased lending, with a tendency to amplify the cycle. Conversely, during a downturn, risk is perceived to have increased, and banks need either to recapitalize, liquidate existing assets or reduce new lending, in order to achieve sufficient provisioning.

In rethinking capital provisioning, it is helpful to identify the basic reasons why regulation is necessary to ensure that adequate capitalization is maintained, and why direct government intervention has been needed to recapitalize numerous ailing banks during the crisis. Agency theory suggests that financing long-term investments using short-term debt finance, as opposed to long-term debt or equity, might help mitigate moral hazard problems affecting the shareholder-manager relationship. The need to roll over short-term funding regularly imposes market discipline, preventing managers from increasing their own compensation by investing in instruments that produce high short-term returns subject to risks that are opaque to shareholders, or by investing in complex instruments that other managers would not easily be able to administer (Kashyap *et al.*, 2008; Squam Lake Working Group on Financial Regulation, 2009c). Short-term debt might therefore be a cheaper source of finance than long-term debt or equity from an individual bank's perspective, but over-reliance on short-term debt finance increases systemic risk.

For a troubled bank, the debt overhang problem identified by Myers (1977) renders recapitalization by issuing new shareholder capital unattractive for current shareholders. A new equity issue redistributes wealth from shareholders to lenders: by reducing risk, recapitalization increases the value of bond holdings (and reduces the expected value of the deposit insurer's liability), and dilutes existing shareholders' claim on the bank's residual value. Therefore, shareholders in a troubled bank might well prefer to liquidate assets, or impose a freeze on new lending, in order to restore capital adequacy. Furthermore, a troubled bank might be reluctant to issue new equity for fear of reputational damage, while the prospect of a government recapitalization "bailout" on favourable terms is a further obvious source of moral hazard.

Accordingly, Squam Lake Working Group on Financial Regulation (2009c, d) suggests that banks with a higher proportion of short-term debt (rather than long-term

debt or equity), and banks with a higher proportion of illiquid assets (which might have to be disposed of rapidly in a fire-sale), should be subject to higher capital requirements. Further, the introduction of a simple leverage ratio (ratio of capital to assets), alongside risk-based capital regulation, should simplify supervision and make regulatory arbitrage more difficult (Group of 30, 2009).

To avoid requiring banks to hold excessive capital during normal or boom conditions, while providing an automatic mechanism allowing banks to recapitalize during periods of stress, Flannery (2005) and Squam Lake Working Group on Financial Regulation (2009c) propose creating a long-term debt instrument that converts to equity under conditions that might be either bank-specific (contingent on the bank's performance or capitalization) or general (contingent on the regulator's judgement that a systemic failure might be imminent), or both. With similar aims, Kashyap *et al.* (2008) propose that banks should be required or given the option to purchase capital insurance against systemic failure. Investors such as sovereign wealth funds or pension funds would deposit the full sum insured with the insurer, in exchange for receiving the premium paid by the bank, and the return of the sum insured at the end of the period if no catastrophic event had occurred. Hart and Zingales (2009) suggest using market indicators, such as credit default swap (CDS) spreads, to trigger the recapitalization mechanism. These time-contingent schemes raise complex issues over how precisely contracts should be specified, and how the banks might be able to game the system. However, both are motivated by the core principle that the cost of the systemic risk should be borne by the banks *ex ante*, and not by the taxpayer *ex post*.

The drying up of wholesale funding and the interbank markets during 2007 and 2008 suggests that past regulation may have over-emphasized capital at the expense of liquidity. By itself, capital regulation is insufficient to guarantee the viability of any financial institution. A liquidity crisis can rapidly develop into a full-blown capitalization crisis due to fire-sale risk, arising from the need for institutions selling large positions in illiquid assets (perhaps in order to reduce leverage in compliance with capital-adequacy requirements) to offer price concessions in order to attract buyers, with knock-on effects for the balance sheets of other institutions obliged to mark their assets to the fire-sale price. Therefore, new liquidity requirements, separate from capital adequacy standards, should focus on the ratios of liquid assets to total assets, and liquid liabilities to long-term liabilities. Liquidity standards for individual institutions should take account of their systemic linkages (Litan and Bailey, 2009).

Kane (2009) notes that while the seizing-up of liquidity in the wholesale and interbank markets in autumn 2008 was the proximate cause of the ensuing crisis, the underlying cause was the recognition in these markets of the severity of the failures in the markets for subprime lending and securitized assets. Accordingly, the realignment of incentives and correction of other forms of market failure in mortgage and securitized markets is a necessary condition for the repair of the system. Obliging the originators of securitized assets to retain a portion of the risk should provide the necessary incentives for appropriate monitoring of lending standards, rather than dereliction of this prime banking responsibility. Stronger emphasis on the quality of the underlying assets, simplification of some of the more complex securitized products, and tighter constraints (through capital and liquidity requirements) on investors are

measures expected to feature prominently in the eventual recovery of markets for securitized assets.

Scope of regulation, and separation of bank functions

Clearly, gaps and weaknesses in the system for the regulation and supervision of financial institutions should be addressed. There is wide support for the principle that all systemically important financial institutions (SIFIs) should be subject to capital regulation, regardless of legal status. SIFIs other than banks that should be subject to regulatory oversight include some large insurance companies, hedge funds, private equity funds and clearing houses (Group of 30, 2009; Litan and Bailey, 2009). SIVs should not be permitted to escape capital and liquidity regulation and disclosure requirements that apply to their parent companies.

More radical and controversial, a case has been made for reintroduction of the separation of narrow banking from investment banking, originally introduced in the USA by the Glass-Steagall Act of 1934, and repealed in 1999 (Buiter, 2009b). A heavily regulated commercial banking sector would provide basic deposit and lending services under central bank lender-of-last-resort protection, while a more lightly regulated investment banking sector would undertake risky investment business without government protection. Another lesson of the crisis is that the banking system has hitherto been underwritten by a large but only partially recognized public subsidy, which enabled some large banks to exploit their status as too-large-to-fail in order to expand their balance sheets recklessly (Kane, 2000; Stern and Feldman, 2004; Mishkin, 2006; Herring and Carmassi, 2008, 2009; Saunders *et al.*, 2009). A return to Glass-Steagall, it is argued, would prevent universal banks from sheltering their risky investment activities under the implicit public subsidy umbrella of too-large-to-fail. However, ring-fencing narrow banking would present formidable technical and practical challenges, and strong support for this proposal has so far failed to coalesce.

Systemic risk

One of the key lessons of the financial crisis is that past financial regulation has overemphasized measures to preserve the soundness of individual institutions, and underemphasized the interconnectedness of financial institutions and its implications for systemic stability. Principal sources of systemic instability include: counterparty risk, the risk of default on the part of counterparties to over-the-counter (OTC) transactions, and fire-sale risk.

Adrian and Brunnermeier (2008) propose a systemic risk measure called CoVaR, the value at risk (VaR) of financial institutions conditional on other institutions being in distress. An increase of CoVaR relative to VaR reflects an increase in systemic risk. Squam Lake Working Group on Financial Regulation (2009a, b) recommends that central banks should be specifically mandated to oversee systemic stability, in addition to their existing responsibilities for price stability and (in the case of the US Federal Reserve) maximizing employment. Forms of oversight should include: gathering and analysis of information on asset positions and risk exposures in a standardized format that permits comparisons between institutions; publication of data, subject to time-lags that strike an appropriate balance between disclosure and transparency objectives, and legitimate concerns over protection of financial innovation and proprietary business models; and the preparation of an annual report on systemic stability and risk.

Credit rating agencies

Searching questions have arisen over the contribution of credit rating agencies to the subprime crisis (Portes, 2008; Bolton *et al.*, 2009; Richardson and White, 2009). The market for ratings data has some of the characteristics of a natural monopoly, because both investors and regulators value consistency of ratings across issuers. In 1975, the US Securities and Exchange Commission assigned nationally recognized statistical rating organization (NRSRO) status to the three major agencies, Moody's, Standard and Poor's and Fitch, creating a powerful barrier to entry. The knowledge embodied in ratings data has the public good characteristics of non-rivalness and non-excludability, giving rise to a free-rider problem if the final user, the investor, pays for the service. On the other hand, if (as is currently the case) the issuer pays, competition between agencies for business may give rise to ratings inflation, as issuers shop around for the most favourable rating. Agencies enjoy legal immunity from malfeasance claims, with their activities viewed by the courts as similar to those of journalists, rather than auditors. There may be misaligned incentives when agencies advise on the construction of a structured product (for which they receive a separate fee), and then provide a confirmatory rating. In the run-up to the crisis, such conflicts-of-interest, together with the growing complexity of many securitized products, led to many unreliable ratings being assigned (Skreta and Veldkamp, 2009). By using backward-looking statistical models to evaluate risk, and by underestimating systemic correlations and long-tail probabilities, the agencies succumbed to the fallacy that the absence of a crisis in the recent past implies a reduced or negligible probability of a crisis in the near future.

A wide spectrum of remedies has been floated, ranging from the creation of a free market in ratings data via the abolition of NRSRO status, to the nationalization of the agencies. The complete separation of advisory services from the award of ratings would address the conflict-of-interest arising from the conflation of these functions, although it might be difficult to prevent issuers from using multiple ratings applications as a means of accessing advice. Transparency might be improved by replacing the letter grading system with numerical estimates of exposures and default probabilities, and the time periods to which these data apply. However, models capable of generating refined numerical estimates for complex structured products are not well developed. One proposal that has gained some traction is for the creation of an intermediary between the issuer and the agency, in the form of a centralized clearing platform administered by the regulator, which would charge the issuer a flat fee dependent on the security's attributes and complexity. The platform would then commission an agency to supply the rating. This system would address the conflict-of-interest problem because the regulator rather than the issuer selects the agency, but it would also impose a heavy burden on the regulator in monitoring the agencies' performance (Mathis *et al.*, 2008; Litan and Bailey, 2009).

Credit derivative markets

The restoration of confidence in OTC credit derivative markets will require increased transparency and improved oversight. During the crisis counterparty risk has been a serious concern, with CDS investors fearful that counterparties may default on their obligations in the event that the underlying asset defaults. Concern over counterparty risk is compounded by a lack of transparency. Following the collapse of Lehman Brothers, $400 bn of CDS were presented for settlement, but after offsetting bilateral

trades were netted out, the figure was reduced to $6 bn. Shortcomings in the supporting infrastructure for OTC derivatives markets include trade confirmation delays, lack of transparency on transaction reporting and pricing, contract closeout procedures, valuation practices and collateral disputes and direct and indirect counterparty credit issues (Group of 30, 2009).

The advantages of a centralized clearing system for credit derivative markets that are sufficiently large to have implications for systemic stability are widely recognized. Group of 30 (2009) reports that the leading credit derivative market participants are working on the creation of such a system. According to Acharya *et al.* (2009), the major gain from developing a centralized clearing system accrues through the elimination of counterparty risk. The development of a formal exchange, requiring standardized contracts, might not be desirable, in view of the complex and thinly traded nature of some credit derivative instruments. Finally, the future regulatory status of credit derivative markets remains an open question.

Cross-border supervision and regulation

In principle, cross-border banking should have beneficial effects for competition and efficiency in home and host countries. By removing some capital allocation transactions from the sphere of the external capital market and acting as an internal market, the cross-border bank might perform the task of capital allocation more efficiently than the external market if it has access to better information. However, the growth of cross-border banking within the EU (and elsewhere) raises complex issues for supervision. Strains are placed on a supervisory framework organized on national lines, with considerable variation between countries in supervisory and regulatory practice. During the crisis, the market valuation of cross-border banking groups has declined by more than that of single-country banks, with inadequate regulatory oversight cited as a contributory factor (Unicredit Group, 2009).

The cross-border bank's legal structure determines the division of responsibilities amongst national supervisory authorities: branches are subject to home country supervision, while subsidiaries are under the host country supervisor's jurisdiction. This violates the principle that regulatory treatment should be neutral with respect to the internal organizational structure of the bank. Home country supervision creates difficulties in the case of a bank failure with systemically damaging implications for a host country. The Icelandic banking collapse illustrates the danger of mismatch between the size of a cross-border bank, and the size of a home country's resources, creating a so-called too-large-to-save dilemma. The UK and Dutch governments provided guarantees for their own citizens' deposits in Icesave, even though they were not responsible for the supervision of Landsbanki.

As the Fortis bailout demonstrates, crisis management requiring cooperation between national supervisors has sometimes proven inefficient and ineffective. Disputes between countries can delay action in situations where speed is essential, and equal treatment for creditors and debtors in different countries can be hard to achieve. Supervisory fragmentation may even constitute a threat to the integrity of a European single market in financial services, with the breakup of Fortis illustrating an alarming tendency for reversion towards banking within national borders in the event of a crisis. Strings attached to publicly funded bank bailouts, in the form of commitments to prioritize domestic lending, also push in the direction of fragmentation.

Most commentators accept that the coordination of mechanisms for bank regulation and supervision within the EU should be improved. The de Larosiere Report (2009) on the reform of EU and global supervision and regulation recommends the creation of a new coordinated supervisory structure. Under the proposals, bank supervision would remain decentralized at national level, but supervisory and regulatory practices would be harmonized. For example, standardized deposit guarantee provisions should be adopted, and consistent principles and tools should be deployed in crisis management. For each cross-border banking group, a college of national supervisors would be established, with provisions for binding arbitration at EU level. Three functional EU-level authorities would be responsible for coordinating the regulation of banking, insurance and securities, respectively. Finally, a European Systemic Risk Council would oversee the entire system, and monitor systemic risk at the macro level.

As Acharya (2009) notes, burden-sharing between countries in the event of a cross-border bank failure remains a thorny issue. Goodhart and Schoenmaker (2009) argue that *ex-post* negotiations on sharing the costs of a cross-border bailout will result in an under-provision of capital, as participants outside the home country have an incentive to understate involvement in order to minimise their costs. Two *ex ante* burden-sharing mechanisms are suggested. The first, a general mechanism, is financed collectively by the participating countries based on their GDP. The second is a specific mechanism, funded by participants based upon the geographical spread of their banks' business. The latter might be more effective, because each country's benefits in terms of financial stability are more closely aligned to their contributions to the scheme.

Conclusion

Bank regulation cannot prevent financial crises, but the regulatory framework that is currently being shaped will influence the development of the banking system for many years to come. Recent firefighting measures by governments to purchase impaired assets, recapitalize troubled banks, and inject liquidity into the system, have commanded support among many banking academics and practitioners, despite nagging concerns that publicly funded bank bailouts sow the seeds for the next crisis by sending all the wrong signals to bank investors and executives who have behaved imprudently in the past. At the time of writing, the roadmap to recovery in Europe and the USA remains highly uncertain, and there are fears that many European banks still have long distances to travel before the fallout from subprime lending and securitization is completely expunged from their balance sheets. Doubtless banks will become leaner, more strongly capitalized, less highly leveraged and more heavily regulated than they have been in the past. Banks' risk management practices will be overhauled, and executive compensation will be more closely aligned to risk-adjusted performance, measured over periods of sufficient duration to allow the underlying risks to be properly identified. If the banking system that emerges eventually is more stable, and more reliable and efficient in performing the core banking function of intermediation between lenders and borrowers, then the lessons of the 2007-2010 global financial crises may yet prove to be salutary.

Information sources

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De Nederlandsche Bank; Deutsche Bundesbank; Economist; ECB European Commission; Financial Stability Forum; Goldman Sachs; House of Commons Treasury Committee, HM Treasury; IMF; Institute of International Finance; International Association of Deposit Insurers; International Organisation of Security Commissions; Norges Bank; Oesterreichische Nationalbank; PA Consulting Group; Securities and Exchange Commission and Sveriges Riksbank Swiss Nationalbank; Unicredit.

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