Journal of Banking & Finance 72 (2016) S1–S5

Contents lists available at ScienceDirect

Journal of Banking & Finance

journal homepage: www.elsevier.com/locate/jbf

Editorial

Bank business models, regulation, and the role of financial market participants in the global financial crisis ☆

1. The background

The recent financial crisis shone a spotlight on several key issues: bank regulation; bank models; and the relationship between traditional banking, the interbank markets and the markets for complex financial derivatives. Indeed, the role that derivatives such as Credit Default Swaps and Collateralised Debt Obligations played in the credit bubble and the subsequent credit crunch may appear to have made this financial crisis unique. However, the fundamental cause of this crisis, which led directly to the worst global recession since the 1930s, is all too familiar: ultimately, too much money was lent to too many people who could not afford to pay it back. It was a classic bank crisis of over-lending, but this time on a global scale.

The expansion of credit in the lead up to the crisis was particularly dramatic in some economies. For example, between 1998 and 2009 the ratio of private credit to GDP in the US rose from 154% to 199%; in the UK it rose from 112% to 213%; in Greece it rose from 32% to 94%, while in Ireland it rose from 79% to 237%[1]. These may have been the more extreme examples of this expansion in credit prior to the crisis, but there can be no doubt that it was this unchecked credit bubble that ultimately led to the financial crisis.

Fig. 1 reveals tentative evidence of the consequence of this pre-crisis credit expansion. The vertical axis measures the growth in bank private credit to GDP growth between 2000 and 2006, while the horizontal axis presents the fall in the equity index of banks between January 2007 and December 2010. Each dot in the Figure represents the combination of these statistics for an OECD economy. The OLS regression line indicates that the greater the pre-crisis credit expansion in an economy, the greater was the eventual fall in the market capitalisation of that economy's banks. While very basic, the p-value of this relationship is 0.03.

But if the end point of this powerful credit expansion was all too familiar, that is, bank failures, tax payer bailouts and a credit crunch, what industry-related factors played a role in this expansion?

At a superficial level it could be argued that no single bank model was more or less uniquely exposed to the global liquidity crisis and related credit crunch. For example, the UK mortgage bank, *Northern Rock*, a "narrow bank", was one of the first casualties of the crisis; *Lehman Brothers*, whose collapse of course was the main catalyst for the wider crisis, was a US investment bank; while *Royal Bank of Scotland*, another UK banking entity, whose failure required the UK government to take it into public ownership, was a "universal bank". Reviewing bank models as a means of preventing future crises and bank failures then might not be a very fruitful activity.

However, one common feature of the business model of all three banks, and others, was the exposure to and reliance on the interbank market for funding. In other words, while we might have expected an investment bank to be exposed to the interbank market, and to a marginally lesser extent a universal bank, the exposure of narrow banks to this market meant that it was not the bank model that mattered as much as the mode of funding. This was indeed a crucial element of the crisis (see, for example, Gorton and Metrick, 2012). Another common element in the difficulties of these three banks and many others that only narrowly avoided bankruptcy, was the predominant asset type on which lending was secured: property (Mian and Sufi, 2009). In our view then, bank models – narrow, investment, or universal – were less important than bank relationships with the financial markets, and the quality of the asset base.

So why were banks able to build their businesses on such precarious foundations?

To answer this question, at least partially, we must surely consider the role of bank regulation during the credit bubble (see for example, Favara and Imbs, 2015). In the couple of decades leading up to the crisis there had been a drive across the globe to make bank regulation less stringent. The repeal in 1999 of most of the US's Glass-Steagall legislation enacted in the aftermath of the Great Depression in 1933 is perhaps the highest profile evidence of this drive to deregulate the environment in which banks operated. And it is perhaps ironic that its repeal was seen by some as playing a crucial role in creating the early 21st century's Great Depression.

It was widely believed that deregulation, in its many forms, would be a way of fostering greater competition which, it was assumed, would in turn lead to a reduction in the numbers of credit constrained individuals. However, by the time the most pernicious aspects of the crisis had passed, many regulators around the world, spurred on by angry tax payers, took a hard look at their regulatory frameworks with a view to strengthening them, where the primary aim has been to ensure that the level and quality of bank capital both rise. Other measures have also played their part in creating a more stringent regulatory background such as the restrictions placed by European regulators in 2010 on bonuses that banks can pay their staff.

Fig. 2 gives a hint at the consequences of the relationship between the strength, or stringency of banking regulation and

☆ We acknowledge financial and administrative support from FCT, IFABS and ISCTE-IUL Instituto Universitario de Lisboa.

[1] See Čihák et al. (2012a).

http://dx.doi.org/10.1016/j.jbankfin.2016.10.007
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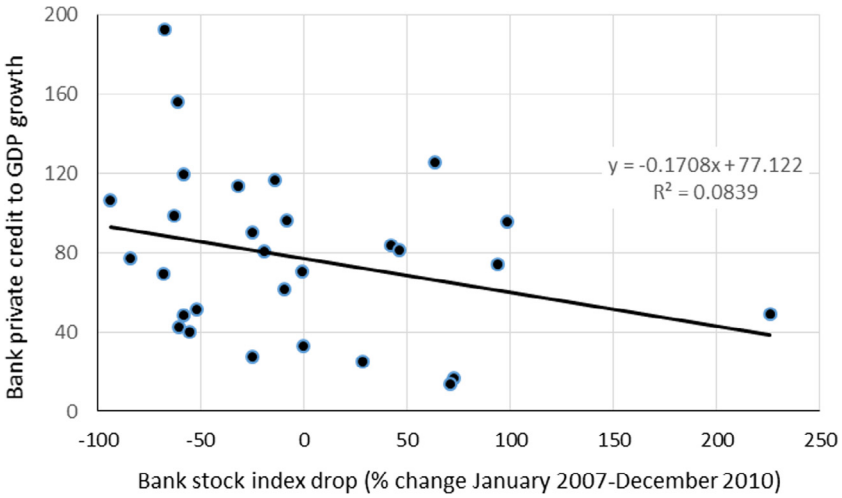

Fig. 1. Bank private credit to GDP growth 2000-2006 and bank stock index drop 2007-2010 (OECD countries). Source: author's elaboration on data from Datastream and Čihák et al. (2012a).

the impact of the crisis. The vertical axis in the Figure measures bank regulator stringency, as defined by Barth et al. (2008) and Cihak et al. (2012), while the horizontal axis again presents the fall in the equity index of banks between January 2007 and December 2008. Each dot in the Figure represents the combination of these values for an OECD economy. The OLS regression line provides tentative evidence that the weaker bank regulation was in an economy prior to the crash, the greater was the fall in the capital value of the related banking sector.

Another aspect of the crisis, which became evident as it unfolded, was the ability, or inability of financial market participants to price risk appropriately. Some risks may have been mispriced because the instruments were just far too complex. For example, with hindsight it is now clear that infamous structured products such as cubed CDOs built upon CDSs of mezzanine tranches of ABSs, were not priced appropriately because of their almost impenetrable structure (see, e.g., Acharya et al., 2009a,b).

However, there are other examples of mispriced risk where opacity surely played a more limited role. For example, the rapid reassessment of sovereign risks, most strikingly in the cases of Greek, Irish, Italian, Portuguese and Spanish government debt. Here the "mispricing" of risk that followed the general depression in sovereign yields caused by the great 'savings glut', probably had more to do with low levels of risk aversion and the depressed price of risk that combined to shrink the risk premia attached to sovereign bonds, but also of corporate bonds and equities.

Whether the risks inherent in bank balance sheets before the crisis were being underpriced because of the opacity of the instruments that they were creating, because risk premia were at historically low levels, or because financial participants did not properly appreciate how interconnected banks were via the inter-bank market and other linkages, financial market participants played a key role in "allowing" the credit bubble to inflate.

At the 2014 International Finance and Banking Society (IFABS) conference these three key themes of bank business models, regulation, and the role of financial market participants emerged as participants strove to understand the crisis and in particular the post-crisis banking landscape[2].

This special issue reflects some key contributions made at the conference to the debate above. It presents twelve papers that tackle the three themes mentioned above; in particular: bank management, regulation, and portfolio management strategies in financial markets that do not always appear to conform with the efficient market hypothesis. Each paper makes a significant contribution to the literature and we believe that all scholars will benefit reading them.

2. Bank management and regulation

As argued above, a crucial issue in financial intermediation, made even clearer by the crisis, is bank risk management. A vast literature has argued that financial innovation might have increased financial instability (see for example the seminal contribution of Rajan (2006)). As the originate-to-distribute model of banking became more and more popular, scholars began to analyze the trade-off between the reduction in bank incentives to screen and monitor their borrowers (Morrison, 2005) and increased diversification opportunities (Wagner and Marsh, 2006), but no clear answer has yet been found.

The paper by Silva Buston (2016) in this special issue makes an important contribution in this direction. In her model, banks can use CDSs to reduce the cost of risk, but this in turn increases the incentives to take on risky activities. While the two opposing effects tend to balance each other, the conclusion of the model is that the impact of CDS use is an increase in overall banking stability. The empirical evidence presented in the paper, based on an unbalanced panel of 2,276 US banks between 2005 and 2010, supports the predictions of the model, confirming that banks that actively manage their risks by either buying or selling protection in the credit derivatives market were less likely to become insolvent during the crisis of 2007–2009, even though their balance sheets displayed ex-ante, higher risk-taking. The policy implications of these results could be significant: drastically limiting the use of credit derivatives could be harmful for the economy. Such a policy could risk throwing the baby out with the bath water.

In a similar vein, the paper by Chen and Lin (2016) in this special issue studies how credit, interest rates, and liquidity risks are managed by banks with different corporate governance structures. Based on a large sample of over 1,600 banks and 8,663 bank-year observations across 43 countries, Hsiao-Jung Chen and Kuan-Ting Lin show that, in normal times, defined as those when the yield curve is positively sloped, banks with a high degree of separation

[2] The conference was held in Lisbon on 18–20 June, 2014. The conference keynote presentations were given by Professor Thomas Noe of Saïd School of Business of the University of Oxford, and Mr. Jonathan Rosenthal, International Banking Editor of The Economist.

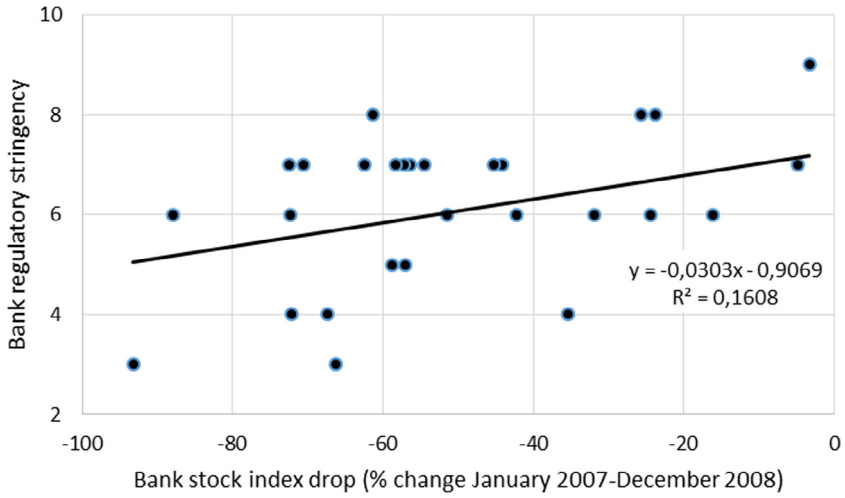

Fig. 2. Bank regulatory stringency in 2003 and bank stock index drop across the crisis (OECD countries). Source: author's elaboration on data from Datastream and Čihák et al. (2012b).

between ownership and control tend to have lower credit and liquidity risk, while those where corporate control is more concentrated in the hands of a few shareholders tend to have higher levels of liquidity risk, as they pursue higher interest rates. The policy implication here is that corporate governance regulations could be introduced to reduce excessive risk taking by shareholder-controlled banks (see for example Acharya et al., 2009a,b).

The critical issue of bank risk management is the focus of another paper in this special issue. Using very detailed and high quality data on Japanese banks, Mamatzakis et al. (2016) study the relationship between the technical efficiency of banks and problem loans within a dynamic VAR framework. This approach allows for a thorough assessment of the direction of causality. Interestingly, their results show that higher bankruptcy rates are associated with higher efficiency, because less inputs are used for credit screening, loan monitoring and management. However, when unexpected events lead to a rise in restructured loans, this is shown to lead to a drop in efficiency, because bank managers are forced to divert their focus to dealing with delinquencies and loan supervision, rather than on their daily operations, which tends to lead to an increases in bank operating costs.

Corporate governance and competition in the market for corporate control is at the heart of another paper in this special issue. The risks posed by ever larger banks that operate in many different countries worldwide and in this way become too-big-to-fail and too-complex-to-fail has been a central part of the post-crisis debate. The patterns driving domestic and cross-border operations have been analyzed in the previous literature (Buch and DeLong, 2004; Focarelli and Pozzolo, 2001; Karolyi and Taboada, 2015; Gulamhussen et al., 2016), but Gulamhussen, Hennart and Pinheiro in their contribution to this special issue further enrich our understanding of this phenomenon by analyzing a very large set of cross-border M&As from 89 acquiring countries to 118 target countries over the 30-year period from 1981 to 2010. Their findings show that the value of cross-border M&As increases with the size and the depth of the financial market of the acquiring country. In addition, they show that the presence of corporate and non-corporate customers from acquiring countries in target countries also has an impact on the probability of cross-border operations.

Caiazza and Pozzolo (2016) focus their attention on the fact that not all planned operations eventually succeed. Studying a large sample deals, including all the major domestic and cross-border deals in the banking sector announced world-wide between 1992 and 2010, the authors show that the hostility of the bidder and the presence of multiple potential acquirers are the major factors determining the abandonment of a planned deal. This provides additional support to the idea that the consolidation process that took place in the two decades preceding the crisis was mainly driven by cooperating banks, rather than by competition in the market for corporate control. Caiazza and Pozzolo (2016) also find that tighter regulation is associated with a lower rate of success of announced M&A deals, suggesting that stronger supervisory activity can be effective in limiting the emergence of banks that are too-big or too-complex-to-fail.

The international consolidation process, together with the strong expansion in interbank cross-border activities, is one of the main reasons why the crisis that initially started in the niche US market for subprime mortgages, eventually became systemic. Gorton and Metrick (2012) provide an insightful overview of this mechanism. At the same time, stronger integration and increased uncertainty about the behavior of financial markets made the impact of the drop in credit supply that followed the crisis on the real economy more powerful than in the past. The paper by Milcheva and Zhu (2016) in this special issues focuses on the link between cross-border bank flows and housing market co-movements. It shows that changes in financial conditions are passed across borders, causing significant house price spillovers far and above those of other, standard measures of international integration such as trade and FDIs might have suggested. This confirms once more that the effects of global banking are not confined to the financial sector, but spread extensively to the real economy.

Aside from the well-known value of the too-big-to-fail option, one possible explanation of the benefits of creating larger financial intermediaries comes from the value of brand recognition. In an environment characterized by pervasive information asymmetries, building a strong reputation with clients and defending it is of crucial value. And because brands give rise to large economies of scope. The paper by Duygun et al. (2016) in this special issue analyzes the relationship between trademarking and efficiency for a large sample of UK commercial banks between 2005 and 2013. Their results show that TFP has grown among trademarking banks, most likely because consumers demand more of the products offered by these intermediaries, allowing them to benefit from economies of scale and scope. However, with the fall in lending and the widespread perception about the riskiness of banks caused by the financial crisis, this trend has reversed.

Regulation (and the lack of it) has played and is playing a crucial role in banking. But the impact of regulation is multi-faceted, and

there is probably no perfect regulatory recipe. As we argued above, while the lack of regulation can be extremely dangerous for the stability of the banking sector, excessive control can also be negative. The paper by Ghosh et al. (2016) in this special issue makes a key contribution to this debate, showing that a deregulation policy like the removal of the 10 percent voting right cap in Indian Banks, a provision that limited the value of votes of bank stocks and induced a wedge between cash-flow and control rights, had two positive effects: it enhanced monitoring activities of shareholders, and favored the probability of takeovers. This led to an increase in bank value, and favored investment in more profitable banks with lower non-performing assets. The bottom line is that excessive regulation can be harmful for the financial sector, especially when it is related to a large state banking sector presence (see also the seminal contribution of La Porta et al. (2002)). Indeed, this suggests that government interventions in the banking sector in the aftermath of the crisis, as for example in the case of *Royal Bank of Scotland*, should be temporary.

3. Understanding financial market behavior

An additional layer of complexity that characterized the recent financial crisis was the high degree of uncertainty that surrounded it. For example, the global recession of 2009 was caused not only by deleveraging, that is, the reduction in credit supply and the wealth effect, but also by an increase in uncertainty, which hampered aggregate demand (Mody et al., 2012). One neat piece of evidence of this increase in uncertainty was the higher dispersion of professional forecasts of the evolution of the macroeconomy that was witnessed over the crisis period (see, e.g., Dovern et al., 2012). However, distilling the information content of professional forecasts is not an easy task. The paper by Krüger and Nolte (2016) in this special issue contributes to this literature, using the cross-sectional variance of survey forecasts to predict the entire distribution of forecasts, instead of just the conditional variance of future macroeconomic quantities. Methodological improvements of this kind will certainly help in the future to quantify better the degree of uncertainty about the future evolution of the economy, possibly reducing its negative impact on agents decisions.

In fact, the reaction of investors to the uncertainties posed by the financial crisis was not limited to real investment choices: it was much sharper and far less predictable in the case of investment in financial assets. It is possible that the behavior of financial markets in the aftermath of the crisis was not consistent with the efficient market hypothesis; better modeling of the forces driving asset prices, especially in the short run, would help our understanding. But much more research is still needed in this area.

A number of papers included in this special issue attempt to improve our modeling and understanding of the behavior of financial markets. In their contribution to this special issue, Ñíguez and Perote propose a new semi-nonparametric density model for describing the density of portfolio returns, that admits any non-Gaussian (multivariate) distribution as its basis. This added flexibility allows us to capture both time-varying correlations and leptokurtosis, two critical features of the distribution of asset prices in the recent period. New methodologies of the type proposed by Trino-Manuel Ñíguez and Javier Perote can play a crucial role in better risk pricing. A widely acknowledged fact in finance is that investor preferences also take into account skewed returns (see, e.g. Martellini and Ziemann, 2010). The paper by Alexandra Dias in this special issue makes an important contribution to the literature by investigating the out-of-sample economic value of introducing the risk of very large losses in portfolio selection, by combining mean-variance analysis with conditional Value-at-Risk. Interestingly, she shows that strategies that account both for the variance and probability of large losses significantly outperform efficient mean-variance portfolios, especially during and after the global financial crisis. The implications of these results cannot be overlooked: when building risky portfolios if investors correctly take into account tail risks, asset prices will reflect more appropriately potential market tail events, which could help with hedging strategies, therefore reducing their overall impact on the economy.

Other important aspects of the behavior of asset returns, and of their determinants, have been studied by the authors contributing to this special issue. Min and Kim (2016) focus on momentum strategies. A vast literature has shown that these strategies can generate positive excess returns, especially in the short run. However, as shown in their paper, this does not come without a cost. Using Compustat data from 1960 to 2011, they classify macroeconomic states based on the expected market risk premium and show that momentum strategies have negative returns precisely when investors are most in need during economic slowdowns. In other words, momentum strategies have significant downside, or tail risk.

Similar risks may be posed by technical trading strategies, also aimed at uncovering trends or momentum in the market that can be exploited to gain positive excess returns. The increase in high frequency trading has indeed shortened the timescales over which technical traders can profit from their strategies. But as argued by Haldane (2012), understanding the impact of the presence of technical traders in a market microstructure context could be crucial for identifying potential problems. In their paper in this special issue, Chiarella and Ladley (2016) build a theoretical model to study the effect of technical trading based on momentum strategies in a dynamic order book-based financial market. They show that in this context technical traders outperform traditional investors, but they also benefit traditional investors, leading to a reduction in volatility and in the average distance between the market mid-price and the fundamental value thanks to their ability to incorporate information into the market price. However, the impact of technical traders on overall market liquidity is unclear, due to the counterbalancing effects of a reduction of both the spread and the quantities available at the best quotes and in the book as a whole. Further research is indeed needed to understand these processes fully.

A partly related issue is the management of information. In a paper published in this special issue, Arslan-Ayaydin et al. (2016) study a sample of 26,000 earnings press releases between 2004 and 2011, showing that the wealth of managers that was more closely tied to the firms share price tend to inflate the tone of words in earnings press releases, using positive words more stridently, while managers whose portfolio value increases when the stock return volatility increases have instead a lower tendency to inflate the tone of the earnings press release. Crucially, the immediate stock price reaction is a positive function of the abnormal tone in the earnings press release, although with a diminishing effect for firms whose managers have higher equity incentives. However, the authors show that in the longer run the excess returns disappear and can even be become negative.

Overall, regulation limiting the short term profitability of momentum, herding and technical strategies might help to reduce the volatility of asset prices and eventually increase financial stability. But limiting the freedom to buy and sell securities might also reduce the information content of financial assets, therefore increasing the risks of market crashes. Finding the right balance is not easy, and further research will be necessary to reach a robust consensus on optimal policies.

4. The challenges ahead

Two key messages seem to emerge from the papers presented in this special issue about the future of global banking: we need

a better understanding of the functioning of banks and financial markets, and we need a sounder regulatory framework to address possible failings.

The trend in bank regulation has changed radically since the crisis. Banks are now required to set aside a larger amount of capital and liquidity than before, to be capable of sustaining large potential negative shocks. Stress tests of their resilience are conducted routinely. Risk taking, especially in lending, is tightly supervised.

But many uncertainties loom ahead. As a result of tighter bank regulation, the unregulated shadow banking sector has been increasing in size, as have the risks that these entities pose to the financial system. Moreover, many banks are still very large, and while a number of regulatory provisions make it possible to let them default, the efficacy of recovery and resolution plans are yet to be tested. Perhaps more importantly, future large bank bail-ins could harm shareholders and households sufficiently to conceivably cause another very large recession. More research like that presented in this special issue will be needed to help ensure that this does not happen.

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