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# Regulating banks for the public? The dilemmas of prudential regulation

Sébastien Commain

Université du Luxembourg

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## **Abstract**

The regulation of banking activities present policymakers with a conundrum: while essential for a healthy and growing economy, they also present important risks of crises that affect all citizens. Prudential regulation is intended to contain the risks while enabling the socially beneficial functions of banks, but the shadow of financial interests influence hangs over the regulatory process. Assessing the reality and extent of this influence, this paper argues, requires first to acquire a sound understanding of the social costs and benefits of banking, and the capacity of regulation to promote social welfare. This paper then offers the reader a review of the main issues covered in the literature and suggests some lessons for the study of financial interest groups.

**Keywords:** banks; banking crises; banking regulation; prudential regulation; social welfare; interest groups.

## 1 Introduction

Systemic banking crises will, in all likelihood, be a recurring feature of the twenty-first century just as it was of the twentieth, and how to regulate them an ongoing conundrum for policymakers of the future, as it has been for the past hundred years. Banks remain the main financial intermediaries in Europe—despite numerous challengers—and, as long as this domination lasts, the economic benefits, but also the risks, involved in their activities will continue to affect all Europeans, far beyond the clients of any individual bank. Banks have since long been considered specially important for a healthy economy because of the greater positive externalities arise from their activities: they still provide the largest large share of the financing for consumers, business firms and governments, operate much of our payment systems from buyers to sellers, and crucially, as creators of liquidity, banks are an essential part of the monetary policy transmission chain (Corrigan, 1982). But because of their centrality in modern economies, the risk of bank failure spilling over into systemic crises—which, as Allen and Wood (2006, 160) put it, ‘hurt innocent bystanders [—] it is in the interests of public policy to make such episodes unlikely by promoting financial stability.’

In reaction to the 2007-2009 global financial crisis, which saw numerous institutions across the US and the European Union (EU) failing or needing urgent rescue from taxpayers, world leaders vowed to adopt a new international framework to regulate banks, one that

must promote propriety, integrity and transparency; guard against risk across the financial system; dampen rather than amplify the financial and economic cycle; reduce reliance on inappropriately risky sources of financing; and discourage excessive risk-taking. (G20, 2009)

Following the crisis, a new set of prudential standards have been agreed on at the international level by the Basel Committee on Banking Supervision (BCBS, 2010), which the E.U. has transposed through a revision of its Capital Requirements Directive (CRD) (known as the ‘CRD IV packge’). Nevertheless, ten year later, little seems to have changed, and as *Financial Times*’s Martin Wolf (2018) notes:

Policymakers have mostly failed to notice the dangerous dependence of demand on ever-rising debt. Monopoly and ‘zero-sum’ activ-

ties are pervasive. Few question the value of the vast quantities of financial sector activity we continue to have, or recognise the risks of further financial crises.

Economists, who made numerous proposals for the new framework (see e.g. Brunnermeier et al., 2009; Borio and Drehmann, 2009), have been critical of the resulting Basel III Accord for what they see as its failure to limit the risks that banks impose on the public (Admati and Hellwig, 2013; Admati et al., 2013; Blundell-Wignall and Atkinson, 2010; Caprio, 2013). This failure, many argue, is at least partly due to the influence of the banking industry over the policymaking process, or the ‘regulatory capture’ of regulators by the industry (Baker, 2010; Chalmers, 2014, 2015; Johnson and Kwak, 2011; Kwak, 2013; Underhill, 2015; Underhill and Zhang, 2008; Young, 2012). Other studies however point to the contingent nature to business power in this area (Chalmers, 2018; James, 2016, 2017; James and Quaglia, 2019; Dür, Marshall and Bernhagen, 2019), calling for students of financial industry power to proceed through cautious methodological steps (Carpenter and Moss, 2013*b*; Dür, 2008*a,b*).

Crucial among these steps is to define the sets of interests that are in conflict over the definition of the policy. If, as Carpenter and Moss (2013*a*, 13) argue, ‘capture moves regulation away from the service of one goal (public interest) and toward another (industry interest)’, then in order to assess the extent of the shift towards financial industry interests, it is first necessary to define in what ways ‘the public’, or ‘society’ may in theory be harmed by banking activities, how it may benefit from regulating them, and how the costs of that regulation are distributed. The vast literature from the field of economics, financial economics and economic regulation, this paper argues, can offer insights into these questions and deliver lessons about the interests of different social groups in the regulatory process for prudential requirements.

This review of the literature proceeds in three steps. Section 2 starts highlighting the socially beneficial functions of banking. Section 3 then moves on characterising the sources of negative externalities that affect creditors and taxpayers because of banking activities. Section 4 then turns to the regulation of banking activities and the conundrum of achieving an optimal institutional design that maximises social welfare. Section 5 concludes, drawing lessons for the study of financial industry

power in the regulatory process.

## 2 Social benefits of banking: The role of banks in the economy

Banks play a particular role in modern economies such as those of EU member states, and their activities do not only benefit their clients—depositors, investors and borrowers—but present positive externalities on which economic growth rests since the industrial revolution. Nevertheless, precisely because bank credit appears indispensable to a healthy and dynamic economy, serial bank failures or the failure of a single bank representing a significant share of a country’s banking sector—i.e., ‘systemic’ banking crisis—impose heavy losses not only to these institutions clients, but to all economic agents. As Allen and Wood (2006, 154) put it: ‘[t]he public interest in financial stability reflects consciousness of the economic and social damage that can result from financial instability’. Banking regulation is thus not concerned with the failure of isolated institutions, but with the potential for system-wide crises, where a significant part of the banking sector would fail.

The literature highlights several roles played by banks that allow modern economies to function more efficiently. A vast literature debates the role played by banks in spurring growth, good corporate governance and innovation, but the empirical evidence is mixed on the actual effects of more or less bank intermediation (as opposed to financial markets) on these dimensions (for a review see Allen, Carletti and Gu, 2014) Three functions appear fundamental for social welfare: banks provide solutions to information asymmetries between borrowers and lenders, intertemporal smoothing of risk, and liquid, money-like assets to the economy.

First, banks help overcome asymmetric information problems by acting as a *delegated monitor of borrowers* for market investors. For a capital market to allocate resources efficiently, lenders (i.e. savers and investors) must be able to make sure that borrowers do make proper use of the funds. The monitoring of each borrower by his lenders entails a fixed cost, and in a market with many lenders (typically, households as savers) each lender wants to free-ride on what the others pay, resulting in no monitoring at all. Banks, as Diamond (1984) has suggested, act as a single monitor for all lenders to control that the borrower makes responsible use of the

funds. The bank's incentive to actually fulfil its mission comes from its commitment to repay lenders a fixed amount (the original capital plus interests): in order to be able to repay, it itself has to make sure that it will receive an income from its loans to borrowers. The advantage of banks over financial markets for allocating resources efficiently is thus particularly important in cases where information about the borrower is difficult to obtain, notably in emerging financial systems (Boot and Thakor, 1997) or markets with numerous and heterogeneous borrowers (such as loans to households and SMEs).

Second, bank intermediation offer an advantage over financial markets in sharing risks that cannot be diversified at a single point in time Allen and Gale (2000a, 1997). Financial markets are efficient at cross-sectional risk-sharing—distributing across a large number of investors the different risk that at a given point in time arise from a specific asset class, exposures to a particular economic sector and allowing investors to diversify their exposure portfolio—but this diversification leaves them exposed to macro-level shocks that could impact all asset classes at the same time. Banks can achieve what Allen and Gale call an 'intertemporal smoothing' of such risks by building reserves when returns on their assets are high and reducing them in bad times, which enable them to maintain a relatively constant level of payment to depositors and investors. However, they note that such intertemporal smoothing tends to unravel when banks are in competition with financial markets for investors' money.

More importantly, banks create liquidity, which they inject in the economy. At its core, banking is the activity of issuing loans to households, firms and other institutions, which banks fund by taking savers' and investors' money in the form of on-demand deposits and the issuance of debt securities. Loans typically are long-term productive capital assets but tend to be 'illiquid', i.e. selling them to acquire cash (central bank-issued notes) may entail a loss (because the buyer asks for a risk premium in the form of a discount). Deposits and short-term debt can, in turn, easily be exchanged for central bank money. For depositors and short-term creditors, these assets that are then almost as 'liquid' as cash. Because of this 'liquidity mismatch' between banks' assets and their liabilities, banking then transforms the real economy's illiquid assets into quasi-money which can be used for further transactions (Bhattacharya and Thakor, 1993; Hellwig, 1994). Banks

then contribute to the money supply mechanism just as much as central banks (Brunnermeier and Sannikov, 2016; Berger and Bouwman, 2009; Rauch et al., 2009), allowing other economic actors (non-financial firms and households) to hedge their idiosyncratic liquidity shock more efficiently than by individually hoarding liquid assets (Buiter, 2007). These benefits notwithstanding, the structural features of banks as well as the nature of financial markets itself generate risks, to which I turn in the next section.

### 3 The risks of banking

As seen in the previous section, banking implies assuming short-term or on-demand liabilities (deposits and debt) to fund medium- to long-term assets (loans). In this trade, the banks' own capital—which principally takes the form of equity held by shareholders—act as a cushion that absorbs potential losses on bad investments (e.g. non-performing loans) since there is no repayment commitment attached to equity. In theory then, shareholders are the only agents whose wealth is at risk due to their involvement with banking. In reality, however, banks tend to be highly leveraged firms—they fund most of their asset acquisition through debt rather than equity—so that when they face exceptionally large losses on their assets, equity capital is likely to be insufficient to meet the payment commitments on liabilities. In this case, depositors and other creditors are likely to suffer losses: the liquidation of the banks' assets usually does not cover the extent of its liabilities. Information asymmetries between bank managers and their creditors play an important role in generating instability, as they create micro-level incentives for creditors to withdraw their funds from the banks at any sign of weakness in the sector, and for bank managers to take excessive risks, making banks vulnerable to exogenous shocks (see section 3.1). Furthermore, the reflexive nature of financial capitalism generate endogenous risks that transform robust financial systems into fragile ones, prone to crises (Minsky, 1986). Periods of economic booms lead to increased leverage across the financial system—and society—and the development of an asset price bubble, until a correction occurs, triggering a cascade of failure (see section 3.2).

### 3.1 Bank runs and the dangers of information asymmetries

At the micro-level, most economists consider that because of their structure—long-term assets, short-term or even on-demand debt—banks are vulnerable to withdrawal pressures or ‘runs’, i.e. depositors exchanging their on-demand deposits for cash and creditors refusing to roll-over their debt to the bank. For Schwartz (1986):

[a] financial crisis is fuelled by fears that means of payment will be unobtainable at any price and, in a fractional reserve banking system, leads to a scramble for high powered money [...]. In a futile attempt to restore reserves, the banks may call in loans, refuse to roll over existing loans, or resort to selling assets.

Key to the dynamics of these runs are the information asymmetries that exist between bank managers and their creditors (Leland and Pyle, 1977). Creditors take the decision to entrust the bank with their money because they judge it safe, based on their assessment of quality of its assets: if the bank lends money to creditworthy borrowers, then it is highly likely that these loans will be repaid and that the bank will earn the necessary income to repay creditors their capital and interest. But information about the creditworthiness of the borrowers remains with the bank and is very difficult for creditors to obtain and analyse, so the decision to deposit money in a bank rests on little information and a lot of trust. Given the limited liability of bank shareholders, this information asymmetry gives them—and the managers they employ—an incentive to increase leverage, thereby accumulating risk which is borne by creditors. Runs then occur when creditors lose their trust in the bank and decide that their wealth would be safer in their hands.

Views on what factors can trigger such pressures can broadly be divided between advocates of a ‘contagion’ or ‘panic’ view, and those of a ‘fundamentalist’ view (Calomiris, 2014). The ‘panic’ view holds that withdrawal pressures can arise suddenly, unwarranted by the actual health of the banks, resulting from a sort of ‘mass hysteria’ (see Kindleberger, 1978). Theory and empirical evidence suggest that, because every depositor knows of the first-come, first-served rule applied to withdrawals (known the as the ‘sequential service constraint’) and the potential losses related to the rapid liquidation of most bank assets, banking systems do not have one but multiple possible equilibria, where panics can occur as soon as the

belief spreads that a crisis is imminent (Bryant, 1980; Diamond and Dybvig, 1983; Allen and Gale, 2000b; Diamond and Rajan, 2005). When depositors believe banks will fail, as they want to avoid being last in line, the rational behaviour is to be the first to run to the counter (or rather, the ATM). The fear of an imminent crisis then becomes a self-fulfilling prophecy. Empirical evidence has thus shown that in many past banking crises, depositors' imitation of other's behaviour have contributed to triggering systemic banking crises (Ó Gráda and White, 2003; Bruner and Carr, 2009). The 'fundamentalist' view denies that banking crises result from 'mass hysteria', but rather are related to the business cycle and fundamental economic indicators. It is when depositors observe an economic downturn that they anticipate a decreased value of banks' assets and ensuing difficulties to repay their commitments, and then try to withdraw their funds (Jacklin and Bhattacharya, 1988; Gorton, 1988).

In practice though, systemic bank runs appear to be usually triggered by some information about an economic downturn inducing a panic which amplifies the original financial difficulties of those banks that did suffer a loss, and extend the crisis to healthy banks. A signal about disappointing future returns can thus be observed by a fraction of depositors—usually the smart financial markets creditors, rather than individual depositors (Caprio and Honohan, 2014)—while the rest of the population try to deduce from the behaviour of those better informed depositors the content of the signal (Chari and Jagannathan, 1988). The issue of asymmetric information then play a major role (Allen and Gale, 2009): when depositors perceive that an economic downturn may lead to difficulties in the financial sector but cannot observe whether their own bank is weak or strong and their deposits are at stake, depositors may not be only risk-adverse but risk intolerant and even a limited increase in insolvency risk across the sector may trigger a systemic banking crisis (Gorton and Metrick, 2012). That can be either because creditors fear reckless behaviour by weakened banks (Calomiris and Kahn, 1991; Calomiris, Himmelberg and Wachtel, 1995) or the reduced liquidity that bank deposits may offer when the bank is considered risky (Gorton and Pennacchi, 1990; Dang, Gorton and Holmström, 2012). Furthermore, creditors liquidity preferences (their preference for cash over less liquid assets) can change due to exogenous shocks, leading to a rapid increase in demand for cash, or the conditions of the supply of cash reserves can change

(e.g. because of a monetary policy decision), leading to a new equilibrium between demand and supply of liquidity and banks struggling to maintain the level of their cash reserves (Calomiris, 2014).

These micro-level and purely financial concerns for the stability of individual banks can nevertheless have important macro-economic effects: rapid cash outflows tend to produce a contraction in bank lending to households and non-financial firms in order to reduce their risk exposure and restore their liquidity profile. Given the central role of bank loans for household consumption and corporate investment, such contraction can compound an economic downturn and spread financial distress across the whole economy, a phenomenon that is well-known since the Great Depression of the 1930s (Bernanke, 1983; Calomiris and Mason, 2003; Carlson and Rose, 2015).

### 3.2 Market reflexivity and the cyclical nature of finance

Information symmetries and the structural features of modern banking explain the financial system’s vulnerability to exogenous shocks. This is not, however, the only—nor the main—source of financial instability: due to the reflexive nature of financial markets, systemic risks are endogenous to the financial system. The idea of financial markets reflexivity means that there is a feedback loop between market participants ideas and behaviours, and the functioning the the market: as market participants observe the evolution of asset prices they modify their investment decisions accordingly, which influences the asset prices themselves. The result is that prices on financial markets are not rooted in fundamentals, i.e. objective but in market participants’ assessments of these fundamentals (Mügge and Perry, 2014; Sinclair, 2010; Soros, 2008). Market reflexivity is the logical consequences of our incapacity to know what the future holds: investors have to make decisions today about which capital assets will yield the best return in the future. In order to do this, they only have at their disposal historical data about the performance of different asset classes and a set of assumptions about the future (Beckert, 2016), which, if they are wrong, can lead them to misprice assets. Furthermore, economic agents’ ‘myopic tendency to extrapolate *recent* developments, especially when these have been good, into the longer term future’ (Goodhart, 2009, 11, emphasis added) limits the amount of historical data that is used to generate risk assessment models.

As a consequence, overoptimism can easily build upon slightly improved business prospects and generate in an asset price bubble (Brunnermeier and Oehmke, 2012).

The implications of reflexivity for systemic risk were already recognized by Keynes (1936) and later integrated by Minsky (1986) to develop his ‘Financial Stability Hypothesis’, which explains how financial instability progressively emerges from within an initially robust financial system. As Caprio and Honohan (2014, 704) note, this ‘dynamic instability in widely held expectations about macroeconomic and business prospects generally’ has dominated many of the larger episodes of systemic banking crisis.

In Minsky’s theory, following a period of crisis, bankers<sup>1</sup> expectations about the future performance of capital assets (including loans) reflect their recent experience of the crisis, inducing them to restrain leverage and maintain ‘margins of liquidity’ in the form of cash reserve or quasi-money assets (e.g. government bonds). In such an environment, the financial system is robust but only offer low yields: bankers then seek to exit these periods of ‘tranquillity’ and look for new investment opportunities with higher returns. At some point, the introduction of an innovation—technological or financial—offers such opportunity, promising increased profits for the entrepreneur and the investors who support the innovation. The diffusion of the successful innovation leads to a boom phase where credit expands to fuel the increase in investment, with asset prices increasing at an ever faster pace. Due to the reflexivity of risk assessment, the initial increase in profits and economic growth will spread a wave of overoptimism, which will in turn validate more lending decision and increase the expansion of the investment boom (Shiller, 2015). Furthermore,

[b]ecause of the overoptimism, loan loss provisioning is lower than will prove necessary, and this for a time is justified by low delinquencies as the overall economic boom financed by credit expansion makes it easy for borrowers to service their debt (Caprio and Honohan, 2014).

In order to keep increasing their profits, banks will then, on the one hand, lend more and invest in riskier, less liquid (i.e. higher-yielding) assets, which at that point look safe (Schularick and Taylor, 2012; Reinhart and Rogoff, 2011). On the

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<sup>1</sup>In Minsky’s works, the term ‘bankers’ includes all lenders, including banks, but also other financial market investors and even depositors.

other hand, to keep increasing lending without issuing new equity and while the growth of deposits does not keep pace, turn increasingly to debt financing, which can enable foreign capital inflows to keep the boom going (as was the case in Mexico and East Asia in the 1990s, and in the U.S. and Western Europe in the run up to the 2007-2009 crisis). The increasing share of ‘non-core’ liabilities in banks’ balance sheet thus rises (Hahm, Shin and Shin, 2012).

As banks keep stretching their capital base, they become increasingly fragile. As asset prices keep increasing, the return on each new investment decreases, thereby reducing their income stream up to a point where it is not sufficient to cover their own payment commitments to their creditors. This is the situation that Minsky call *Ponzi finance*. As Brunnermeier and Oehmke (2012, 12) note:

[a]t this point investors may be aware, or at least suspicious, that there may be a bubble, but they are confident that they can sell the asset to a greater fool in the future.

At this point, a very small event can trigger a panic. As seen in section 3.1, the news that some investors are liquidating their exposures, or that banks may suffer losses on a particular class of assets, or an increase in interest rates may start a run. As Brunnermeier and Sannikov (2016) explains, endogenous risk then materializes in the form of two spirals. A ‘liquidity spiral’, first, affects the value of banks’ assets: as banks all sell assets to obtain liquidities, asset prices plunge, inducing more of these ‘fire sales’, further depressing asset prices (see also Brunnermeier and Pedersen, 2009). A parallel ‘disinflationary spiral’ affect banks’ balance sheets on the liabilities side: as they extend less loans after a shock, banks inject less money in the economy, which translates into less deposits and less available funding, making refinancing costlier. Ultimately, this double spiral result in a paradox: banks’ individually rational move to reduce their exposure when hurt by a shock collectively amplifies the destabilisation of the financial system. For Brunnermeier and Sannikov (2016, 3) this

‘Paradox of Prudence’ arises when intermediaries shrink their balance sheet and households tilt their portfolio away from real investment towards the safe asset, money. Scaling back risky asset holding is micro-prudent, but makes the economy more risky, i.e. it is macro-

imprudent.

Banking activities thus give rise to several interrelated dynamics at the micro- and macro-level, creating risks that periodically explodes in costly systemic crises.

### 3.3 The cost of banking crises

Estimates of macroeconomic costs of banking crises have flourished since the 2000s, in reaction to the apparent return of banking sector instability in the latest quarter of the twentieth century (Bordo et al., 2001; Reinhart and Rogoff, 2009). The estimates have to include not only the direct fiscal and quasi-fiscal costs of bank bail-outs by taxpayers, decreased tax revenues and increased social expenditure for automatic stabilizers as the economic downturn deepens (Amaglobeli et al., 2015), but also the losses in economic output (usually proxied by losses in a country's GDP).

Before the 2007-2009 crisis, Hoggarth, Reis and Saporta (2002), considering both direct resolution costs to the government and the broader costs to the welfare of the economy averaged at 15 to 20% of annual GDP. Laeven and Valencia (2013), gathering data on banking crises from 1970 to 2011 find that output losses (proxied as deviations of actual GDP from its trend) in advanced economies amount in average to 32.4% of GDP and direct fiscal costs to 4.2% of GDP. Thus, despite active monetary policy responses to financial crises (Schularick and Taylor, 2012) and in some cases multilateral rescue programmes engineered by the International Monetary Fund (Barkbu, Eichengreen and Mody, 2012), the overall social welfare cost of banking crises remains incredibly large, with substantial effect on income inequality (Honohan, 2005).

As Reinhart and Rogoff (2009) furthermore suggest, the dramatic increase in public debt that results from bail-outs and, more importantly, reduced tax revenues and increased social expenditure in automatic stabilizers due to the economic downturn has negative effects on long-term growth, which should also be taken into account in calculations of the impact of banking crises on social welfare. While their estimated average of an 86% increase in public debt in the three years following a crisis should be taken with caution (Laeven and Valencia only find an average increase of 23.6% for advanced economies since 1970), this suggests a very prolonged impact of banking crises on social welfare.

Finally, while most estimates measure output losses from the peak of a boom to the deepest of the following recession, booms as well can be socially inefficient: by distorting asset prices, they distort agents' investment incentives and induce over-investment in the asset that is over-priced (Brunnermeier and Oehmke, 2012), e.g. real estate, as ghost cities of unfinished houses in Spain and elsewhere remind us. Cheap credit can thus lead to a substantial waste of resources (Admati and Hellwig, 2013; Caprio, 2013) .

## 4 Social costs and benefits of regulation

The literature that I have examined in the previous two sections highlights that banking activities contribute significantly to social welfare, but also include risks that can result in important losses for society. For regulators, the challenge then is to find an institutional design that enables banks to fulfil their socially beneficial functions, while limiting excessive risk-taking. The history of banking regulation has however been shaped by important theoretical debates about the capacity of state regulation to maximise social welfare (4.1), with consequences for economists' prescriptions for prudential regulation (4.2).

### 4.1 Theories of economic regulation and social welfare

From the 1930s, after the New Deal in the U.S. and World War II in Europe, two arguments were often used in political and legal circles to support regulation of private economic activities. The first is that market often fail to allocate efficiently the costs and benefits of economic activities. This argument finds its economic justification in welfare economics and the work of Arthur Pigou (1920) on market failures and the benefits of tax to internalise negative externalities into the production cost (so-called 'pigouvian taxes'). The second is that regulation is a costless solution to correct market-failure and improve social welfare. This perspective, usually known as the *public interest theory of regulation* (Hantke-Domas, 2003) assumes regulatory authorities that are not only immune from the pressure of special interests, but also perfectly informed and rational, 'in other words, infallible, omniscient, welfare-maximising regulatory authorities are concerned with public interest alone' (Harnay and Scialom, 2016, 403). For banking, this view of regulation underpinned

the tight post-war restrictions on banking group and market structures, directed credit and interest rate ceilings.

From the mid-1960s, however, critics of post-war banking regulations started asserting that the restrictions generated inefficiencies in the financial system, resulting in welfare losses (Meltzer, 1967; Kreps, 1966; Kaufman, Mote and Rosenblum, 1984) and associated state regulation with ‘financial repression’ (McKinnon, 1973). The critique was part of a wider reconsideration of the costs and benefits of the state’s involvement in economic activities (Joskow and Noll, 1981; Hägg, 1997; Meyer et al., 1959; Averch and Johnson, 1962; Caves, 1962), that found its intellectual foundations in the *Chicago School* critique of the assumptions on which the public interest approach rested.

Coase (1960)’s seminal work on social costs was a full scale attack on Pigou’s analysis of market failures and taxation. Coase generally refuted the pervasiveness of market failures, and argued that for those rare cases where markets were not able to solve issues, courts of law were more efficient than state regulators to offer compensation to aggrieved parties. A decade later, Eugene Fama (1970) proposed the *efficient market hypothesis*, which argues that market prices reflect all available information and that market participants rationally adapt their portfolios to any newly available information. The efficient market hypothesis thus provided further theoretical justification to deregulation of financial activities and, despite serious theoretical and empirical challenges (e.g. De Bondt and Thaler, 1985; Grossman and Stiglitz, 1980), it became a dogma of financial deregulation (Stiglitz, 2015). At the same time as Fama developed his efficient market hypothesis, Stigler (1971) developed a new perspective on the assumption that regulatory authorities pursue the public interest. Instead, his *regulatory capture* theory argues that the political process is usually captured by the industry that it is supposed to regulate, and that incumbent firms use regulation to shield themselves against competition by raising the cost of entry to the market. Moreover, even in cases where regulators may be pushed by some organised consumer groups to pursue their interests rather than those of the industry, their lack of competence results in inefficient regulation and increased social costs.

The Chicago School approach however has its own weaknesses. At the theoretical level, it places disproportionate trust in contractual arrangements and courts

of law as effective mechanisms to remedy negative externalities. As Shleifer (2005, 442) notes, while "[p]rivate orderings indeed work extremely well in some situation, [...] they also degenerate into the anarchy of private enforcement, where the strong and not the just win the day". Courts actually appear to be far from immune to inefficiencies, political motivation or even corruption (Johnson, McMillan and Woodruff, 2002; Djankov, La Porta, Lopez-de-Silanes and Shleifer, 2003; Glaeser, Scheinkman and Shleifer, 2003) and even if they were, the magnitude and urgency of the negative externalities that result from systemic banking crises makes it hard to imagine how courts could address the problem efficiently. At the empirical level, evidence suggests that regulation is beneficial to the development of financial markets and the participation of an ever broader public in them (La Porta, Lopez-de-Silanes and Shleifer, 2006), but more importantly, the deregulatory agenda that was its logical conclusion accelerated the frequency of banking crises (Reinhart and Rogoff, 2009).

In order to move forward in this discussion of the socially optimal institutional design for banking regulation, we need 'a more nuanced theory, which incorporates the powerful Chicago critiques of the public interest approach to government, but also recognises the benefits of public involvement in at least some activities' (Shleifer, 2005, 442).

Djankov, Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2003) and Shleifer (2005) suggest an alternative approach, based on acknowledging that 'a fundamental problem of institutional design is the conflict between the twin goals of controlling disorder and dictatorship', each of which entail substantial social costs. The cost of *disorder* arises from 'the risk to individuals and their property in such forms as banditry, murder, theft, violation of agreements, torts, or monopoly pricing', or, to put it differently, the risk that private behaviours put the wealth of others at risk, e.g. banks' excessive risk-taking imposing the costs of a crisis on all economic agents. The cost of *dictatorship* comes from the risk of expropriation by the state and its agents, notably through taxation or violation of property. In banking, that cost is rather to be seen in the inefficiencies of direct state regulation or the use of state-owned banks to pursue political ends (La Porta, Lopez-De-Silanes and Shleifer, 2002).

Any strategy through which *society* tries to control business, Djankov and col-

leagues argue, only imperfectly controls these risks, and is characterised by a trade-off between these ‘twin dangers’. Then

[a]s we move from private orderings to private litigation to regulation to public ownership, the powers of the government rise, and those of private agents fall. The social losses from disorder decline as those from dictatorship increase (Shleifer, 2005, 443).

This trade off, which Djankov, Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2003) call the ‘Institutional Possibility Frontier’, implies that the optimal institutional arrangement to govern a given economic sector depends on the particular circumstances of the economy or sector that is being regulated, notably the efficiency of judicial redress systems (to contain the costs of disorder with limited state involvement), the democratic controls on state action or the technical capacity of state regulators (to contain the costs of stronger state powers).

The basic implication of the theory is that the resort to regulation is only necessary when the level of disorder is too high for private orderings and even courts to deal with successfully. This case is most compelling in situations where the problem of inequality of weapons between private parties involved in a transaction is too too severe (Shleifer, 2005, 446).

Such an approach allows us to think about banking regulation in a new way. Rather than assuming that regulation is necessarily socially beneficial—as under the public interest theory—or always socially costly—as the Chicago School would have us think—their *enforcement theory of regulation* invites us to examine how the different prudential policy tools available help contain the dangers of excessive risk-taking and ensuing systemic crises on the one hand and excessive state control, with its inefficiencies, on the other.

## 4.2 The tools of prudential regulation

As we have seen in previous sections, containing banking crises is a public policy goal because of the negative externalities of banks’ risk-taking and the burden it puts on the general population. Historically, the first policy responses developed to contain the risk of banking crises have been to assign a role of lender of last resort

(LOLR) to central banks (Wood, 2003)—following Bagehot (1873)’s exhortation to the Bank of England—and, later on, the diffusion of deposit insurance schemes, institutional protection schemes and ex-ante resolution funds (see Eisenbeis and Kaufman, 2014; Demirguc-Kunt, Kane and Laeven, 2014). Together, LOLR and deposit insurance form an explicit government safety net to banking activities, removing incentives for bank runs, to which were added after WWII the banking sector restrictions I have mentioned in the previous section. The quasi-impossibility for governments to let a substantial part of their banking sector fail furthermore imply an implicit guarantee of bail out in case of failure—as is the case for the so-called ‘too-big-to-fail’ (TBTF) banks—and thus a subsidy by to these banks by way of lowering their funding costs.

The existence of these public guarantees however creates a moral hazard in the banking sector (Aghion, Bolton and Dewatripont, 2000; Allen et al., 2015): because creditors do not have to worry about losses, they relax their monitoring of banks’ risk management practices. Empirical evidence thus suggest that banks tend to initiate riskier loans after the introduction of a deposit guarantee scheme (Ioannidou and Penas, 2010; Lambert, Noth and Schüwer, 2017), a negative effect which appears greater than the stabilization effect in crisis times (Anginer, Demirguc-Kunt and Zhu, 2012). The implicit guarantee of bail-outs have a similar effect: as governments are more likely to intervene when virtually every bank is highly leveraged, the likelihood of bail-outs generate a collective incentive to take on more risk (Farhi and Tirole, 2012; Dam and Koetter, 2012).

Government guarantees thus do not reduce the incentives problem of banking: instead of creditors, it is taxpayers who bear the burden of banks’ excessive risk-taking. Cash reserve requirements, which force banks to invest a fraction of the deposits they accept as central bank reserves, historically were the first measure adopted to curb bank risk-taking behaviour (Feinman, 1993), and the ancestor of today’s liquidity requirements (4.2.1). New economic perspectives on banking crises developed in the late 1970s and the 1980s (Leland and Pyle, 1977; Merton, 1977; Diamond and Dybvig, 1983; Diamond, 1984; Stiglitz and Weiss, 1981) brought to the fore the issue of bank’s capital (Kaufman et al., 1986), and *risk-based minimum capital requirements* (4.2.2) became the dominant paradigm of the newly created Basel Committee (Goodhart, 2011).

With the 2007-2009 crisis and the economists' rediscovery of the credit cycle, the procyclical character of minimum capital requirements became obvious, prompting calls for a macroprudential and dynamic approach to bank regulation.

#### 4.2.1 Liquidity capital requirements

Liquidity requirements, out of fashion from the 1980s, were rediscovered with the 2007-2009 crisis, characterized as 'a crisis of banks as liquidity providers' (Acharya and Mora, 2015). For Rochet (2004, 2008), liquidity regulation is justified to deal with moral hazard at the individual bank level (information asymmetries between banks and their creditors) and at the aggregate level (bailout expectations). As Diamond and Kashyap (2016) note, the incompleteness of the information depositors have on banks' ability to survive shocks gives each individual bank an incentive to hold lower-than-optimal levels of liquidity (as in Diamond and Dybvig, 1983). Liquidity regulation then restores correct incentives, with higher costs for shareholders (liquid assets have lower returns than productive but illiquid assets), but reduced risk for creditors.

At the macro level, market failure arises from banks setting their liquidity buffers taking into account their own exposures to refinancing risk and the state of the interbank market but fail to take into account the systemic effect of their decisions. This results in a level of aggregate investment in highly liquid assets that is sub-optimal for financial stability (Perotti and Suarez, 2011; Stein, 2013). Liquidity ratios can solve this issue: forcing each bank to invest more into HQLA leads in aggregate to more liquidity in the system, and reduces the risk of systemic liquidity crises.

Basel III reintroduced liquidity requirements in global banking regulation in the form of a short-term *liquidity coverage requirement* (LCR) and a long-term *Net Stable Funding Ratio* (NSFR). The LCR measures a bank's ability to withstand a severe liquidity freeze (interbank market freeze and large withdrawal pressures) during at least 30 days. In other words, a high LCR should imply a higher resistance to sudden bank runs. Liabilities are ranked in terms of the degree of difficulty to roll them over or replace them by equivalent funding. Assets are categorized in terms of the likely loss incurred should the bank have to sell them in the middle of the crisis (fire sale). The most liquid assets are called 'High-Quality Liquid Assets'

(HQLA) and constitute a reserve of quasi-cash. The LCR is defined as the ratio of HQLA to total net cash outflows (i.e. the likely amount of cash that the bank will have to pay to depositors and creditors) over the next 30 days.

The NSFR takes a longer view on the maturity mismatch between assets and liabilities: it measures the amount of available stable funding to the required amount of stable funding over a one-year horizon. It is then intended to reveal excessive reliance on short-term debt to fund illiquid (and risky) assets. Liquidity requirements, because they mandate that banks invest a certain part of their funding into liquid but low-yielding assets, effectively limit the possibility for banks to shift their asset portfolios towards increasingly riskier assets. By doing so, these requirements impose a sort of ‘pigouvian tax’ on maturity transformation that internalizes its social costs in banks cost-benefits calculations, but it also potentially limit the number of investment projects that can be funded.

#### 4.2.2 Minimum capital requirements

Minimum capital requirements are concerned with banks’ funding structure, what sort of liabilities they rely upon to fund their activities. Concretely, these rules define how much of a bank’s assets must be funded through equity—money it receives from its shareholders, which gives them a claim on a share of profits—rather than borrowed money—deposits and, mostly, debt securities. The core difference between equity and debt that is instrumental for prudential policy is that while the latter involves a fixed commitment from the bank to repay, the later does not, so long as the bank remains in activity. The logical consequence is that in bad times, a higher capitalisation allows a bank to absorb more losses without having to sell illiquid assets in fire sales.

Representatives of the banking industry often argue—sometimes forcefully—that increasing minimum capital requirements is socially costly because it increases banks’ overall funding cost and leads to a restriction of bank lending to the economy (Institute of International Finance, 2010).

That assertion, Admati et al. (2013) argue, is fallacious, based on a confusion between private and social costs. First, higher capital ratios induce *private* costs for the shareholders but not social costs. The lower cost of debt funding is the result of a favourable tax treatment (which, from a public policy perspective represent a tax

revenue loss), and implicit or underpriced public guarantees on banks' debt (which reduce the risk-premium investors ask of issuing banks, but represent a liability for taxpayers). These subsidies to debt thus represent a distortion of the normal pricing of debt securities relative to equity. Then,

[r]equiring banks to have significantly more equity so as to lower the social cost associated with any implicit (or underpriced) guarantees and to reduce the inefficiency of high leverage is highly beneficial and corrects the distortions (Admati et al., 2013, 2).

Second, the relation between capital and bank lending is far from straightforward (for a review, see Bouwman, 2014). On a theoretical level, while some argue that the relation should be negative, others note that higher capital, because it increases total loss-absorption capacity, reduces the required risk premium and allows a bank to lend more (Repullo, 2004; Allen and Gale, 2004; Bhattacharya and Thakor, 1993; Allen and Santomero, 1997; Hanson, Kashyap and Stein, 2011). The empirical evidence does not indicate a clear direction either. In Europe the effect seems to vary greatly across bank types (Distinguin, Roulet and Tarazi, 2013; Aiyar, Calomiris and Wieladek, 2012). Overall then, reducing banks' reliance on debt and increasing equity appears to have a negative effect on shareholders but a positive effect on creditors and taxpayers.

There are nevertheless two issues with micro-level minimum capital requirements as they have been developed by the Basel Committee. The first is that the system leaves important room for regulatory arbitrage. The second is that they have important procyclical effects.

Under Basel standards, the calculation of regulatory capital is made with reference to 'risk-weighted' assets: the amount of each asset on a bank's balance sheet is multiplied by a factor representing the underlying risk of the asset. While under Basel I (1988) banks were forced to use the assigned risk-weights, from Basel II (2004), banks have been allowed to calculate their regulatory capital requirements based on their own risk-assessment models, a regime called the 'Internal Ratings Based' (IRB) approach, by opposition to the 'Standard' approach (SA). It has however been observed that the use of the IRB approach led to a substantial increase in leverage as banks used model complexity and non-verifiable assumptions in their models to reduce their total risk-weighted assets (Mariathasan and

Merrouche, 2014; Haldane and Madouros, 2012). For Harnay and Scialom (2016, 414):

By allowing banks to use their own models to assess the risks of their investments, regulators overlooked the discrepancy between the banks' interests in measuring and managing risks and the public interest in promoting a safe banking system.

Indeed, this self-regulation enabled banks to define regulatory capital in a way that maximises market value for a given risk profile, and thus increase their profits. But the object of regulatory capital is not to ensure a good return for shareholders:

regulatory capital is a matter for the taxpayers. It is defined as the minimum capital required by the regulator to guarantee the stability of the financial system. It must therefore take into account endogenous spill-over effects between banks. Specifically, bank regulatory capital must integrate the negative externalities that the insolvency of an individual bank generates for the whole banking system (Harnay and Scialom, 2016, p. 413).

Despite this important shortcoming, the IRB approach was maintained in the latest version of the Basel standards, but regulators introduced a complementary *leverage ratio*. That tool is different from the classic equity requirements in that it is set against unweighted assets. It is thus praised as a more straightforward tool to monitor bank leverage and the growth of their assets through time (Hildebrand, 2012; Blum, 2008; D'Hulster, 2009), despite shortcomings of its implementation in Basel III (Blundell-Wignall and Atkinson, 2010; Kiema and Jokivuolle, 2010).

#### 4.2.3 Macroprudential regulation

Micro-prudential rules on asset holdings and funding structures additionally do not successfully address the issue of macroeconomic booms and busts. As Goodhart (2013, 246) notes:

a problem of micro-prudential regulation is that it, semi-consciously, tends to force all banks to hold roughly similar portfolios; one aim of regulation always having been to bring all banks into line with the standards of the 'best' banks. This is fine so long as the adverse shocks are

‘small’. When, however, the adverse shocks are big enough to challenge the prior estimates of PD [probability of default] and valuation of previously supposedly safe assets, this can lead to even greater contagion and a more precipitate collapse.

As we have seen in section 3.2, during booms market participants’ overoptimism lead to a misappreciation of the risk attached to specific asset classes, and large investments in it. As microprudential capital requirements give low-risk assets a premium in the form of lower required regulatory capital, they reinforce the investment boom. By contrast, when the bubble bursts and asset prices collapse, banks struggle to restore their capital position (Goodhart, 2009).

Proposals for countercyclical capital buffers, which would limit increases in leverage during booms, emerged as a reaction to this pro-cyclicality of minimum capital requirements even before the crisis (Borio and Drehmann, 2009; Borio and Lowe, 2002; Drehmann and Gambacorta, 2012; Griffith-Jones and Ocampo, 2009; Jiménez et al., 2017). The effectiveness of such a buffer however depends crucially on the balance between rules and discretion in setting its level, as well as on the choice of a ‘common reference point’ for early warning signal. Pre-established binding rules offer the advantage of shielding supervisory authorities against pressures to let the investment boom develop longer, but mechanistic indicators of possible financial imbalances —such as deviations of the credit-to-GDP ratio from its historical average— necessarily need to be accompanied by a much more comprehensive evaluation of the risks by these supervisory authorities. Since said evaluation is likely to be influenced by past experiences, the longer the boom lasts, the more susceptible supervisors are to be victims of the ‘this time is different’ syndrome (Arnold et al., 2012, 3128).

Moreover, while the credit-to-GDP ratio has been accepted as a reliable early warning signal (Behn et al., 2013; Drehmann and Tsatsaronis, 2014), Repullo and Saurina Salas (2011) note that it would only point to the need for capital increases once GDP growth slows, that is, potentially too late in the financial cycle. Credit growth deviation from its historical trend is likely to provide earlier warning, giving more time for supervisors to take action (Ibáñez-Hernández, Peña-Cerezo and Araujo, 2015).

Additional measures on lending standards are also advocated as a way to limit

leverage by restraining the growth of assets: Claessens, Ghosh and Mihet (2013) thus find that setting maximum debt-to-income and loan-to-value ratios for individual borrowers and loans, as well and limits on individual banks' credit growth and foreign currency lending have a positive effect on reducing leverage during boom times, as well as the ratio between core and non-core liabilities. They also see a positive effect of measures which force banks to retain liquidity and limit profit distribution and constitute countercyclical buffers on leverage and asset growth, all measures also advocated by Admati et al. (2013), together with regular mandatory equity issuances.

## 5 Conclusions: Lessons for the study of lobbying on banking regulation

What lessons can we draw from the literature on banking regulation for our understanding of financial sector lobbying? In section 2, we saw that banks provide services that are useful not only to their clients—solution to information asymmetries problems between lenders and borrowers, and intertemporal smoothing of risk—but to the whole economy—liquidity provision. The provision of these services however comes with important risks (section 3). Because of the maturity transformation process that is the very core of banking, banks are vulnerable to creditors runs that can turn into systemic banking crises (3.1). Moreover, at the macroeconomic level, the reflexive nature of financial markets induces boom and bust dynamics characterized by phases of credit expansion and banking crises (3.2). Regulation offers potential solutions (4). However, we have to bear in mind that the capacity of regulatory processes to achieve an optimal institutional design, one that can maximise social welfare, is much more problematic than commentators and political advisors tend to acknowledge (4.1), making a nuanced approach to economic regulation necessary to assess the array of regulatory tools available to address the risks of banking (4.2).

From this review, we can identify an array of social groups, which each stands to be affected differently by the risks arising from unregulated banking activities. Bank shareholders and managers, first, see their profits increase with increasing leverage and risk-taking, but never bear more than a fraction of the cost related

to systemic crises. For them, prudential regulation represents a cost, as it limits the extent of their lucrative risk-taking behaviour or forces them to bear at least a part of its burden. Borrowers, second, benefit from the expansion of cheap credit in boom phases, but are likely to be negatively affected by the contraction of credit following systemic crises. Third, depositors and more importantly holders of bank debt securities stand to gain substantially from the high yields in good times, while pervasive bailout guarantees protect them from the inevitable losses when a crisis hit. Finally citizens more generally pay the invisible cost of the inefficient allocation of resources induced by mispriced capital assets during booms, and, as taxpayers, bears the brunt of crisis-related costs.

Beyond this schematic presentation of the different social groups involved in banking, we should however not forget the large overlaps between them: taxpayers are also depositors who keep their savings in bank accounts, investors through pensions funds and life insurance that invest in banks' debt securities, borrowers when they buy a house or a car, or through the non-financial firms that employ them. The evolution of banking and other financial practices in the last four decades have transformed banking in such a way that most social groups see their welfare related to the growth of asset prices in intricate ways (Hardie et al., 2013; Finlayson, 2009), blurring the traditional dividing lines between interest groups. In such a context, it becomes illusory to base studies of financial interest groups influence on banking regulation on any clear 'model of the public interest' (Carpenter and Moss, 2013a) that would serve as a counterfactual to compare the actual policy against.

However, understanding in theoretical terms how the risks arising from banking activities are distributed across social groups, and the likely effects of prudential rules on different risks enables us to see better through the 'mystique' of banking that characterizes financial interest groups' lobbying (Admati and Hellwig, 2013, 2) and to distinguish genuine arguments from framing strategies (Eising, Rasch and Rozbicka, 2015; Kluever and Mahoney, 2015). It also helps us understand the domestic political dynamics that influence global financial regulation (Helleiner and Pagliari, 2011) and the special power of finance compared to other business interests (Pagliari and Young, 2014). Overall, understanding the substance of banking regulation remains an essential first step for empirical studies of business power in this areas.

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