13 Regulation of banking and financial markets

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1. INTRODUCTION

Financial crises are at the core of the academic and the policy debate on banking and finance. Traditionally intertwined with macroeconomic policy, financial instability is increasingly dependent on excessive risk-taking by financial intermediaries. For a long time, it was believed that as long as central banks guaranteed price stability through appropriate interest rate policies, the financial infrastructure would also remain stable. This view is no longer supported. The regulation of banking and financial markets has become the major challenge for public authorities. Due to increased competition, the borders between financial institutions are fading, financial innovations are multiplying off-balance-sheet activities, and internationalization is rendering control by national authorities more and more difficult. All of these problems culminated in the global financial crisis of 2007–09 and, at the time of writing this chapter (April 2011), have not yet been resolved.

Financial crises are not a new phenomenon, but from a historical perspective, they have become increasingly complex (Gorton, 2010). According to the International Monetary Fund (IMF), in the period 1980–93 about 133 IMF member countries experienced significant banking sector problems, of which 36 countries had to face real financial crises (see Lindgren et al., 1996). These financial problems are not limited to developing countries and emerging financial markets, but occur also in developed countries and in highly sophisticated financial markets. The global turmoil that followed the subprime mortgage crisis in the US is a prominent example of how financial innovation can not only boost investment and growth, but also bring the financial system worldwide nearly to a standstill. Due to these developments, economic policymakers and financial authorities have been increasingly concerned over global financial stability, which has become more and more difficult to safeguard (see Schinaisi, 2006).

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The major goal of regulation in economic life in general, however, traditionally consists of protecting (uninformed) consumers against a variety of market imperfections. Problems of market failures also apply to the financial sector and the banking system in particular. The goal of banking regulation and supervision is often explicitly stated so as to prevent banks from assuming unacceptably high risks which may endanger the interests of creditors, that is, deposit holders and savers in general.

Government intervention may also aim at the advancement of other policy objectives: that is, to encourage particular activities in the industrial sector, the agricultural sector or in the social field. In the financial sector the government intervenes in credit markets to subsidize or guarantee lending for industry, agriculture, housing and other activities regarded as beneficial to the economy. Often specialized financial intermediaries are sponsored by government to make home mortgages accessible to borrowers or to grant cheap investment credits to particular sectors of the economy. In this way, however, governments influence the choice of projects to be financed and may affect financial stability when this influence leads to unsound borrowing or lending policies. The US experience with government-sponsored entities for housing policies, like Fannie Mae and Freddie Mac, is a case in point in the subprime crisis.

It may be observed all over the world that, compared to other sectors of the economy, a much more elaborate system of regulatory intervention has been set up in the financial sector. Hence, the question arises what is specific to the financial sector that warrants such extensive regulation and supervision.

First, it is held that special protection has to be provided to the consumer due to the fiduciary nature of most financial products and services. Credit derives from the Latin ‘credere’, which means to trust. Being in essence future markets, financial markets are unavoidably characterized by risk and uncertainty, which is also reflected in the financial assets traded therein. In order for consumers to trust financial markets for their inter-temporal choices, they have to be protected from excessive prices and opportunistic behaviour by the suppliers of financial services who know more than unsophisticated investors do. Second, money, a special commodity with vital transaction functions in the economy, is at the core of the financial system. As a consequence, monetary and financial stability is a public good and this concern has become the overriding goal of financial regulation. Specific concern for the stability of the financial sector is warranted due to external effects. Financial markets and institutions are much more interconnected and characterized by ‘herd behaviour’ than is the case in other sectors of the economy. Bankruptcy of one institution may easily spill over to others and endanger the whole financial system.

The recent financial crisis has placed even more emphasis on these problems, particularly from the perspective of liquidity, which is understood as the ability to transform debt into money. Liquidity has important public good
characteristics, which already implies underproduction in an unregulated environment. Liquidity can be a source of negative externalities too. This is particularly the case when uncertainty nurtures the precautionary demand for money thereby leading to lower asset prices, instability of financial institutions, and possibly to a credit crunch (Keynes, 1936).

The elaborate system of financial regulation established in the aftermath of the great economic depression of the 1930s, which was attributed to a financial crisis, has been since questioned for various reasons. It was challenged by major evolutions in the financial sector, which seemed to make regulation and supervision unnecessary if not counterproductive. Today, in the aftermath of the global financial crisis, this free-market approach is being reconsidered by policymakers (e.g. the former US Federal Reserve Chairman Alan Greenspan – Andrews, 2008) as well as by academics (e.g. Posner, 2009).

To begin with, the traditional public interest view of regulation was challenged by the public choice approach. This approach argues that regulation often fails to serve the public interest. Regulators are ‘captured’ by the regulated firms through lobbying in order to protect the business interests, often at the expense of the consumers. In particular, firms have an interest in limiting competition by restricting entry into their markets through regulatory barriers. It is observed that the ‘capture theory’ applies even more forcefully to the financial sector, where unbridled competition is seen as a major threat to the primary goal of stability of the financial system. Hence, according to Van Cayseele (1992), the emphasis of financial regulation has been on stability rather than on efficiency-enhancing competition. Following this argument, the financial sector, more than other sectors of the economy, was hit by the deregulation wave in the past two decades. For an illustration of how deregulation has impinged on the recent financial crisis in the US, see e.g. Levine (2010). For the view that financial regulation is pro-cyclical (i.e. lax in good times, when it would be needed the most, and strict in bad times, when it stands in the way of recovery) due to the time inconsistency of self-interested policymakers, see e.g. Zingales (2009).

Moreover, the regulatory debate has received renewed attention in the economic literature because of new insights from developments in the field of information economics. Financial markets are considered imperfect by definition as they are characterized by asymmetric information, agency problems and moral hazard. Markets are powerful coordination mechanisms, yet they do not operate perfectly and cannot do so. However, government intervention does not always provide better coordination and therefore need not necessarily replace market mechanisms. Government policies in the first instance have to create a framework for satisfactory market operation, and only in the second instance do they have to prevent and limit the consequences of some negative aspects of the operation of the market mechanism. Hence, a delicate balance...
has to be struck between the discipline of the market and coordination by government actions. Relying upon more profound analyses of agency problems involved in the financial sector, the debate has shifted towards corporate governance and self-regulatory issues (see Devriese et al., 2004). Particularly after the global financial crisis, the virtues of the so-called ‘market discipline’ of financial institutions are being questioned (Hellwig, 2009), and the need to regulate corporate governance and the role of institutional investors therein is increasingly advocated (Calomiris, 2009; Zingales, 2009). Alongside this debate, regulatory governance, i.e. the governance of institutions involved in the supervisory function, is also currently an issue (see e.g. Quintyn, 2007).

Finally, the dynamic evolution of the financial system (financial innovation) constantly presents new challenges for the regulatory debate. Government measures to protect the consumer, such as deposit insurance, have created new moral hazard problems. They diminish the incentives for markets to discipline the banks, and induce excessive risk-taking as has been documented in the past, for example in the widespread Savings and Loans crises of the 1980–90s in the US. Hence, in order to complement market discipline a regulatory dialectic has developed in which deposit insurance has become a major modern driving force behind the supervision and regulation of banks. What the last financial crisis has clearly shown, however, is that deposit insurance is not sufficient to guarantee financial stability. Other traditional instruments of the so-called ‘safety net’ aimed at preventing financial meltdown, particularly lending of last resort by the central banks, also had to be adapted to the innovative features of the financial system and to be complemented by ex-post bailouts by governments in order to be effective. This outcome seems to make moral hazard concerns endemic in the modern financial infrastructure (Johnson and Kwak, 2010).

Moral hazard is not the whole story though. In global financial markets, ongoing financial innovation and restructuring continuously present challenges to the delicate balance between government regulation and market discipline. Hyman Minsky (1986) – a neo-Keynesian economist who emphasized endogenous financial instability – described this tension between financial innovation and regulatory attempts to catch up with it as an unfair game, which governments are bound to lose. Governments are no more prescient than financial entrepreneurs, they work on lower-powered incentives, and thus they can only deal with the externalities of financial innovation ex-post. This logic bears some resemblance to the unfolding of events in the global financial crisis.

Recently, the adoption of very complex and sophisticated financial innovations in the quest for profit has determined structural shifts in the financial intermediation process. As a result, the core of traditional banking intermediation has declined significantly. At the periphery, intermediaries such as...
institutional investors, hedge funds, private equity funds and new specialized investment vehicles have captured the largest share of financial markets. The relationship-banking model, traditionally predominant in Continental Europe and Japan, has been overtaken by the Anglo-Saxon market-based model. This circumstance raises new prudential concerns because financial risks are transferred from the highly regulated banking sector to non-regulated intermediaries, thereby becoming more difficult to monitor. However, one lesson from the global financial crisis is that risk is never entirely divested away from the banks, which remain the weak point of the financial system. When the stability of non-banking institutions is shaken by lack of reliable models to price risk, investors ‘fly to quality’: they demand only safe and liquid assets (Caballero and Krishnamurthy, 2008). Risk that cannot be objectively quantified via probability distributions is more precisely characterized as uncertainty, after Knight (1921). According to Keynes (1937), investors and people in general demand liquidity as a reaction to immeasurable uncertainty. This immediately puts a strain upon banks, because they are the ultimate providers of liquidity although they do not have as much cash at hand as they have promised to their lenders. Suddenly scarce liquidity available to depository institutions is supplied at increasingly higher premiums, which undermines refinancing of existing positions, raises the spectre of interbank contagion, and reduces the credit available to business and households. Because by definition the stock of financial assets cannot be liquidated at once, the failure of banks (and central banks) to credibly meet liquidity demand implies the default of virtually every financial promise. In essence, financial innovation involves uncertainty and this circumstance – particularly when governments and monetary authorities fail to handle it in a timely way – may cause a financial meltdown (Pacces, 2010).

In this evolutionary process, which is driven by profit opportunities from making financial markets more complete and thus is in principle efficient, there are no definite or universal recipes to be found. The balance between market and government intervention may shift from one extreme to the other, like a pendulum, depending on the circumstances defining the conventional wisdom in times of prosperity (when regulation is considered excessively binding) as well as in times of crisis (when the political pressure to regulate anything that has turned out badly becomes irresistible). Rather than discussing ad hoc regulatory policies, it is important to specify the general principles that determine the right balance between market and government coordination. Therefore, before moving into specific regulatory issues, such as regulatory instruments and regulating authorities, a more fundamental analysis of the role and the nature of the financial system is in order.
2. THE NATURE OF THE FINANCIAL SYSTEM

According to economic analysis financial markets are by definition imperfect. Financial intermediaries find their origin precisely in these market imperfections. They may provide a market solution to these market failures and in this respect may be an alternative to government intervention.

First, more than other economic activities, financial operations are concerned with the future, and hence are characterized by risk and uncertainty. The key services of the financial system in the process of allocating funds between savers and borrowers consist in trading risk and liquidity. As a consequence, expectations play a major role in the pricing of financial assets. However, given the often limited amount of information available to all market players, price developments are difficult to predict. In other words, there is uncertainty, which differs from measurable risk in that uncertain events cannot be assigned an objective probability. As new information becomes available, market prices adjust suddenly and collectively (so-called ‘herd behaviour’) to the new price expectations. Together with low transaction costs in financial markets, this mechanism explains the high volatility and inherent instability of financial markets. These insights go back to John Maynard Keynes (1936; 1937).

Second, asymmetric information problems arise when market parties have different information. Hence, one party may not have enough information about the other party to make accurate decisions. This certainly applies to financial markets where one party often has superior information about the risk being transacted than the other party, for example an investor knows more about the riskiness of his investment than does the lender.

Asymmetric information hampers the well functioning of markets. It creates problems of adverse selection before the transaction is entered into, and of moral hazard after the transaction has taken place. Adverse selection arises because due to incomplete information the lender cannot accurately distinguish good-risk applicants from bad-risk applicants before making an investment. Thereby a so-called ‘lemon premium’ will increase the loan rate, and a number of risky projects will fail to be funded. Moral hazard costs, incurred by the lender to verify that borrowers are using their funds as intended, further raise the loan rate and reduce the amount of projects that can be financed.

In this process, financial intermediaries arise because they specialize in information on borrowers and solve these asymmetric information problems. The key services provided by financial institutions then consist in collecting and communicating information on debtors and on financial assets.

The principal-agent relationship of creditors with financial institutions, however, involves similar information problems. How can the lender (the
principal) make sure that the agent (the financial intermediary) acts in his interest? For example, depositors lack information regarding the riskiness of a bank’s portfolio. Should these financial intermediaries, who provide market solutions to market imperfections, in turn not be subject to government regulation and supervision?

Third, financial markets and financial institutions tend to be more interdependent than is the case for other sectors of the economy. Events in one financial market or institution may have important external effects on the rest of the financial system and on the whole economy. Together with significant potential for ‘herd behaviour’, this explains the occurrence of so-called systemic risk, whose effects may be devastating. This problem has received special attention in the analyses of the global financial crisis. In particular, the persistence of disequilibrium prices (Gennaioli et al., forthcoming) and the fear of contagion from counterparties (Krishnamurthy, 2010) interact in a potentially disruptive manner with leverage and illiquidity of financial intermediaries (see also Adrian and Shin, 2010).

Fourth, at the heart of the financial system lies a special commodity: money. Traditionally, the proper functioning of money depends upon price stability. As there is a link between prices and money in circulation, there is a need to keep money creation under control. Money creation, however, is profitable, so that it may not be taken for granted that an unregulated money supply will guarantee price stability. As money is created by the banking sector, a special need to control these specialized intermediaries may arise. A problem highlighted by the global financial crisis is that it can be very difficult for central banks to control the effective quantity of money. In good times, a number of assets beyond the scope of open market operations by central banks can be accepted as collateral for short-term funding, which is equivalent to money (Gorton and Metrick, 2010a). As Minsky argued, ‘everyone can create money; the problem is to get it accepted’. Banks specialize in the business of getting their liabilities accepted as money because they are ‘merchants of debt’ (Minsky, 1986: 255, 279). Unfortunately, financial assets previously deemed liquid may suddenly become illiquid and thus unsuitable as collateral. This is akin to money disappearing from the system. When financial intermediaries cannot refinance their short-term positions, they may need to sell assets at so-called ‘fire sale’ prices – that is, for less than the assets are worth. Ultimately this leads to defaults, contagion (or fear thereof), more illiquidity and even lower asset prices (Brunnermeier, 2009). Central banks had to acknowledge their inability to stop this downward price-liquidity spiral with conventional monetary policy. Eventually they had to engage in support programs targeted at private debt in order to satisfy the liquidity demands of panicking investors.

Fifth, many of the assets generated by financial intermediation are both private and public goods. The private good aspect is that money and finance...
provide benefits to the parties engaged in private transactions. However, the multilateral trade and exchange processes involved, both at a moment in time and intertemporally, become public goods and present public policy features. A well-functioning monetary and financial system provides beneficial external effects for society, reaching well beyond the aggregate benefits of private individual transactions. Basically, the trading and liquidity of financial assets reduce the cost of credit and increase its availability for consumption and investment at large. Liquidity is non-rival because the benefits to one person do not diminish another person’s access to the same benefits. This holds for both borrowers and lenders since liquidity is ultimately a convention and it is never actually ‘consumed’ (Keynes, 1937). Moreover, since liquidity also has the characteristics of a network good, the more everyone accesses the benefits of liquidity (for instance, on secondary markets), the greater the benefits for all. Lastly, the efficiency advantages are non-excludable as no one can be excluded from the broader social benefits of finance’s contribution to economic welfare (see Schinasi, 2006). These public good features give rise to negative externalities when liquidity becomes scarce, not because investors actually hoard more cash, but because the premium from parting with unproductive cash increases regardless of the available quantity of money and of other stores of value (this is the so-called ‘liquidity trap’ – Keynes, 1936).

Finally, the whole financial system can be seen as comprising several closely related components: financial markets directly matching savers and investors; the financial infrastructure ranging from clearing, payments and settlement systems to the regulatory and supervisory authorities; and a whole array of financial intermediaries pooling risks and funds, and supplying diverse financial services. Key to understanding its functioning is that uncertainty and trust is at the core of intertemporal transactions. Hence, modern financial systems are continuously involved in providing beneficial but necessarily imperfect (and accident-prone) ways of transforming uncertainty into quantifiable and priceable risks. Banks play a crucial role in this process, involving both opportunities and dangers. By financing long-term investments with short-term liabilities, banks allow financial resources to flow to valuable projects that will only return cash in an uncertain future. This mismatch in the operations of banks is known as maturity transformation, which is a prominent mechanism to overcome uncertainty in finance. The downside is that the quest for profit from this operation induces banks and other intermediaries to increase leverage by issuing liquid liabilities. These liabilities are considered relatively ‘safe’, but in fact their low-risk premiums underestimate the impact of uncertainty. Financial instability occurs when these liabilities are no longer accepted as cash (i.e. they are discounted by an additional liquidity premium) and governments are unable or unwilling to support their issuers or otherwise to lend against the assets they are invested in.
3. INFORMATION FAILURES AND THE NEED FOR FINANCIAL REGULATION

Mainly due to information asymmetries, financial markets do not operate perfectly. In reallocating funds between market players an agency problem arises between the lender (principal) and the borrower (agent), because the latter has private information about the potential return and risk of his investment project. Hence, optimal debt contracts typically include extra costs (a so-called ‘external finance premium’) that are incurred. They consist of costs incurred in screening loan applicants and monitoring the behaviour of borrowers and include a premium for credit risk. These are deadweight costs associated with the agency problem and are more particularly due to problems of adverse selection and moral hazard explained in the previous section. Solutions for these information failures may be provided by the market itself, mainly by financial intermediation, or may require government intervention.

Instead of individual investors having to perform a variety of screening and monitoring functions that are complex and time-consuming, financial intermediaries arise. They specialize in these information functions and thus may benefit from scale economics, which reduce the cost of information production and, in turn, the external finance premium. As argued by several commentators, for example Dewatripont and Tirole (1994), there may be a ‘natural monopoly’ in the exercise of these information functions because cost duplication by several parties is socially wasteful.

However, the main reason for the existence of financial intermediaries depends on their ability to overcome free rider problems in the production of information, due to problems of non-appropriability of information. Information has public good characteristics in that information is often non-rivalrous, meaning that one person’s use of information does not diminish its availability for others to use. Moreover, because the transmission of information has become so cheap, it may be expensive to exclude some people from this information. The non-excludability of people who do not pay for information creates a free rider problem. It prevents the market from producing enough information to eliminate information asymmetries. The undersupply of information in the market may require regulatory intervention by the government to disclose information.

In financial markets, large numbers of savers have little incentive to devote resources to screening and monitoring investors. Financial intermediaries, on the contrary, have an incentive to invest in information and to act as delegated monitors for many individual savers who deposit their funds with the intermediary, if they can obtain extra profits from the production of information (Diamond, 1984).
Banks play a special role as financial intermediaries in this respect by reallocating funds from small, uninformed savers to small and medium-size investors, whose creditworthiness is often difficult to evaluate. Individual savers are faced with difficult information problems as the use of their funds involves a lot of ‘private’ information. When banks give private loans, instead of buying market paper, they invest in information on credit risks.

According to Mishkin (2010), banks are able to profit from the information they produce and to avoid free rider problems primarily by making private loans. These loans are not traded, so that other investors cannot free ride on the intermediary’s screening and monitoring efforts by observing what the bank is doing and bid up the loan’s price to the point where the bank receives no compensation for its production of information. Hence, banks generally benefit from higher intermediation margins compared with external finance premiums in financial markets.

The above traditional view of banking has been called into question by the facts of the global financial crisis. Thanks to securitization, a financial innovation of the late 1980s that flourished in the mid-2000s, banks can ‘sell’ loans because the latter are pooled in non-recourse vehicles, issuing securities that are placed with the investing public or with institutional investors and hedge funds. Private placements face significantly lower regulatory costs and therefore are preferred (Zingales, 2009). By selling loans, financial intermediaries move from the ‘relationship banking’ model (a commercial bank earning intermediation margins) to the ‘transaction banking’ model (an investment bank earning transaction fees). The obvious implication of this solution is that financial risk and the underlying asymmetric information is shifted to the market. But there are two complications. First, the counterparties to the selling banks are mainly professional investors, who invest on behalf of ultimate savers and may take advantage of them. Thus, asymmetric information must still be dealt with by financial institutions. Second, the financial panic of 2007–08 shows that banks and other leveraged intermediaries warehoused or otherwise repurchased a substantial proportion of the securitized loans (Gorton, 2009). Actually, a core problem of this crisis was so-called ‘shadow banking’, a pattern of financial intermediation based on short-term liabilities nearly as liquid as money, but which are neither insured nor regulated as deposits. We will discuss the implications of this issue for financial stability and regulation in the following sections. The important point at this stage is that the distinction between bank-based and market-based financial systems is becoming blurred, if not outdated, because banks need markets to sustain their intermediation margins, but markets still need banks to provide investors with liquidity.

Another advantage of relationship banking is that non-tradable loans commit banks to disciplining the behaviour of borrowers and to monitoring
moral hazard. In the corporate governance literature it is emphasized that banks can play an active gatekeeper role, monitoring the behaviour of their corporate clients. As the quality of corporate governance in a country is found to have a substantial impact upon its economic performance (La Porta et al., 1998), the role of banks as a source of corporate monitoring has some public good aspects. This monitoring function, however, proves to be more difficult in the case of market financing, for example by the emission of corporate bonds. These distinctions lie at the heart of the controversy between the bank-financing model, which is still predominant in Continental Europe, versus the market-financing model of business investments in the Anglo-Saxon world. However, the vulnerability of many banks in Continental Europe to the downturn in debt and equity markets suggests that the corporate governance of banks has nowadays become a more important issue than the role of banks in the governance of non-financial companies (Hellwig, 2009; Heremans and Bosquet, 2011).

The role of markets and financial intermediaries in the provision of information implies that the need for government intervention is essentially of a complementary nature. First, in financial markets, regulation is needed to the extent that no solutions for information failures are provided by financial intermediaries. This is the domain of the regulation of the conduct of financial market transactions. Second, financial intermediaries alleviate information problems, but their operation creates, in turn, similar information and monitoring problems. This has to be solved by regulation and supervision of financial institutions.

Traditionally, the case for government intervention in the operation of financial markets rests upon asymmetric information problems that create risks of fraud, negligence, incompetence, and so on. Specific conduct of business rules are therefore enacted and enforced by financial authorities. But are other markets for non-financial products and services not likewise affected by problems of imperfect and asymmetric information? It appears that quality problems and related information problems may be much more difficult in the modern sophisticated financial markets.

With respect to informational imperfections, economic analysis divides products and services into three categories. First, information problems are less severe for search goods which may be inspected upon purchase. Also marginal consumers exert an effective market constraint on the opportunistic behaviour of the suppliers. This results from suppliers’ competition for the marginal consumer. Hence, the marginal consumer investing in information and shopping around for price to quality combinations will also protect uninformed consumers. Second, this disciplining effect on suppliers may also apply to those experience goods that are frequently purchased. However, it would take more time when they are only infrequently bought. Third, for
credence goods, whose quality is much more difficult to assess, knowledgeable comparison shopping by marginal consumers is not likely to occur. Many financial services, especially those involving the provision of investment advice, are to be seen as credence goods for unsophisticated investors (see Pacces, 2000).

The distinction between sophisticated and unsophisticated users of financial services is particularly relevant in view of the institutionalization of savings and securities markets. In contrast to the background of US financial regulation in the 1930s, which emphasized individual protection of ‘widows and orphans’, modern investor protection should focus on institutional investors and their conflicts of interests with customers, counterparties, and corporate management (Zingales, 2009). This approach has two major implications for financial regulation. On the one hand, conduct of business rules should allow retail investors in both debt and equity markets to select institutional suppliers of investment services knowledgeably. On the other hand, disclosure regulation should focus not so much on the transparency of complex financial products for unsophisticated investors, but rather on the systemic vulnerability of the markets in which these products are traded, funded, and insured. That is to say, securities regulation may be evolving from problems of information and competition towards financial stability issues.

Information problems may be alleviated by private production and sale of information, which is performed by information intermediaries. For example, rating agencies screen and monitor the creditworthiness of bond issuers in the financial market. Because of the public good nature of information and the free rider problem linked to it, private intermediaries are not able to solve these information problems completely. The failure of credit rating agencies in assessing and monitoring risk has been evident in the global financial crisis. However, the way forward for regulation is still unclear. In particular, opinions differ as to whether conflicts of interest prevent ratings from being accurate (Pagano and Volpin, 2009), ratings are inflated because they enjoy a ‘regulatory license’ (Partnoy, 2009), or ratings simply underestimate systemic risk because of model uncertainty regarding financial innovations like asset-backed securities (Coval et al., 2009). What can be concluded from this debate is that the problem with rating agencies, if any, is not just that they may mislead unsophisticated investors, but rather that financial stability may suffer from collective illusions of safety supported by high ratings. The fact that ratings and the models on which they are based are exposed to uncertainty, inaccuracy, or outright fraud becomes problematic for stability to the extent that ratings and their reliability affect the terms of funding for financial intermediaries. The recent European sovereign debt crisis has shown that ratings may generate funding problems even in the absence of conflicts of interest (see e.g. IMF, 2010; Coffee, 2010b).
Financial institutions on the one hand help to alleviate information problems in financial markets. On the other hand, a substantial part of financial assets issued by financial institutions are information intensive and therefore cannot be easily evaluated and liquidated. This applies in particular to banks, where depositors are not informed about the quality and risk of the asset portfolio. Note that ‘shadow banking’ involves similar issues so long as intermediaries are investing in securities too complex to be scrutinized and they finance these investments with short-term liabilities. Information asymmetries create problems of moral hazard as financial institutions may take actions that are not in the interest of their lenders. For example, banks have incentives to make high-yield but very risky loans. Moreover, a free rider problem arises as large numbers of investors have little incentive to devote resources to the monitoring of financial institutions. In particular, bank debt is primarily held by small, unsophisticated depositors who have little incentive to perform various monitoring functions. However, these costs of moral hazard may also be reduced and financial institutions could be disciplined by the nature of the debt claims they issue. By issuing short-term debt claims, as the banks do, their behaviour will be disciplined by the threat that savers may withdraw their funds at short notice. If, however, such short-term debt claims are insured, as in the case of deposit insurance, moral hazard problems may even increase. Only uninsured creditors who cannot withdraw from funding at once, such as when banks issue a certain amount of subordinated debt, will have incentives to monitor risk-taking by banks.

Market discipline by uninsured creditors is a double-edged sword, however, because it impinges on the stability of individual institutions and possibly of the system as a whole. Indeed, there is a trade-off between financial stability and the control of moral hazard. The costs of the safety net to whichsystemically important intermediaries have access in case of trouble are ultimately borne by taxpayers and this, of course, induces more risk-taking than would be socially optimal.

Government regulation and supervision is needed in order to reduce the costs of moral hazard to individual savers and taxpayers. The failures of market discipline can be counteracted primarily by requiring that financial information be disclosed promptly and accurately. This can also be achieved by increasing incentives for responsible performance by bankers and bank shareholders, for example by augmenting their stake in the bank by capital adequacy rules requiring larger commitments of their own funds. As the recent financial crisis shows, however, such measures at the level of individual institutions are not always sufficient to contain systemic risk.
4. FINANCIAL STABILITY AND THE NEED FOR POLICY INTERVENTION

Stability has traditionally been the main concern of the financial sector, and it has become increasingly important after the first episodes of financial panic in 2007. Financial stability may be broadly defined as the ability of the financial system to facilitate economic processes, manage risk, and absorb shocks. As it preserves the beneficial effects of the financial system in enhancing economic activity, stability also presents public good features. On a more restrictive interpretation, financial stability is seen as managing the macro-problem of systemic financial risk. Systemic financial risk refers to the risk that an event will trigger a loss of economic value or confidence in a substantial portion of the financial system that is serious enough to have significant adverse effects on the real economy (see Schinasi, 2006). Characteristics of the financial sector are such that individual problems may easily spill over and endanger the whole financial system. Hence, failures in the operation of the financial sector not only have consequences for individual investors and savers, but also stock market crashes, bank failures and other financial disasters may endanger the health of the whole economy.

Financial operations are characterized by risk and uncertainty. As a result, financial decision-making depends heavily upon expectations. It is also characterized by herd behaviour (Devenow and Welch, 1996). Market parties adjust their expectations suddenly and collectively, leading to high volatility in financial markets. Moreover, compared with other sectors of the economy, financial markets are much more interdependent. This is evidenced by very tight interconnections in the interbank market. Events in one financial market or institution may then have important effects on the rest of the financial system. Failure in one market or institution may create a financial panic and end up in a systemic crisis. Due to ever increasing international capital mobility, this may become a worldwide financial crisis.

Banks are specifically faced with a two-sided asymmetric information problem. On the asset side, borrowers may fail on their repayment obligations. Depositors, however, cannot observe these credit risks. The quality of the loan portfolio is private information acquired while evaluating and monitoring borrowers. On the liabilities side, savers and depositors may withdraw their funds at short notice. Banks, however, cannot observe the true liquidity needs of depositors. This is private information. A true liquidity risk arises when depositors collectively decide to withdraw more funds than the bank has immediately available. This will force the bank to liquidate relatively illiquid assets at a loss. A liquidity crisis may then also endanger the solvability of the bank and eventually lead to bankruptcy.
As Dewatripont and Tirole (1994) observe, the providers of funds are not able to assess the value of the bank’s underlying assets. As a result, bad news, whether true or false, may provoke a withdrawal of funds. Moreover, as deposits are repaid in full on a first-come-first-served basis until the liquid assets are exhausted, depositors have an incentive to act quickly, creating a collective action problem. A ‘bank run’ may occur when enough savers lose confidence in the soundness of a bank.

The recent financial crises (both the global crisis and the European sovereign debt crisis) have shown that bank runs can and do occur in a different way from traditional models of depositors’ coordination failure (Diamond and Dybvig, 1983), but following a similar logic. Nowadays retail depositors are insured and this solution has made old-fashioned bank runs almost extinct (for exceptions based on conservative design of deposit insurance, see e.g. Goodhart, 2009). The problem is that banks and other non-depository institutions raise a significant portion of their funding on the money market, which is short term too. This funding can be withdrawn at once simply by failing to roll over the bank’s or the non-bank intermediary’s liabilities. Because these liabilities — for instance commercial paper, repurchase agreements (repos), certificates of deposits, and claims on money market funds — are not insured, creditors will withdraw from them when confidence in the issuing intermediary is impaired.

As in the case of a run by uninsured depositors, withdrawals of short-term funds can be based on self-fulfilling prophecies. Doubts about a bank’s solvency may drive even a perfectly sound bank to bankruptcy because investors know that only a small part of the bank’s assets can be liquidated to meet withdrawals, whereas they are satisfied on a first-come-first-served basis, so they ‘run’ collectively at the first sign of trouble. The main difference from traditional banks runs is that short-term funding comes from wholesale investors, which make runs invisible, but faster, more violent, and spread across the world. This is currently the major source of vulnerability of the banking system worldwide (IMF, 2010). Collateralized lending has proved particularly troublesome (Gorton and Metrick, 2010a). For example, repo contracts are ostensibly ‘safe’ sources of funding as they are backed by marketable securities. However, when the underlying securities become illiquid, investors demand higher cash margins to roll over positions, which implies that overall lending is curtailed and financial assets may need to be liquidated at fire sale prices.

In addition, bad news about one bank can snowball and have a contagion effect on other banks. A bank failure could trigger a signal on the solvency of other banks. Even if these banks are financially healthy, information about the quality of the loan and/or securities portfolio is private, so that investors may also lose confidence and withdraw their funds. As documented by Paroush
(1988), domino effects in the interbank market or in the payments system lead to a widespread loss of confidence in the banking system and create a ‘financial panic’.

To be sure, mainstream theory is sceptical of outright contagion between financial intermediaries and points instead to fire sales of illiquid assets as the main source of systemic externalities (Brunnermeier et al., 2009). The post-financial-crisis literature on fire sales is burgeoning (e.g. Shleifer and Vishny, 2011). One important intuition behind it is the so-called liquidity spiral (Brunnermeier and Pedersen, 2009). Spirals occur because of the simultaneous shrinking of ‘funding liquidity’ (the ability to refinance existing positions by collateralization) and ‘market liquidity’ (the ability to sell assets at stable prices). The limitation of these models is that they assume lack of willing buyers of illiquid assets, but this is hard to reconcile with reality when investors know that falling prices are due to forced sales by leveraged intermediaries and not to changes in fundamentals. Lack of balance sheet capacity for purchase did not affect all prospective investors during the financial crisis; on the contrary, also due to capital injections, the capacity of commercial banks to purchase and to lend increased, but was underused during the crisis (He, Khang and Krishnamurthy, 2010). These investors should have acted as natural buyers, but they did not do so until monetary authorities committed to supporting private debt. This may be attributed to the role of Knightian uncertainty (Krishnamurthy, 2010). Investors may stop lending and buying not just because of falling asset prices, but because they suddenly become unconfident about standard models of risk assessment and fear individual contagion from remote counterparties defaulting on their promises (Caballero and Simsek, 2011). In these models every investor assumes the worst and over-insures against counterparty risk by ‘flying to quality’, that is, conserving liquidity instead of investing it out in a complex environment (Caballero and Krishnamurthy, 2008). This fear-of-contagion mechanism magnifies the losses of leveraged intermediaries by collectively inducing more forced sales than necessary to absorb an initially small shock (such as e.g. the crisis of subprime mortgages).

Financial market failures and instability possibly leading to a systemic crisis affect not only individual savers and depositors, but also the health of the whole economy. Public policy intervention then is not only a microeconomic question of protecting individual savers and investors, but becomes a macroeconomic issue. Government concern about the health of the financial system is mainly motivated by the negative macroeconomic externalities from bank failures and financial panics. These impair the ability of the financial markets and intermediaries to provide the key services of risk-sharing, liquidity and information when faced with economic disturbances. Financial crises undermine the efficiency with which resources in the economy are allocated.
because, for example, companies have difficulty raising capital for investment and job creation. The collapse of financial institutions in general may have important costs of debt deflation on effective aggregate demand in the economy (see Fisher, 1933).

Because of the banks’ central role in channelling financial resources, it is particularly important to maintain the health of the banking industry. The severity of the Great Depression of the 1930s is often linked to the breakdown of the banking system’s ability to provide financial services. As explained before, banks are very important in reducing information costs in the economy. Insolvency of banks is costly because information on borrowers is then lost. In particular, it hurts the ability of less well-known borrowers to obtain loans. Moreover, banks play an essential role in the payments system and in the creation of money. Bank failures could cause large and uncontrollable fluctuations in the quantity of money in circulation. The negative impact of banking problems on economic growth, the government budget, the balance of payments and foreign exchange rates are further documented in various IMF studies (see e.g. Lindgren et al., 1996).

Systemic risks are more difficult to deal with than the individual risks for depositors and savers, discussed in the previous section. Of course, government intervention aiming at the protection of depositors and investors by reducing information costs will also stabilize their behaviour and reduce the danger of systemic instability. Also, at the international level, the timely dissemination of financial information can be extremely helpful. The question arises whether additional government intervention may be necessary. This applies especially to ex-post interventions when a financial crisis has occurred. Recent experience suggests that such interventions may be unavoidable to stop crises once they have occurred. But of course, the expectation of these interventions has adverse effects on incentives, especially moral hazard.

Liquidity crises may be overcome by monetary authorities acting as a lender of last resort and lending against illiquid assets. However, this may lead in turn to a moral hazard problem. Financial institutions anticipating possibility of bail-out by monetary authorities may behave in a riskier way. Hence, the lender of last resort certainly does not have to intervene in financial problems that do not carry the danger of a systems crisis. For an international financial crisis, the question arises as to the need for an international lender of last resort. Again, the recent experience with crises of wholesale funding has shown that only coordinated action by monetary authorities can be sufficiently credible to stop panic spreading across the globe (IMF, 2010).

Finally, ensuring a stable payments system has always been a main concern of public policy. Financial regulation in a broader perspective contains also a whole framework for controlling the volume of money in circulation, that is, a whole set of monetary policy instruments. Normally a stable and sound
financial system is a condition for an efficient monetary policy. Therefore, in financial law, specific regulations determine which institutions can offer deposit accounts. One major problem highlighted by the recent financial turmoil is that demand deposits are no longer the main channel of money creation because other liabilities of banks and non-depository institutions may be accepted as money too. When this is the case, monetary authorities have lost effective control over the quantity of money (Minsky, 1986). Central banks may have no alternative to unorthodox lending of last resort and outright purchase of private debt of different maturities to regain such control and restart bank lending in times of crisis. This is the gist of the so-called ‘quantitative easing’ successfully implemented by the US Federal Reserve to stop the crisis of private debt in 2008–09 (see Roubini and Mihm, 2010). However, in the short run, conflicts may arise between money supply control and the provision of additional liquidity under the lender of last resort function. Furthermore, quantitative easing may conceal a bail-out when it includes assets of dubious quality that will eventually force central banks to bear losses.

5. THE OVERALL REGULATORY FRAMEWORK

Public policies to maintain a well-functioning financial system are framed in Figure 13.1 within a policy-matrix.

![Policy-matrix of financial regulation and supervision](image-url)

*Figure 13.1 Policy-matrix of financial regulation and supervision*
The different objectives and areas of policy interventions are listed at the top of Figure 13.1. First, financial regulation aims at the efficiency of the market organization through competition policy, and at the integrity of transactions in products and services markets through conduct of business rules. Competition and conduct of business rules belong to the broader economic domain, and derive often from policies that are also applicable to non-financial sectors. Some of the conduct of business rules are specific to financial transactions and may also involve non-financial firms when they are listed on the stock exchange. Second, prudential regulation and supervision constitutes a rather specific area in the regulatory framework and typically only refers to the financial domain. The micro-prudential objective is to maintain the soundness of individual financial institutions, the stability of the whole financial system being the macro-prudential objective.

In the column to the left of Figure 13.1 the major financial sectors and corresponding types of financial intermediaries are classified. Investment and securities firms, insurance companies and banks are to a different extent subject to the different objectives of regulation and supervision. Moreover, banks are also involved in the monetary policy domain, which aims at price stability and short-term macroeconomic stabilization. As explained before (Section 2), the important lesson from the global financial crisis is that non-bank intermediaries may affect both financial stability and the efficacy of monetary policy. However, these effects may be hidden behind operations formally different from the traditional intermediation between deposit and credit. The key to identifying the ‘shadow’ banks that can be systemically important is maturity transformation, which means essentially issuing short-term (liquid) liabilities in order to finance long-term (illiquid) securities or the underlying projects. When a financial institution (bank or non-bank) intermediates substantial amounts in this fashion, it has relevance for the liquidity and stability of the whole system. Hence, it is the function of lending-long-borrowing-short, rather than the specific quality of depository institution, that matters the most for monetary policy and macroeconomic stabilization.

It also follows from Figure 13.1 that financial regulation and supervision may involve broader policy issues and be subject to trade-offs between the different policy objectives and corresponding regulatory areas. In policy-making, not enough attention is paid to these interferences. For instance, when competition authorities move into the financial sector, they may impact also upon the soundness of financial institutions and overall financial stability. In a similar way, prudential authorities may impact upon competition in the financial sector. However, the major areas of specific regulation to be distinguished in the financial domain are conduct of business regulation, which focuses on how financial firms conduct business transactions with their
customers, and prudential regulation, aiming at the safety and soundness of individual financial institutions and of the financial system as a whole.

Conduct of business regulation aims at correcting market failures which may be due to external effects and information asymmetries. The aim is mainly to mitigate principal-agent problems between producers and consumers in the market. In financial markets, due to the opaque and complex nature of financial products and services, these distortions tend to be more severe, explaining also the specific conduct of business regulation for the financial sector. Whereas a principle-based approach may be sufficient for wholesale markets, a rule-based approach is preferred in retail markets. By imposing rules of honesty, fairness and diligence, consumers are to be protected against opportunistic behaviour by producers of financial services and other participants in financial markets. However, in order to contain regulatory arbitrage, it might be wise to narrow the gap between retail and wholesale markets. This may improve regulation’s ability to control externalities (Zingales, 2009).

Opportunistic behaviour is often made possible by asymmetric information. In securities markets, corporate officials and owners are better informed about the fortunes of their companies. Hence, other investors are protected by insider trading regulations. Certain financial products, such as insurance, pension plans and long-term securities, are sometimes very complicated. In order to avoid some buyers of these products being misled, standardized disclosure rules may be imposed and reporting requirements and supervision of these financial institutions by regulators may be in order.

Investor and consumer protection regulation tends to be very extensive and may even lead to regulatory overkill. This effect is sometimes claimed for the Market in Financial Instruments Directive (MIFID), recently introduced in the European Union as an attempt to combine further financial market integration with consumer protection (see Heremans, 2007).

As far as the prudential field is concerned, governments have developed a whole range of regulatory and supervisory instruments in order to maintain the health of the financial system and to protect depositors and other creditors against failures of financial institutions. Governments have placed different degrees of emphasis upon the various objectives at different times and have used different regulatory tools to achieve them.

The different regulatory and policy measures are classified in Table 13.1 according to the following criteria. First, following Baltensperger (1990), public authorities may limit themselves to ex-post interventions, offering protection to customers and financial intermediaries in the case of impending insolvency. Given that the system’s vulnerability is not limited to demand deposit and interbank illiquidity, it might be advisable to implement facilities supporting the liquidity of assets backing private debt in case of systemic
events (Shleifer and Vishny, 2011). Second, supervisory authorities may also act in a preventive way by controlling the levels of risk assumed and reducing the probability of insolvency and illiquidity. Third, the safety and stability of the financial system may be enhanced by structural limitations of competition and market forces. Instead of these structural measures, more weight has been given to market efficiency by resorting to a whole set of prudential measures. The balance between these approaches is being reconsidered after the financial crisis. Fourth, regulatory measures may focus on the macroeconomic concerns of systemic risk, or directly aim at microeconomic consumer protection. However, both are interrelated as the avoidance of consumer risks also limits systemic risks and vice versa.

The overriding reason for government intervention has always been the desire to avoid systemic risk. Historically, that was effected mainly by ex-post rescue operations of financial intermediaries. The emphasis was upon emergency liquidity assistance by central banks and bail-outs of financial intermediaries with tax money. Preventive measures were mostly of a structural nature by limiting competition. The focus on market efficiency and individual consumer protection by deposit insurance and prudential measures is of a more recent date. After structural deregulation, prudential ‘reregulation’ was needed due to moral hazard problems, since the safety nets in place were conductive to more risk-taking in a liberalized market.

<table>
<thead>
<tr>
<th>Table 13.1 Classification of regulatory and policy instruments</th>
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<tbody>
<tr>
<td><strong>Protective systems (ex-post)</strong></td>
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<tr>
<td>Lender of last resort</td>
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<tr>
<td>Deposit insurance</td>
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<tr>
<td>Asset liquidity facilities</td>
</tr>
<tr>
<td><strong>Preventive measures (ex-ante)</strong></td>
</tr>
<tr>
<td>Structural</td>
</tr>
<tr>
<td>Restrictions on entry and on business activities</td>
</tr>
<tr>
<td>• Product line restrictions</td>
</tr>
<tr>
<td>• Geographic restrictions</td>
</tr>
<tr>
<td>Regulation of interest rates</td>
</tr>
<tr>
<td><strong>Prudential</strong></td>
</tr>
<tr>
<td>Banking licence</td>
</tr>
<tr>
<td>Capital adequacy standards</td>
</tr>
<tr>
<td>Asset restrictions and portfolio diversification rules</td>
</tr>
<tr>
<td>Liquidity adequacy requirements</td>
</tr>
<tr>
<td>Disclosure standards and reporting requirements</td>
</tr>
<tr>
<td>Conduct and conflict rules</td>
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<tr>
<td>Inspection and bank examination</td>
</tr>
</tbody>
</table>
Structural and prudential regulation often involves a whole set of different public regulatory measures which differ from country to country. They are stylized in Table 13.1 and further commented upon in the following sections.

6. PROTECTIVE POLICIES AND CRISIS MANAGEMENT

An important and not undisputed component of the regulatory regime is the nature, timing and form of government intervention to protect financial intermediaries from bankruptcy in the event of financial distress. Policymakers tend to rely more on discretionary interventions than to follow clearly defined rules. Central banks provide emergency liquidity assistance and financial authorities run the deposit insurance systems. Both of them are usually involved in taking responsibility for crisis management, bail-out and exit strategies for financial institutions in distress. As crisis resolution requires the application of legal frameworks for bankruptcy and close-out procedures for financial markets and contracts, the legal rules on bankruptcy, which are sometimes specific to the banking sector, apply (see Schinasi, 2006). Especially in an international dimension, legal complexities may stand in the way of an orderly winding up of troubled institutions. As the last financial crisis shows, this undermines the credibility of international crisis management, leaving national authorities with basically no alternative to bail-outs.

Central banks can significantly limit the occurrence of systemic crises through their role as a ‘lender of last resort’. Central banks have been set up to control liquidity provision in the economy. They are the ultimate source of credit to which financial institutions can turn during a panic. By providing liquidity as a bankers’ bank, they can stop the contagious transmission of financial problems among financial intermediaries.

In some countries, central banks under certain conditions also guarantee the settlements risk involved in the funds transfer system as pointed out in Herring and Litan (1995). By bearing the risk of non-payments by participants, they take the systemic risk out of the payments system. The same role may also be taken up by private clearing houses, which have developed to handle larger value payments transactions. These clearing houses additionally use forms of private regulation such as capital standards, limits on the amount of debt and so on to reduce default risk. The problem, however, is that these private intermediaries do not have sufficient means to cope with economy-wide shocks, for example serious disturbances that affect the members as a whole. In order to cope with systemic risk in the payment system, it has recently been suggested that bilateral settlement over-the-counter (OTC) should be disallowed and direct access to multilateral clearing facilities restricted only to highly capitalized financial institutions enjoying governmental guarantee (Rochet, 2009).
There are several difficulties with the lender of last resort function. To begin with, interventions must be carried out swiftly in a credible way. Credit should only be advanced to solvent financial intermediaries using good, but illiquid, assets as collateral. They should not be used to bail out insolvent institutions, often at a high cost for taxpayers. However, it may not be easy in practice to distinguish between problems of liquidity and insolvency. In addition, recent experience has shown that prolonged situations of illiquidity automatically lead to insolvencies due to the shrinking of banks’ balance sheets (so-called ‘deleveraging’ – see Adrian and Shin, 2010). In contrast to a traditional depositors’ run, wholesale runs on collateralized lending cannot be stopped by suspending convertibility: lenders are entitled to sell the collateral (Gorton, 2010). For this reason, in order to stop financial panic, central banks had to lend against several kinds of paper in addition to governments being committed to contain deleveraging with capital injections. Finally, lender of last resort interventions may conflict with monetary policy objectives. In order to avoid a systemic crisis, central banks may extend liquidity and fuel inflationary pressures. Inflation may structurally weaken the financial sector and its capacity to absorb shocks, thereby increasing the probability of a systemic crisis.

In addition, public authorities also intervene by guaranteeing some financial liabilities and by directly protecting investors through ‘deposit insurance’. Insurance arrangements contain the promise that if a financial institution fails, the investors will be reimbursed for the funds lost. They directly aim at protection of individual investors, in particular small depositors who are unable to determine the quality of the bank assets. Indirectly, deposit insurance also reduces the threat of a systemic crisis. This is best achieved not by bailing out individual financial institutions, but by reducing incentives for bank runs by depositors and by containing the risk of contagion among financial institutions (Diamond and Dybvig, 1983).

Deposit insurance was introduced in the 1930s in the US in order to stabilize the financial system in the aftermath of the Great Depression. Other countries have since followed, legislating on a variety of deposit insurance schemes. Deposit insurance systems differ according to their public or private organization, compulsory or voluntary participation, fee structure, degree of coverage, funding provisions, etc. A crucial issue for debate in the aftermath of the global financial crisis is whether insurance should be explicitly extended to other short-term liabilities of banks or to the assets backing them (Caballero and Kurlat, 2009). The obvious downside of this approach is moral hazard. But a good argument is that recent experience shows that this kind of back-up of private debt by governments and central banks may be necessary to stop panics ex-post, so a credible set-up ex-ante may be combined with regulatory measures against moral hazard.

The question arises whether government intervention may not be limited to
these protective policies. Why do public authorities resort to more extensive public regulation of the financial system? It appears that further government regulation has to be explained by the potential high costs and moral hazard problems that these protective policies may entail. The lender of last resort prevents failures of financial institutions, in particular when they are considered to be ‘too-big-to-fail’ and therefore they also enjoy support from the governments. On the implications of this for the EU regime of state aid, see Heremans and Bosquet (2011). In their IMF study, Lindgren et al. (1996) document that the ‘too-big-to-fail’ doctrine has been prevalent in many countries, including major industrial countries, for example France and Japan, where it has prevented the closure of major commercial banks. In the US too, the practice of merging banks rather than closing them in case of distress is based on this approach. One major problem after the global financial crisis has been that, especially in the US, surviving financial institutions have become bigger than ever (Johnson and Kwak, 2010). Considering the crises of sovereign debt that followed those of private banks, one might fear that too-big-to-fail institutions will eventually become too-big-to-save.

Finally it appears that, in order for financial regulation to prevent instability without undermining private incentives to optimal risk-taking, some combination of strictness ex-ante and leniency ex-post is in order. One promising approach in this direction is mandating that banks arrange their own way out of unexpected distress. This is the sense of so-called ‘living wills’ where the bank provides for its own winding up. Another proposal in the same vein is contingent capital (or so called ‘bail-in’ – Coffee, 2010a), which is basically subordinated debt that converts to equity with triggers predefined by regulation. These proposals have pros and cons (on which see e.g. Heremans and Bosquet, 2011). However, the basic idea is that of making crisis resolution credible ex-post (which reduces bail-out expectations) and costly ex-ante, at least for those who engage in excessive risk-taking (which reduces moral hazard).

More traditional models of structural and prudential regulation, which are discussed below, follow a similar logic.

7. STRUCTURAL MARKET REGULATION

In order to limit the threat of systemic risks, government intervention in the financial sector used to consist in regulatory measures limiting competition and restricting the operation of market forces. Unbridled competition was seen as a major threat to the stability of the financial sector. As set out in Table 13.1, structural regulation mainly involves restrictions on entry and on business activities, and often includes various measures of interest rate regulation.
It was mainly in the aftermath of the Great Depression, which had its origin in a stock market crash, that it was deemed necessary to introduce structural restrictions on the scope of permissible activities by the different financial institutions. Before the crisis, commercial banks acted as securities market institutions as well as depository institutions. They had an incentive to take on more risky activities in financial markets and earn investment banking fees, the risk being shifted in part to the depositors. In order to limit these risky activities and to reduce the risk of contagion within the financial system, after the crisis these activities were legally separated in many countries. In the US, the separation of the banking and securities industries was legislated in the well-known Glass-Steagall Act. Besides bank investments in industrial firms, their real estate investments and insurance activities were also often regulated.

Frequently, the ownership of financial institutions and non-financial firms was separated, and the investments of industrial firms in banks limited. However, these additional restrictions were aimed at limiting the concentration of power. For similar reasons, branching restrictions could also be imposed. In the US, in particular, banks were geographically limited and were not allowed to open branches in other states or to engage in interstate banking.

Since the 1970s deregulation wave, the debate over retaining these restrictions was reopened and limits faded significantly. First, it was observed that some countries, such as Germany, maintained a system of universal banking, in which banks were allowed to participate heavily in non-financial activities. Did this so-called bank intermediation model not present certain advantages for the economy? Giving a role to commercial banks in corporate finance might improve information gathering and the monitoring of loans, thereby reducing problems of adverse selection and moral hazard in core banking. Moreover, the restrictions also shielded the investment banking industry in many countries from competition. As a result of this debate, in its banking directives, the European Union adopted the universal bank model.

The affiliation with commercial companies, however, remains a controversial issue. It may stretch the safety net, intended only for bank depositors, to protect other commercial operations, and induce more risky behaviour. Also the risk of contagion increases as shocks in the industrial sector may more easily spread to financial institutions. Furthermore, the combination of banking and insurance within the same financial institution has been permitted mainly in European countries. However, it raises similar regulatory issues of conflicts of interests. Finally, domestic branching restrictions, by limiting the concentration of power, may lower the cost of providing risk-sharing, liquidity and information services. However, they increase the
exposure of banks to credit risk by reducing their ability to diversify assets. In the meantime, banks have spread worldwide so that it becomes increasingly difficult to maintain these restrictions. The European Union in its banking directives has resolutely opened up the opportunities for European-wide banking through the single bank licence.

In the US, structural restrictions used to be complemented by regulations, like interest rate ceilings, aimed at preventing excessive risk-taking via restricted competition. In the 1980s, many of these anti-competitive regulatory measures were removed. Finally, The Glass-Steagall Act was repealed in 1999. It was observed that this approach did not contribute to financial stability in the long run. Structural measures resulted in disintermediation as funds could be more profitably directly invested in and obtained from financial markets. Also many financial innovations were introduced to circumvent these restrictive regulations. In the trade-off between safety, stability and efficiency, the regulatory environment has been giving more weight to competition and efficiency. Instead of structurally limiting competition and the operation of market forces, regulation gradually moved from structural to prudential measures under the assumption that the latter protect financial stability without undermining the interests of consumers.

In the aftermath of the financial crisis, structural regulation is back on the agenda. Specifically, it has been argued that restriction of competition is necessary for financial stability because rents (‘charter value’) protect banks from disintermediation, reduce the incentives for regulatory arbitrage, and thus insulate vulnerable banking from the pressures of financial innovation which may turn unexpectedly into a crisis (Gorton, 2010). Competition of banks with hedge funds through their off-balance-sheet vehicles is a prominent illustration of this argument and allegedly, one major reason why the recent financial crisis was enormously larger than the subprime shock that triggered it (Hellwig, 2009). The regulatory overhaul is not insensitive to these arguments, particularly in the US. One example of how structural restrictions are being reconsidered is the so-called Volker Rule in the Dodd-Frank Act 2010, which prevents banks and systemically important institutions from trading on their own account beyond certain proportions of core capital and of investment concentration. This regulation corresponds with the power of the newly established US Financial Stability Oversight Council to identify non-bank, but systemically important institutions, to which the same restrictions would apply in addition to enhanced prudential regulation. As we will see in the following sections, in the EU the strategy to counter regulatory arbitrage does not include structural restrictions.
8. PRUDENTIAL REGULATION AND CAPITAL ADEQUACY REQUIREMENTS

Prudential control is exercised first at the market entry stage by ‘chartering’, that is, the obligation to file an application for a charter. To obtain a licence the owners have to supply sufficient equity capital. A minimum of capital is required as a cushion against losses. The chartering of new financial institutions is also subject to a screening of the proposed managers to prevent undesirable people from controlling them. An adverse selection problem arises as financial activities may attract entrepreneurs wishing to engage in speculative activities.

A central instrument of prudential control for banks consists in capital adequacy rules. Equity capital provides the necessary cushion against losses, since shareholders may want to benefit from the leverage effect and to increase their return on equity by providing as little capital as necessary. Only in well-capitalized institutions, however, do shareholders have enough incentives to monitor their financial health. When financial institutions hold a large amount of equity capital, they have more to lose in case of failure, so they will pursue less risky activities.

From a prudential point of view, the incentive effects of capital requirements are more important than the mere buffer function of capital against losses. In particular, the imposition of capital requirements on banks is deemed to be necessary to limit their high leverage ratios. Banks typically maintain only a ratio of capital to assets of about 4 percent and less, giving them a leverage effect of twenty-five and more. This is to be compared with traditionally much higher ratios of capital to assets in non-financial firms and an average leverage effect of three and even less.

Banks have an incentive to economize on capital which is expensive, given the rates of return required by equity markets, in comparison to the cost of debt financing. Shareholders may want to increase their return on equity by providing as little capital as necessary. Also, the cost of capital is to be reflected in the risk-adjusted pricing of loans, affecting their competitive position in credit markets. As banks are in the business of providing risk services, the high leverage, however, may easily induce excessive risk-taking and possibly huge losses, undermining individual solvency and systemic stability. Hence, capital regulation is seen as necessary to limit the high leverage ratios and to provide the necessary cushion against losses in order to protect creditors.

Capital requirements may take different forms. Traditionally they are calculated as a fixed percentage of assets in order to limit the leverage ratio. Since these do not sufficiently reflect the differences in risk-taking, default-risk-based capital requirements have been developed.
In order to achieve the goal of investor’s protection and financial stability, minimum capital ratios could have been imposed by national authorities. However, the road to international financial regulation was taken because of level playing field concerns. Under the auspices of the Bank for International Settlements, the Basel Committee on Banking Supervision was instrumental in working out capital standards for credit risks on the banking book, covering more than half of the risks of a typical bank. In fact, banks were required to hold at least 8 percent of capital (broadly defined to include hybrid instruments, and only 2 percent of ‘core’ equity) against their risk-weighted credit assets. Risk-weighted assets measure the risk of credit risk exposure. They are calculated by multiplying outstanding credits by risk weights assigned to five broad categories of relative risk. They are given weights ranging from 0 percent for sovereign credits to 100 percent for commercial loans. These standards were finalized in the 1988 Basel I Capital Accord and supplemented in 1996 by a capital adequacy amendment to incorporate also market risks in the trading book.

The agreements were initially only applicable to international banks, but gradually became the regulatory standard for all banks. In the EU, these requirements were formally incorporated into the EU Solvency Ratio and the Own Funds Directive for Banking. The evolution of the Basel Accords, initially based on the so-called Basel II described below, is mirrored by the Capital Requirement Directive (CRD), which at the time of writing has already been revised twice to account for the prudential shortcomings highlighted by the financial crisis.

Whereas initially the Basel I Capital Accord contributed to financial soundness and a level playing field in the banking sector, major drawbacks gradually also emerged. Capital requirements concentrated on credit risks, but did not include such risks as operational risks, market risks on the banking book, other risks on off-balance-sheet activities, etc. A major shortcoming was the risk measurement framework, which turned out to be crude, with only a few broad risk brackets, thereby seriously limiting the risk sensitivity of banks. As a result, regulatory arbitrage was induced, e.g. by securitization of loans, which could circumvent the capital requirements by increasing off-balance-sheet activities. The same result was achieved by financial innovations, such as, for instance, the development of credit derivatives undermining the effectiveness of capital standards. No less important were the undesirable side effects on internal risk governance, as Basel I contained few incentives for banks to make use of the rapid innovations in risk measurements technologies and advances in risk management techniques. In reality, the largely mechanistic Basel I approach, inadequately supplemented by supervisory review, proved insufficient to shield some allegedly well-capitalized banks from the banking crises of the 1990s.
Hence, the Basel Committee took remedial actions, and after long negotiations, the new Basel II Capital Accord came into force in 2008. This date is important to clarify that Basel II could not have a direct impact on the global financial crisis that started in 2007, especially considering that even at the time of writing, the epicentre of that crisis, the United States, has not yet fully implemented Basel II. In this respect, two main points are worth making (see Hellwig, 2009). First, the 1996 Amendment to Basel I had already introduced lower capital charges for securitized loans. Second, before market discipline was formally introduced in the Basel Accords, the effective capital charges on financial intermediaries were already determined by investors (for instance, via the spreads of credit default swaps) based on standard models of risk assessment like the so-called value-at-risk (VaR). In contrast to the rule-based Basel I approach, Basel II has introduced a more flexible process-oriented approach, based upon advances in risk management technologies. The new agreement consisted of three mutually reinforcing pillars, which together should contribute to better safety and soundness in the financial system.

In the first pillar, minimum capital requirements of 8 per cent have been maintained, but the methodology for calculating risk-weighted assets has changed. In order to limit incentives for regulatory arbitrage, a more risk-sensitive capital allocation system for credit risks has been introduced, more closely aligning capital charges with loss risks. They are made more comprehensive by including interest rate risk on the banking book as well as operational risks. The risk measurement approaches are more refined and leave a choice between a standardized building block approach and an internal ratings-based approach. To measure credit risk in the standardized approach, use is also made of external ratings of assets by private credit rating agencies. Within the approach based on internal ratings, banks also have a choice between a foundation approach, where the risk weights are largely determined by the supervisory authorities, and an advanced approach requiring the development of sophisticated risk models based on the history of credit defaults in their loan portfolios.

A major innovation of Basel II has been the introduction of two additional pillars. The second pillar deals with the supervisory review process. Supervisors should ensure that a bank’s internal risk management procedures are adequate, and may eventually force banks, commensurate with their risk profile, to operate above the minimum regulatory capital. The third pillar assigns an important role to effective market discipline in maintaining financial stability. The importance of involving market participants as ‘third-party’ reviewers of banks’ risk management and capital allocation systems cannot be overstated. External governance through the market enhances internal governance because it gives direct incentives to banks to maintain capital commensurate with their risk profiles.
The efficacy of market discipline has been severely questioned, however, by the events of the global financial crisis. As a result, Basel II was overhauled only one year after its coming into force. The 2009 revision consists of two main elements. First, in order to counter regulatory arbitrage by the effects of securitization and value-at-risk-models that fail to account for risk correlations, the weights attached to market risks have been supplemented with incremental risk capital charges. Second, internal models of risk assessment need to include *stressed* value-at-risk, based on one-year observation of significant losses, in addition to the most recent one-year observation period. The purpose of these revisions is to make capital adequacy requirements more directly concerned with systemic risk.

Short of these adaptations, it is interesting to observe that as a by-product of Basel II, banks have been developing increasingly sophisticated models to determine the total amount of capital needed to cover all risks as they themselves perceive them. These firm-wide risk measurement systems are made feasible by tremendously improved data gathering and by recent methodological advances in measuring and analyzing individual risk types. Risk assessment, in turn, serves as an input in allocating capital over the different business lines and, in the credit process, for calculating risk-adjusted loan rates.

The lesson from the financial crisis is that, while new technologies undoubtedly have made risk management more efficient, they have also increasingly exposed banks and financial stability in general to uncertainty not captured by risk models. Unsurprisingly, the reaction of regulators to this insight has been a conservative one. The new version of the Basel Accords, the so-called Basel III, moves strongly in the direction of increased capital charges. Although the new capital requirements will be ultimately phased in by 2018 and no change is expected before 2013, eventually banks will have to maintain 7 percent of core equity (as opposed to the current 2 percent) against their risk-weighted assets, 10.5 percent of total capital requirement, in addition to a countercyclical equity buffer and to a straightforward leverage ratio (to be determined).

This approach is criticized by those commentators who argue instead for state-contingent insurance (Caballero and Kurlat, 2009) or equity injections (Hart and Zingales, 2010) as a way to protect banks’ stability in bad times, without overly constraining their operations in good times. Higher capital requirements, however, should cope better with moral hazard. The question is whether moral hazard is actually so relevant in a world where the magnitude of crises is driven more by uncertainty than by excessive risk-taking. Subprime borrowing undoubtedly qualified as excessive risk-taking, but it was never large enough to justify the crisis of 2007–09. Likewise, the authorities initially believed that the crisis could be contained with orthodox monetary policy, thus there was no reason to expect bail-outs. Finally, the peak of the
crisis was reached precisely when the authorities failed to rescue Lehman Brothers, which again points to uncertainty rather than moral hazard as a potential source of disaster. On the other hand, if moral hazard is the core problem – perhaps after rather than during the last crisis (Goodhart, 2009) – it is at least questionable that enhanced capital requirements can stop institutions from becoming too-big-to-fail (Johnson and Kwak, 2010).

Sound capital standards are important to offset the moral hazard created by government safety nets for depositors and other creditors. If capital regulation were perfect, no other regulatory intervention would be needed to contain moral hazard. Financial intermediaries could then be shut down and creditors reimbursed just before insolvency occurs. In practice, however, regulators face delays in taking appropriate actions. Moreover, the measuring of risk and the valuation of assets and capital proves to be difficult. Hence, other regulatory tools are necessary to backstop capital regulation.

Besides structural interventions whereby financial institutions are not allowed to engage in certain activities, such as investments in common stocks by banks, the imposition of quantitative limits on certain asset holdings has more the character of prudential regulation. By ‘portfolio diversification rules’, such as limiting the amount of loans in particular categories or to individual borrowers, the risk profile of banks can be reduced.

Cash reserve requirements are often imposed as a measure to enhance liquidity adequacy. By providing the necessary liquidity for deposit withdrawals, they are supposed to increase confidence among depositors and thus to reduce the threat of bank runs. In situations of collective withdrawals, however, reserves turn out to be largely insufficient to avoid a bank panic. Nowadays, changes in required reserves have developed into an instrument used primarily for controlling the quantity of money and credit creation. In addition, as explained in the previous sections, banks and non-bank institutions have proved capable of creating money outside traditional depository channels. Because this does not only undermine the ability of central banks to control the money supply, but is also a major source of vulnerability of the system to liquidity shocks, a broader approach to the regulation of liquidity is in order. Opinions on this matter vary significantly. Some argue for the prohibition of private money altogether (Gennaioli et al., forthcoming). Others advocate that wholesale markets for short-term funding be operated by special, ring-fenced intermediaries (Gorton and Metrick, 2010b). Other commentators (e.g. Stein, 2011) recommend the imposition of margins of safety on banks’ collateralized borrowing. For instance, a 10 percent margin implies that banks can borrow only 90 cents on the dollar of asset value. Such a margin is called a ‘haircut’ and is functionally equivalent to a reserve requirement on deposits. Regulated haircuts limit banks’ ability to create fragile liquidity. The focus on liquidity regulation under Basel III seems to be going in this direction.
Additional prudential rules, such as disclosure requirements, tend to focus on the discipline of financial institutions by the market rather than by regulators. Generally, providing appropriate and timely disclosure of financial conditions of companies may help to reduce stock price volatility and excessive speculation. In particular, disclosure of financial conditions of financial institutions not only increases the ability but also gives incentives to investors to monitor the performance and the risk-profile of financial intermediaries. Also by discouraging shareholders and managers from excessive risk-taking, public disclosure reduces the threat of systemic crises. After the financial crisis, regulations aimed at improving transparency have received a lot of attention from commentators, although opinions as to the desirability of disclosure differ. On the one hand, mandatory disclosure seems to be beneficial so that retail investors are not defrauded, so that regulators can identify sources of systemic risk in a timely fashion, and for institutional investors to be more involved in corporate governance (Zingales, 2009). On the other hand, it is argued that too much information undermines the functioning of markets for liquidity wherein debt is traded only so long as it stays ‘information-insensitive’ (that is, a store of value – see Holmström, 2009). This perspective suggests that liquidity problems are better dealt with by cash guarantees, of which haircuts on collateralized debt – perhaps guaranteed by central banks – are a prominent example.

Market discipline is also the logic behind the development of market-value accounting standards imposed by the International Financial Standards Reporting (IFRS) rules on companies listed on stock exchanges. As it turns out, these new standards are not easy to implement in the financial sector, in particular for complex financial derivative products and for financial techniques such as hedging. Marked-to-market valuations are also coming at the price of more volatility in profits and losses, and in equity valuation of financial institutions, thereby increasing concerns for financial stability. This dark side of market discipline has become dramatically clear during the financial crisis, when marking-to-market has worsened the pro-cyclical effect of capital requirements on banks’ balance sheets, thereby amplifying the shortage of liquidity and credit (Adrian and Shin, 2010). Yet it is debatable whether other accounting rules would fare any better (Laux and Leuz, 2009) or if marking-to-market should be suspended in times of crisis (Brunnermeier et al., 2009).

9. WHAT REGULATORY AND SUPERVISORY ARCHITECTURE?

It follows from the previous discussion that the need for government intervention, as well as the choice of regulatory instruments, depends on the threat
of the occurrence of systemic crises and on the need for individual investors’ protection. The occurrence of these risks may differ among financial institutions. Hence the need for regulating different types of financial institutions depends on the specific activities they engage in. In particular, the danger of systemic risk is seen as justifying a larger role for government. In this respect, the activities of the different financial institutions may be compared according to three criteria: first, the risks involved that may lead to their failure; second, the interconnections among intermediaries determining the contagion effect; and finally, their importance for the whole financial system and the real economy.

According to these criteria, it was held that deposit taking, which used to be the core of banking, was especially vulnerable to systemic risk. First, the maturity transformation sets the banks apart from other financial intermediaries. The mismatch between the maturities of their assets makes them vulnerable to decisions by depositors to withdraw their funds. As the liquidation value of their investments is often smaller, this may amplify withdrawals to a bank run. Second, important interconnections in bank relations through the interbank market mean that even healthy banks are exposed to failures elsewhere in the banking system. The externalities involved may lead to a contagious collapse of the whole banking system. Third, the costs to the economy of bank failures may be huge. Banks play a crucial role in the payments system and in refinancing other financial intermediaries. Failures have wider ramifications on the rest of the financial system and on the real economy. One may point also to the danger that a banking crisis causes large and uncontrollable fluctuations in the quantity of money and credit. Hence, the case for banking regulation not only arises from the need for depositors’ protection, but more urgently from the systemic risk of the collapse of the whole financial system.

Particularly after the global financial crisis, the question whether the failure of other financial institutions may present the same dangers of systemic crises must be answered in the affirmative. The reason is twofold. On the one hand, the vulnerability factors described above apply as well to innovative forms of maturity transformation, that is, to so-called shadow banking. On the other hand, failure to control shadow banking implies that vulnerability may develop anywhere financial markets allow funding long-term assets with short-term liabilities. These circumstances have important consequences for the definition of the regulatory perimeter of financial markets and of the safety net.

It was long held that investment and securities firms are less dangerous than banks in terms of systemic stability (e.g. Herring and Litan, 1995). The reason was, essentially, that because these intermediaries do not engage in maturity transformation and invest mainly in marketable securities, they do not run liquidity risks. This view is no longer supported. First, some investment firms
do engage in maturity transformation inasmuch as they issue liquid liabilities to fund their illiquid investments. Hedge funds are a case in point, but this operation can become much wider when banks need to compete with non-regulated intermediaries on their turf (Hellwig, 2009). The recent financial crisis featured the flourishing of investment vehicles sponsored by financial conglomerates of any sort. Second, intermediaries on the securities market suffer from the externalities of shadow banking even when they do not engage in maturity transformation. Short-term liabilities must be based on a credible promise to deliver cash on demand. Not having access to deposits, shadow banks relied on collateralized lending: that is, they funded investment in securities by posting them as collateral on repo or commercial paper markets. In hindsight, we know that this demand for collateral nurtured the incredible growth of securitization in the years preceding the financial crisis (Gorton, 2010). But more importantly, we have learned that a crisis of the funding markets can determine the collapse of both the secondary and the primary markets for the underlying securities. Not only has this happened with securitizations, which were suddenly halted, but it has also created funding problems for intermediaries that have nothing to do with shadow banking. Money market mutual funds, some of which experienced a run in the US, are a case in point. They could not meet withdrawals except by making losses on their formerly liquid investments. The problem is that, once the generation of liquidity is no longer reserved to banking in the traditional sense, virtually no part of the financial infrastructure is immune from systemic risk.

A similar reasoning applies to insurance. In the insurance sector, important interconnections exist through the important role of reinsurers. In principle, an insurance crisis may emerge when many or all of the reinsurers simultaneously cut off reinsurance coverage, so that primary insurers eventually have to cut back on the availability of insurance. In practice, major shocks in the insurance market have never entailed such a collapse before insurance companies started to support liquidity. The case of monoline insurers and of a large insurance company like AIG – a major counterparty to credit default swaps – is illustrative of this problem. They were essentially providing systemic risk insurance for the liquidity facilities supporting the securitization markets. Private markets are ill-equipped to provide such insurance, especially in the presence of uncertainty as to exactly what factors may trigger a liquidity crisis. Under these conditions, which always characterize financial innovations, only governments can credibly perform the role of insurer of last resort because of their ability to spread losses across generations. Private insurance of systemic risk may support illusory safety and liquidity in good times, but is liable to increase counterparty risk exactly when that is most harmful for liquidity, namely in the presence of uncertainty as to where credit defaults may come from (see Krishnamurthy, 2010). This explains both why AIG had to be bailed
out ex-post and why regulations aimed at containing systemic risk need to be concerned about insurance markets ex-ante.

In line with the view that systemic stability requires the application of different rules to different financial institutions, the regulatory and supervisory system was traditionally organized on an institutional basis. The three main sectors, i.e. banks, insurance companies and securities firms, were regulated and supervised by separate regulatory bodies. For banks and insurance undertakings, the emphasis was upon supervision of the soundness of the institution, whereas for securities firms the focus was more on conduct of business rules.

Institutional regulation, however, becomes difficult to implement when the different financial intermediaries widen the scope of their activities, for example when universal banks engage in securities activities. Maintaining institutional regulation and subjecting these banks to strict capital requirements also for their securities activities, or providing the bank’s safety net also for their securities branch, would conflict with the competitive neutrality of regulation. Hence, the regulatory structure has to formulate a response to the blurring of distinctions between banking, insurance and securities activities that is taking place within the financial conglomerates.

The regulatory response to the shift of banking towards market-based operations (i.e. from relationship banking to transaction banking) has taken different forms on the two sides of the Atlantic. In the US, as mentioned before, re-introduction of structural measures has been considered part of the solution to multiplying sources of systemic risks. Restrictions on proprietary trading by banks cannot, however, do the whole job because other institutions can become systemically dangerous just by mimicking the operations of banks, but with a balance sheet that is not subject to capital adequacy requirements. The US has opted for a flexible solution in this respect, leaving it to the newly established Financial Stability Oversight Council to identify systemically relevant financial institutions that will be subject to the same prudential regulation (and operational restrictions) as banks. The European Union has followed a completely different pattern. On the one hand, it has established as many as four supervisory authorities at the EU level (one for each of the three financial sectors and one to monitor systemic risk), none of which has – at least for the moment – the authority to override the powers of national supervisors. On the other hand, the EU regulation tends to be stricter in the first instance than US regulation with financial institutions that only potentially affect systemic risk. The Alternative Investment Fund Management Directive is a good illustration of this point as it subjects *inter alia* hedge funds to a number of prudential requirements that are not always justified by systemic risk concerns.

Obviously these asymmetries between Europe and the US undermine the effectiveness of financial regulation because intermediaries always shop around for the most favourable regulatory environment, which is a more
general problem with financial regulation, discussed in the next section. But the main disadvantage of both regulatory responses to the widening of systemic risk is that they are backward-looking, whereas the next financial crisis is probably not going to look like the last one. In other words, these regulatory reforms are short-sighted because they do not account for the role of financial innovation. It might be objected that regulation simply cannot do that. However, if history doesn’t repeat itself, at least it rhymes. What we can learn from the history of financial crises is that systemic instability depends on the failure (actual or expected) of maturity transforming intermediaries to deliver on their promises to exchange liabilities for cash. More awareness of this recurrent pattern by policymakers could lead to a ‘functional’ regulation of banking supporting both better monitoring of moral hazard and liquidity externalities ex-ante and a more effective safety net ex-post (see Pacces, 2010).

10. THE PENDULUM OF FINANCIAL REGULATION AND BANK GOVERNANCE

Awareness has grown in the policy debate that regulation not only entails benefits, but also imposes substantial costs on the economy. In the financial domain, the traditional public interest view of regulation has also been challenged by the public choice approach. This implies the need for an evaluation of the impact of regulatory measures. Structural regulation that limits market competition may convey benefits to private financial institutions, by protecting them against outside competition and by promoting confidence in financial intermediaries. However, restricting market entry may involve substantial welfare costs to society. In this respect, regulators may be ‘captured’ by the regulated firms through lobbying in order to protect their business interests at the expense of consumers.

The awareness of these efficiency costs led to structural deregulation and liberalization in the financial sector in the foregoing decades, entailing a so-called regulatory crisis. Shifting the emphasis towards market efficiency made it more difficult to balance security and risks. For stability purposes, governments continue to provide a safety net through protective policies such as deposit insurance, lender of last resort interventions and other bail-out policies. This incentivizes financial institutions to pursue high-risk investment strategies. As explained above, information asymmetries in financial markets create problems of moral hazard. Financial intermediaries have incentives to take more risk than is in the interest of savers, depositors, and taxpayers. Hence, despite faith in market efficiency, regulation remains necessary in order to reduce the costs of moral hazard to individuals and society.
The recent financial crisis has dramatically confirmed the validity of these concerns. Particularly important is the circumstance that in the presence of systemic crises bringing the global financial infrastructure to the verge of collapse, government and monetary authorities cannot credibly commit to let major financial institutions fail. On the one hand, uncertainty of public intervention exacerbates the uncertainty that prompts investors to fly to quality. This circumstance forces intermediaries to deleverage, realize losses, and curtail credit to the real economy. On the other hand, a crisis is the wrong time to worry about moral hazard (Goodhart, 2009). This approach is tantamount to refusing to rescue a patient in cardiac arrest in order to induce him or her to care more about a low-cholesterol diet. When a systemic crisis occurs, defibrillators are needed more than prophylaxis (Caballero, 2010). By the same token, regulation becomes extremely important in the ex-ante stage in order to contain the losses of financial crises to the taxpayers of present and future generations.

Historically, episodes of crisis have shaped regulatory reform in the financial sector. Proposals were launched in the past to reform deposit insurance in various directions, from reducing the level of deposit insurance coverage and risk-based pricing of deposit insurance to private deposit insurance schemes. More recently, as explained in the previous sections, models of public insurance of other forms of private debt affecting liquidity have been suggested. This implies that the undesired risk incentives of the safety net need to be reduced even further by supplementary prudential regulation. Hence, reregulation has mainly taken the form of prudential measures such as risk-based capital requirements in line with market principles. This approach has been strengthened after the recent financial crisis, particularly in the overhaul of the Basel Accords. However, the question remains whether this ‘pendulum’ of financial regulation, promoting deregulation and liberalization in the name of efficiency in good times, but distrust towards market mechanisms and financial innovation in the aftermath of a crisis, is the best way to deal with the problem of financial stability.

To begin with, prudential regulation entails a substantial burden for the financial sector. It imposes additional costs when financial intermediaries have to adjust to the regulatory standards. The foregone earnings due to high capital requirements or to required cash reserves may be considered as a tax on financial institutions. By increasing the intermediation cost, they lead to disintermediation as larger market shares are captured by non-regulated entities. This leads to the problem of regulatory arbitrage.

Financial institutions are bound to respond to an increasing regulatory burden by changing their activities and by introducing financial innovations in an attempt to circumvent the regulatory restrictions. In particular, off-balance-sheet transactions, which supplement traditional balance sheet activities, have
multiplied banking risks. Moreover, they also involve severe information problems as to measurement and valuation of these risks. As regulators react by introducing new regulations, innovation leads to a regulatory dialectic. The dynamics of regulation boils down to a continuous tension between the desire for a stable financial system and an economically efficient system. Trying to regulate shadow banking is unlikely to stop these dynamics, for the simple reason that regulation can only intervene after financial innovation has proved systemically dangerous. However, regulatory arbitrage provides an important lesson for financial regulation: the more regulation insists on disciplining certain forms of financial intermediation, the stronger the private incentives to develop financial innovation that is potentially harmful for financial stability.

Empirical research has also been increasingly concerned with excessive regulation. It is calculated that regulatory costs are rising, imposing a substantial burden on individual banks (see Kager, 2006). It is also found that more severe regulation is not necessarily conducive to an efficient development of the banking system (see Barth et al., 2001). In other studies, it is observed that worries about contagion and stability are often unfounded and that there is no reason to claim that banking is more fragile than other financial activities. Hence, it was argued that a combination of minimum capital requirements with a system of structured early interventions in distressed banks would be sufficient to avoid a systemic crisis (see Benston and Kaufman, 1995). Due to the difficulties with crisis management highlighted by the recent crisis and discussed in Section 6, the empirical evidence no longer supports this view. But this does not imply that the opposite approach, namely tight regulation of banking and of the whole financial infrastructure, is the golden rule for financial stability.

Apart from the costs of regulation to society and its shortcomings in the face of financial innovation, regulation can simply be misguided and thus can undermine instead of protecting financial stability. The example of credit rating agencies is illustrative. Although the lack of appropriate regulation of ratings is currently at the centre of the policy debate, Goodhart (2009) has correctly emphasized that it is misuse of ratings and not ratings themselves that has an impact on financial stability. Regulation has affected the way in which ratings were used by financial institutions to create liquidity. On the one hand, before the revision of Basel II, top-notch securities held by banks carried lower capital charges than the underling assets. On the other hand, regulation still prevents some financial institutions from investing in non-rated or low-rated assets, thereby inducing rating inflation. Although the problem of ‘regulatory licenses’ (Partnoy, 2009) is not easy to solve, it is an important illustration of the unintended effects of regulation for financial stability.

The long-standing debate on rules versus discretion has taken a different direction. Whereas rules can be crude and not adapted to the situation at hand,
discretion makes regulatory intervention a largely political matter. As argued by Horvitz (1995), the need for discretion may be reduced, while allowing for reasonably flexible regulation by a graduated system of interventions and controls. Traditionally, in the US, this works through the operation of various trigger points as banks approach the critical area of balance sheet ratios. In this respect, the Basel Accords are criticized for not providing such a graduated response.

The concern over excessive government regulation is underpinned by more fundamental economic research. Financial transactions are analyzed as a complex structure of explicit and implicit contracts dealing with informational asymmetries and involving principal-agent problems. Relying upon contract theory, the analysis of financial regulation is becoming a truly interdisciplinary law and economics endeavour. According to Richter (1990), the complex ongoing business relationships between savers, borrowers and financial institutions can be understood as relational contracts. By their very nature, these are incomplete contracts – as analyzed by Hart (1994) – which may be in need of further regulation.

In repeated business transactions, one may rely upon private contract-enforcing mechanisms such as reputation. Individual monitoring in banking, however, suffers from a collective action problem. Dewatripont and Tirole (1994: 117–18) argue that unsophisticated, small claimholders suffer from information asymmetries and have little incentive to invest in monitoring due to a free rider problem. Active representation of depositors must be provided by organizing ‘delegated’ monitoring. However, if no mechanism of private representation is or can be set up, regulation may be necessary. This may take the form of private regulation by an independent supervisory or regulatory organization.

Public regulation of banks is a very complex matter and therefore should be limited to a complementary role (that is, it requires a light touch). More specifically, regulation must focus upon altering incentives, for example for shareholders to discipline managers through higher capital requirements. It should not impose rigid regulatory schemes to all intermediaries indiscriminately, but introduce a number of options from which financial institutions should be allowed to make a selection. In this approach, regulation and supervision become subordinate to creating incentives for good governance by institutions and delegated monitoring by the market.

Hence, in the prudential supervision area, more attention should be paid first to ‘internal governance’ of institutions. This implies appropriate incentives for internal control procedures and for a risk-focused approach. Capital requirements must be sufficiently flexible to allow financial operators to develop their own risk management systems. The role of the supervisory authorities should be limited to the supervision of these private regulatory
systems. This corresponds largely with the approach ultimately envisaged by the Basle II framework for banks. The recent financial crisis suggests, however, that this approach should be implemented with great care by supervisory authorities.

In this approach, corporate governance becomes a necessary complement to, if not a substitute for, regulatory intervention (see Devriese et al., 2004). Since regulation is about changing the behaviour of financial institutions, this may be achieved as easily through incentives for appropriate behaviour as by externally imposed rules. In this respect, all aspects of the behaviour of financial firms can be ultimately understood as corporate governance issues. Hence, within the present corporate governance debate, more attention should be given to specific agency problems for financial institutions. In particular, the corporate governance of banks should also be viewed from a financial stability perspective. This approach implies corporate governance recommendations for financial firms which may differ from corporate governance for non-financial firms. Corporate governance arrangements for banks are to provide for effective monitoring and supervision of the risk profile of banks, for instance with management structures having clear lines of accountability, independent directors on the board, an independent audit committee, etc. (Heremans, 2007; Heremans and Bosquet, 2011). Deficient corporate governance in the financial sector is a contributing factor in financial crises.

The lack of appropriate corporate governance arrangements for banks and financial institutions has been singled out as a major culprit in the financial crisis. Indeed, banks are subject to more severe agency problems with shareholders compared to non-financial firms. As financial products are very opaque and banks’ balance sheets very complex, it becomes more difficult to monitor management pursuing its own private interests at the expense of the shareholders. Also inside transactions are more difficult for small shareholders to control, which increases the danger of expropriation by controlling shareholders. More importantly, however, banks face serious agency problems with debt holders. Shareholders, who earn residual income, have an incentive to engage the bank in taking excessive risk, as these risks are shifted to debt holders who are only entitled to a fixed contractual payment. The high proportion of debt in total liabilities and the resulting high leverage of banks facilitate risk shifting by shareholders. The opportunities for risk shifting are also larger given that deposit holders are dispersed and are not experts compared with the creditors of non-financial firms. Moreover, moral hazard depending on too-big-to-fail issues is at play because the systemic externalities involved in bank failures may ultimately force governments to provide safety nets and to bail out banks with tax money.

Corporate governance arrangements affect the incentives and the power of parties involved to assume excessive risk. Finance theory suggests that the risk
The appetite of management and shareholders crucially depends on their remuneration and their opportunities for diversifying risk. High-powered variable remunerations for management may be conducive to more short-termism in risk-taking. The opportunities to diversify risk also determine the incentives for risk-taking by management and shareholders. Given market risk, firm-specific risk may be diversified away in a wealth portfolio that allows for higher returns on investment. Parties with a diversified wealth portfolio have an interest in taking more bank-specific risk.

Hence, corporate governance arrangements with respect to ownership and remuneration will affect risk-taking by banks. Dispersed and mostly diversified shareholders, complemented by variable performance-linked pay to discipline management in the Anglo-Saxon corporate governance model, are more conducive to risk-taking by banks. For the Continental European blockholders model, relying less on variable remuneration for management, straightforward controlling shareholders are less likely to be diversified and less risk prone compared with the levered control model in which minority blockholders are more diversified, and hence more risk preferring. This analysis points to the need for a more hybrid approach to corporate governance for banks and financial institutions, the Continental European controlling shareholders model being better for financial stability as it also takes into account the interest of other stakeholders, including society at large (Macey and O’Hara, 2003).

To conclude, the organization of the procedures with respect to risk management is heavily dependent on the specifics of the corporate governance of banks and of comparable financial institutions. The elaboration of a specific corporate governance framework is a necessary component of compliance with financial regulation and supervision.

Second, the emphasis is upon external governance. It is a question of discipline by the market, i.e. private delegated monitoring by rating agencies, financial analysts and other specialized agencies. The merit of increasing the market role is that large creditors (also other banks) have the expertise, market information and incentives to conduct monitoring and to impose discipline (Schinasi, 2006). Market signals are expressed by the cost of raising funds, and in particular by the risk premiums implicit in the price of subordinated debt. It has long been argued that banks should be required to issue a minimum amount of subordinated debt as part of their capital base. Unlike the shareholders, holders of this debt do not benefit from the potential upside gains through the bank’s risk-taking. Hence, they have more incentives to monitor the bank’s risk profile (Benink, 2002). However, as the interests of subordinated debt holders do not necessarily completely coincide with those of depositors nor with other public interests, subordinated debt cannot be a substitute for official monitoring (see Dewatripont and Tirole, 1994). In this respect, the role of all potential monitors needs to be strengthened.
Market discipline only works effectively under conditions of full and accurate disclosure and transparency. Information needs to be timely, of good quality and available to all market participants so that they may assess the risk profile and the creditworthiness of the financial institutions. Hence, government intervention is needed for market discipline to function. The role of regulation and supervision, however, could possibly be limited to information disclosure, transparency, accounting and auditing rules.

Recently, the need for market discipline is also emerging from a critical analysis of excessive reliance on regulatory and supervisory agencies acting as monopolistic monitors. There is a danger in having monitoring and supervision conducted by a monopolist with imperfect and incomplete information. In addition, moral hazard problems may result from official regulation and supervision, as they reduce the incentives for other market participants to monitor the behaviour of banks. Governance problems are also involved because the supervisory authorities may also be liable to principal-agent problems (see Schüler, 2003). In this perspective, regulation and supervision are to be regarded as incentive contracts within principal-agent relationships. This implies frequent regulatory review and more attention to the accountability of financial regulators. According to the IMF, independence, accountability, transparency, and integrity are the pillars of regulatory governance that reinforce each other (see Quintyn, 2007). A strong case can also be made for subjecting financial regulation to the procedures of regulatory impact analysis (RIA).

11. THE INTERNATIONAL DIMENSION OF REGULATION AND SUPERVISION

The globalization of financial markets and cross-border establishments of large banks and financial conglomerates constitute a major challenge to the regulation of financial activities and institutions, which continues to be carried out by national governments. It creates serious problems for which solutions are not easy to identify, let alone to implement.

First, due to the growing interdependence in international financial markets, financial difficulties experienced in one country can easily spill over to other countries. A systemic crisis in one country and the failure of its authorities to deal with it appropriately may lead to a global banking crisis. Although this circumstance was well known in theory, the global financial crisis has dramatically revealed its practical relevance.

Second, regulation can be considered as a tax and can have an impact on the international competitiveness of financial institutions. Different regulatory regimes may also create barriers for firms in cross-border provision of financial services.
services. For instance, different capital requirements create an unlevel playing field between financial institutions of different countries.

Third, financial institutions may attempt to avoid more stringent domestic regulation by relocating abroad. Regulatory arbitrage impairs the effectiveness of regulation and the ability of different countries to maintain their own regulatory framework. Regulatory competition may eventually lead to a downward regulatory spiral, a so-called ‘race to the bottom’. However, as demonstrated in a game-theoretic framework, by taking into account the special informational characteristics of financial products and the role of reputation in the banking industry (see Van Cayseele and Heremans, 1991), there may be limits to this process. Particularly in retail markets, where financial integration is far less complete, there remain upward regulatory pressures. Countries will be able to maintain regulatory measures as a signal of quality differentiation provided that they are valued by customers. Of course this reasoning does not apply to the cross-border liquidity externalities highlighted by the recent financial crisis.

The concern for the distortion of international competition has been a major driving force behind the attempts to harmonize financial regulation worldwide. The global financial crisis has increased the demand for an international approach. On the one hand, international market integration explains the recent shift of emphasis from structural towards prudential regulation. On the other hand, the same trend requires coordinated action by regulatory and supervisory authorities in order to prevent financial panic and to counter it spreading across countries.

Taking into account the concern for races to the bottom, many forms of international harmonization of regulation have been envisaged. The European Union has linked policies of mutual recognition and home country control rules with agreements on minimum standards of conduct. The Basel Committee on Banking Supervision has laid down common bank capital rules. These minimum standards, however, have to be enforced by the national authorities in the individual countries. This creates potential conflicts in their implementation.

Through efforts of international coordination, an answer is sought for these potential conflicts. This holds true particularly with respect to questions of what should be the right of access to foreign markets and which rules should apply in the international provision of financial services. In this respect, there is a tendency to treat branches and subsidiaries of foreign banks in the same way as domestic banks. For cross-border transactions of financial intermediaries, it is instead argued that they should be monitored by the home country. When a crisis occurs, however, the reaction of governments and central banks differs depending on whether distressed institutions affect the stability of local counterparties, including most prominently the depositors. When that is not
the case, both home and host authorities may refuse to support branches or subsidiaries that were under their regulation and supervision.

Within the EU single market, based on mutual recognition, home country control has already been implemented for foreign branches, but not for subsidiaries. In the process of international coordination, issues of conflicting assignments of supervisory powers to home and host country authorities arise. Whereas the micro-supervision of the soundness and solvency of individual financial institutions may be assigned to the home country, the macro-responsibility for financial stability remains with the host country. The conflicts of interest are exacerbated when locally operating foreign branches have an important share in the banking market in the host country (see Heremans and De Smet, 2007). They are both systemically important and create a political risk. Moreover, agency problems arise as home state supervisors may have suboptimal incentives to monitor these foreign branches. They are bearing the costs of supervision, whereas the benefits accrue to the host country. Hence, they may not have the appropriate incentives to take the cross-border externalities of these actions into account (see Schüler, 2003). In particular, host emerging countries are exposed to the negative externalities of home country supervision because they are dependent on foreign capital and thus lack bargaining power in times of crisis, just when they need it most (Pistor, 2010).

Attempts are being made to enhance cooperation between financial authorities by concluding memorandums of understanding (MOU). As a multitude of authorities, in a number of countries, are involved, this is proving to be a cumbersome task. Moreover, these agreements are not legally binding. Progress is proving difficult as national authorities face a collective action problem. All countries may be better off cooperating, but each country believes it may gain by operating alone. In the aftermath of the global financial crisis, and motivated by the sovereign debt crisis that followed, the European Union appears to have made the most significant progress in this regard. In 2010, a new architecture for financial supervision was established in the EU, including three sectoral supervisory authorities and one European Systemic Risk Board. To be sure, the powers of these authorities, and particularly of the Systemic Risk Board, are very limited, and by no means interfere with the exclusive national competences in fiscal policy. However, some commentators (Ferran and Alexander, 2010) consider this ‘soft law’ approach a first step towards coordinated banking regulation and supervision in the EU.

Especially in the area of crisis management, such coordination seems to be an urgent matter. In the face of the possibility of other global systemic crises in the future, the lender of last resort function still remains largely the endeavour of national – or at best federal or supranational – central banks. Whether emergency liquidity assistance should be provided not only for banks, but also...
for other financial intermediaries, and whether the lender of last resort function should be provided at the international level, remain heavily debated issues. For a recent application to the European Central Bank, see Hertig et al. (2010).

Faced with fragmented supervision by many agencies in many countries, the prospects for international cooperation to reinforce supervision remain bleak. Discussion about putting in place more integrated institutional arrangements for prudential supervision and the managing of cross-border financial crises is largely confined to the European Union (see Heremans, 2007). In the past, difficulties in agreeing on the international dimension of financial regulation and supervision fuelled the overall trend towards deregulation. Whether or not deregulation led to the global financial crisis, this approach is no longer supported. Regulation cannot be sidelined and neither can its coordination across different, but interconnected, financial systems. The main trade-off to be addressed is between financial market integration and national supervisory authority. These two goals cannot be reconciled because financial crises generate inter-jurisdictional externalities so long as financial markets are integrated. In the European Union, the problem is complicated by centralization of monetary policy. It is argued that the EU single financial market faces a ‘trilemma’ between financial stability, financial integration, and national financial policies: one of these objectives must give (Schoenmaker, 2011). Centralization of banking regulation and supervision seems to be a natural solution. However, according to Pistor (2010), decentralized regulation and supervision provide a better balance between control of externalities and financial integration.

12. CONCLUSION

In this chapter, we have reviewed the economic rationale for regulating banking and financial markets. Intermediaries emerge in financial markets in order to cope with the risk and uncertainty of financial exchange. These problems are shifted, mitigated, but not eliminated by financial intermediation. Hence, regulation and supervision of banking and the financial infrastructure in general are necessary to improve the efficiency of financial markets, which have direct impacts on economic growth.

Markets failures in finance are mainly due to problems of information and externalities. Regulation addresses these problems through conduct of business rules and prudential requirements. This approach has recently proved insufficient to prevent financial crises. Governments and central banks had to step in with massive safety nets in order to prevent financial meltdown. Although the appropriate regulatory response to the global financial crisis of
2007–09 is still to be discovered, this chapter tries to draw a few lessons for the architecture of financial regulation and supervision.

In particular, we have discussed the implications of new business models in banking for financial innovation, liquidity, and moral hazard. Although, in the face of systemic problems, governments and central banks cannot credibly commit to refraining from intervention, moral hazard is not the overarching determinant of financial instability. Problems of uncertainty are intimately connected with financial innovation, which is in turn motivated by the quest for profits in a competitive setting. Therefore, if we want to maintain a market-based approach to financial intermediation, we need to accept that intermediaries will innovate and expose themselves and the system to unpredictable and incommensurable uncertainty. Since financial intermediaries overcome, but do not eliminate, uncertainty by creating liquidity, this implies that the recurrence of liquidity crises cannot be avoided.

Against this background, this chapter identifies a few paths along which financial regulation may evolve in order to contain the disruptive effects of financial crises. First, regulation and supervision should primarily focus on systemic risk, identifying and monitoring its sources. These include banks and other intermediaries who effectively engage in banking, but also new forms of maturity transformation which will emerge in the future. Second, regulation should combine ex-ante restrictions on liquidity generation with the ex-post commitment of governments and central banks to back up private money in order to avert panics. Third, all financial institutions falling within this regulatory perimeter should have good corporate governance. However, what is good governance for non-financial firms is not necessarily efficient for financial firms due to the quality and quantity of externalities involved. Finally, regulation, supervision, and crisis management cannot be carried out effectively at the national level. The increased interconnectedness among financial institutions has made systemic risk a global problem, which implies that a choice must be made between committing authorities to coordinated interventions and limiting financial integration in certain geographical areas or worldwide.

BIBLIOGRAPHY


Partnoy, Frank (2009), ‘Historical Perspectives on the Financial Crisis: Ivar Kreuger, the Credit-Rating Agencies, and Two Theories about the Function, and Dysfunction, of Markets’, Yale Journal on Regulation, 26(2), 431-44.


