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REGULATION OF BANKING AND FINANCIAL MARKETS

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Abstract

The dynamic evolution of the financial system is stirring up the regulatory debate. Recent theoretical insights in the role of financial intermediaries and banks shed new light on the role of financial regulation. Information asymmetries, adverse selection and moral hazard problems help to explain the need for investors' protection and the occurrence of systemic crises that may endanger financial stability. Lender of last resort interventions and deposit insurance are to be complemented by incentive compatible capital adequacy rules in an efficient corporate governance perspective. The balance between market and government is shifting, replacing structural by prudential measures, eventually moving towards worldwide regulation.

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1. Introduction

Recently no longer irresponsible macroeconomic policy of governments but rather excessive risk taking by financial intermediaries is becoming the major factor explaining the occurrence of financial crises. Hence, it is the regulation of banking and financial markets that is becoming the major challenge for public authorities as 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. According to an International Monetary Fund study by Lindgren, Garcia and Saal (1996), since 1980 about 133 IMF member countries have experienced significant banking sector problems of which 36 countries had to face real financial crises.

The major goal of regulation in economic life in general, however, traditionally consists in protecting the (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 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, 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 governments to make home mortgages accessible to borrowers or to grant cheap investment credits to particular sectors of the economy.

It may be observed all over the world that compared to other sectors of the economy a much more elaborate system of regulatory interventions has been set up in the financial sector. Hence, the question arises what is specific to the financial sector in order to warrant 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. Being in essence future markets, financial markets are unavoidably characterized by risk and uncertainty, what is also reflected in financial assets as the intertemporal assets traded in these markets. Consumers have to be protected from excessive prices and opportunistic behavior by the suppliers of financial services. 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 has become even 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 behavior' 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 elaborate financial regulating system that has resulted in the aftermath of the economic depression of the 1930s, which was attributed to a financial crisis, has recently been questioned for various reasons.

First, the traditional public interest view of regulation has been challenged by the public choice approach. The latter view observes that in reality 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 consumer. 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 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 has been more on stability than on efficiency by limiting competition. As a result the financial sector more than other sectors of the economy has been hit by the deregulation wave.

Second, the regulation debate has recently received renewed interest in the economic literature by new insights from developments in the field of information economics. Financial markets in particular are seen as imperfect by definition 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 provide better coordination and therefore need not 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.

Moreover, the dynamic evolution of the financial system constantly presents new challenges to the regulatory debate. Government measures to protect the consumer such as deposit insurance coverage have in turn created new moral hazard problems. They diminish the incentives for markets to discipline the banks and induce excessive risk taking as has been documented recently, for example in the widespread Savings and Loans crises 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.

In this evolutionary process there are no definite nor universal recipes to be found and the balance between market and government may shift over time. Rather than discussing ad hoc regulatory policies, it is important to specify the general principles that have to 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 by definition are imperfect. Financial intermediaries find their origin precisely in these market

imperfections. They may provide a market solution to the market failures and in this respect may be an alternative for 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 price developments are difficult to predict. As new information becomes available market parties adjust suddenly and collectively (so-called herd behavior) their price expectations. Together with low transaction costs in financial markets, it explains the high volatility and inherent instability of financial markets.

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. It 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 the money 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 as 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, so that only risky projects will be funded. Moral hazard costs, incurred by the lender in verifying that borrowers are using their funds as intended, further raise the loan rate.

In the process financial intermediaries arise as 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 the bank's portfolio. Should these financial intermediaries which 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 the important potential for 'herd behavior' it explains the occurrence of so-called system risks.

Finally, at the heart of the financial system lies a special commodity: money. 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 lead to a sufficient stable price level. As money is created by the banking sector a special need for controlling these specialized intermediaries may arise.

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 parties an agency problem arises between the lender (principal) and the borrower (agent), since 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 behavior of borrowers and include a premium for credit risk. These are dead-weight costs associated with the agency problem and are more particularly due to problems of adverse selection and moral hazard as explained before. 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 may benefit thereby from scale economics, reducing the cost of production of information, that is the external financing costs. As is argued by several authors, for example Dewatripont and Tirole (1994), in the exercise of these information functions there may be a 'natural monopoly' in that their duplication by several parties is technically 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 it, creates a free rider problem. It prevents the market from producing enough information to eliminate all the asymmetric information. 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 screen and monitor investors. Financial intermediaries on the contrary will 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, as is argued by Hubbard (1996, p. 203).

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 (1997), banks are able to profit from the information they produce and to avoid the free rider problems by primarily making private loans. These loans are not traded, so that other investors cannot gain a 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 to external finance premiums in financial markets.

By giving private loans banks are also able to better discipline the behavior of investors and to avoid risks of moral hazard. This monitoring function proves to be more difficult in case of market financing, for example by the emission of corporate bonds. These distinctions lie at the heart of the controversy between the so-called banking financing model, that is predominant in continental Europe, versus the market financing model of business investments in the Anglo-Saxon world. It may help to explain differences in choices made by banking legislation among countries.

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 financial market regulation. 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.

The case for government interventions in the operation of financial markets mainly rests upon asymmetric information problems that create risks of fraud, negligence, incompetence, and so on. Financial services in this respect are seen as credence goods whose quality it is difficult to establish. However,

information problems may be alleviated by private production and selling of information. 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, financial intermediaries are not able to solve completely these information problems. Additional public policy is needed therefore, in particular in retail markets. Hence, traditionally the main motive for regulatory intervention is found in the need to protect the consumer against information related failures. Timely and accurate information disclosure is needed to enable market participants to make prudent financial decisions, for example regulation requires lenders to provide borrowers a meaningful disclosure of credit terms. Information disclosure rules may also aim at ensuring equal treatment for all financial customers.

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. This applies in particular to banks where depositors are not informed about the quality and risk of the asset portfolio. Information asymmetries create problems of moral hazard as financial institutions may take actions that are not in the interest of investors, for example banks may have incentives to make high yielding 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 be disciplined by the nature of the debt claims they issue. By issuing short-term debt claims as the banks do, their behavior will be disciplined by the threats that savers may withdraw their funds on short notice. If, however, such short-term debt claims are insured, as is the case for deposit insurance, moral hazard problems may even increase. Only uninsured creditors who cannot run, as is the case when banks issue a certain amount of subordinated debt, will have incentives to monitor risk taking by banks.

Government regulation and supervision is needed to provide additional ways to reduce the costs of moral hazard to individual savers. These failures in market discipline can be best counteracted by requiring that financial information should be disclosed promptly and be accurate. This can also be achieved by increasing incentives for responsible performance for bankers and bank shareholders, for example by augmenting their stake in the bank by capital adequacy rules requiring to invest more of their own funds.

4. Financial Stability and the Need for Regulation

Stability is traditionally an important concern in the financial sector. The 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 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. In particular information problems arise as explained before. As a result financial decision making depends heavily upon expectations. It is also characterized by herd behavior. Market parties adjust suddenly and collectively their expectations leading to high volatility in financial markets. Moreover, compared to other sectors of the economy, financial markets are much more interdependent. This is witnessed 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 it may become a worldwide financial crisis.

Banks specifically are 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 on 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. It will force the bank to liquidate relatively illiquid assets probably at a loss. A liquidity crisis may then endanger also 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. A 'bank run' may occur when enough savers lose confidence in the soundness of a bank.

Moreover, bad news about one bank can snowball and have a contagion effect on other banks. A bank failure could eventually trigger a signal on the solvency of other banks. Even if these banks are financially healthy the information about the quality of the loan portfolio underlying the deposits is private, so that depositors may also lose confidence and withdraw their funds.

As is documented by Paroush (1988) domino effects lead to a widespread loss of confidence in the banking system and create a 'financial panic'.

Financial market failures and instability eventually leading to a systemic crisis not only affect individual savers and depositors, but 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 as, 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, as is extensively documented by Hubbard (1991).

Because of the banks' importance it is in particular 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. It hurts in particular 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. As argued by Mishkin (1997) 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 budgets, the balance of payments and foreign exchange rates are further documented in an IMF study by Lindgren, Garcia and Saal (1996).

Systemic risks are more difficult to deal with than the previous individual risks for depositors and savers. Of course government intervention aiming at the protection of depositors and investors by reducing information costs will also stabilize their behavior and reduce the danger of major financial instability. Also at the international level the timely dissemination of accurate financial information may be in order. The question arises whether additional government intervention may be necessary. This applies especially to *ex post* interventions when a financial crisis has occurred.

Liquidity crisis may be overcome by monetary authorities acting as a lender of last resort and providing additional liquidity. However, this may lead in turn to a moral hazard problem. Financial institutions anticipating the bail-out possibility by monetary authorities may behave in a riskier way. Hence, the

lender of last resort certainly does not have to intervene for financial problems that do not contain the danger of leading to a systems crisis. For an international financial crisis the question arises as to the need of an international lender of last resort.

Finally, ensuring a stable payments system has been a principal concern of public policy. Therefore financial regulation in a wider 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 for instance which institutions can offer deposit accounts.

However, in the short run conflicts may also arise between money supply control and the provision of additional liquidity under the lender of last resort function.

5. Regulatory Instruments

To maintain the health of the financial system governments have developed a whole range of regulatory instruments. They 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 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. They may also act in a preventive way by controlling the levels of risk assumed and reducing the probability of insolvency and illiquidity. Second, 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 is given to market efficiency by resorting to a whole set of prudential measures. Third, 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.

Historically, the overriding reason for government intervention has been the desire to avoid systemic risk, mainly by *ex post* rescue operations of financial intermediaries. 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.

Structural and prudential regulation often involve a whole set of different public regulatory measures which differ from country to country. They are

stylized in Table 1 and further commented upon in the next sections. Protective interventions in the form of the lender of last resort and deposit insurance provisions do not involve such extensive regulation. Central banks can significantly limit the occurrence of systemic crises by 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.

Table 1

Protective systems (<i>ex post</i>)		Lender of last resort
		Deposit insurance
Preventive measures (<i>ex ante</i>)	Structural	Restrictions on entry and on business activities - product line restrictions - geographic restrictions
		Regulation of interest rates
	Prudential	Portfolio restrictions and supervision - capital adequacy standards - asset restrictions and diversification rules - liquidity adequacy requirements
		Disclosure standards and reporting requirements
		Conduct and conflict rules
		Inspection and bank examination

As pointed out in Herring and Litan (1995, pp. 51-55), in some countries central banks under certain conditions also guarantee the settlements risk involved in the funds transfer system. 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.

There are several difficulties with the lender of last resort function. First, interventions must be carried out swiftly in a credible way. Credit should only be advanced to solvent financial intermediaries using the 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. Second, 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 individual investors protection, in particular the small depositors who are unable to determine the quality of the banks assets. Indirectly they also reduce the threat of a systemic crisis. This is 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 (see Diamond and Dybvig, 1983).

Deposit insurance was already 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 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.

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? According to Herring and Litan (1995) 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'. In their IMF study Lindgren, Garcia and Saal (1996) document that the 'too-big-to-fail' doctrine has been prevalent in many countries, also in major industrial countries, for example recently in France and Japan, where it has prevented the closure of major commercial banks. Also in the US the practice in case of distress of merging

banks rather than closing them relies upon this philosophy. When the government provides such a safety net it tempts financial institutions to pursue high risk investment strategies at the expense of the government. Also, when they are covered by deposit insurance, depositors have less incentive to monitor and discipline financial institutions. Hence, government safety nets help solve risk problems only by creating other problems. Instead of spending substantial amounts of GNP on rescuing *ex post* ailing financial institutions, preventive government interventions by regulation and supervision may be in order to counter *ex ante* these moral hazard effects.

6. Structural Regulation

In order to limit the threat of systemic risks government intervention in the financial sector traditionally consisted in regulatory measures aiming at limiting competition and at restricting the operation of market forces. Unbridled competition was seen as a major threat to the stability of the financial sector. As listed in Table 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 found its origin in a stock market crash, that it was deemed necessary to introduce structural *restrictions* on the scope of *permissible activities* of the different financial institutions. Before the crisis commercial banks acted as securities market financial 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 also *branching restrictions* could be imposed. In the US in particular banks were geographically limited and were not allowed to open branches in other states and to engage in interstate banking.

Since the 1970s the debate over retaining these restrictions has been reopened and limits have faded significantly. First, it was observed that some countries such as Germany had 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 may 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 recent debate, in its banking directives the European Community adopted the universal bank model.

Second, the increased affiliation with commercial companies, however, remains a controversial issue. It may stretch the safety net meant only for bank depositors to protect other commercial operations, and induces more risky behavior. Also the risk of contagion increases as shocks in the industrial sector may more easily spread to financial institutions. Third, the combination of banking and insurance within the same financial institution has been permitted mainly in European countries. It raises, however, similar regulatory issues of conflicts of interests. Fourth, 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 increasingly becomes difficult to maintain these restrictions. The European Community in its banking directives has resolutely opened up the opportunities for European-wide banking through the single bank license.

Interest rates are important instruments of monetary policy. Hence, governments traditionally have intervened in the price formation in money and capital markets by regulating interest rates. *Interest rate ceilings* and other pricing rules, however, were also introduced to limit competition between banks and between banks and other financial institutions. Limiting price competition in financial markets would also reduce risk taking and moral hazard problems for financial institutions. Imposing interest rate ceilings such as regulation Q in the past in the US would then lower the cost of funds, enhance profits and reduce the likelihood of bank runs.

Recently many of these anti-competitive regulatory measures have been removed. It was observed that they did not contribute to financial stability in the long run. They 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 present regulatory environment gives more weight to competition and efficiency. Instead of structurally limiting competition and the operation of market forces, regulation is taking more and more the form of prudential measures which may better serve the interest of the customers.

7. Prudential Regulation

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 license 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. According to Mishkin (1997) an adverse selection problem arises as financial activities may attract entrepreneurs wishing to engage in speculative activities.

A central instrument of prudential control 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 the 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 that they will pursue less risky activities.

Capital requirements may take different forms. Traditionally they are calculated as a fixed percentage of the assets to limit the leverage ratio. Since these do not sufficiently reflect the differences in risk taking, default-risk-based capital requirements have been developed. Under the auspices of The Bank for International Settlements a risk-asset ratio, the so-called Cooke-ratio, that reflects ratios of capital to risk-weighted assets has been introduced. Recently additional risk-based capital requirements, so-called Capital Adequacy Directives, that take into account off-balance sheet activities and deal with market risk, have been devised.

As is argued by Herring and Litan (1995, pp. 55-58) 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 interventions would be needed against the danger of moral hazard. Financial intermediaries could then be shut down and creditors reimbursed just before insolvency of the intermediary. In practice, however, regulators face delays in taking appropriate action, 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 increase confidence with depositors and reduce the threat of bank runs. In situations of collective withdrawals of deposits, however, they turned out to be largely insufficient to avoid a bank panic. Nowadays changes in required reserves have developed to an instrument that is used primarily for controlling the quantity of money and credit creation.

By regular *examination* and *inspection* regulators may limit the moral hazard problems. They have to control whether the financial institutions are complying with the capital requirements and the restrictions on asset holding. A supervisory structure has to be set up in which bank examiners make periodic, but also unannounced visits to the financial intermediaries.

Recent prudential measures such as '*disclosure requirements*' tend to emphasize the disciplining 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. Recently the Basle Committee issued recommendations to banks to disclose their trading and derivatives activities. Also by discouraging shareholders and managers from excessive risk taking, public disclosure reduces the threat of systemic crises. Some degree of market discipline is also restored by recent developments such as market value accounting.

Finally, many other regulatory measures are imposed that primarily aim at consumer protection. Consumers have to be protected against excessive prices from opportunistic behavior by producers of financial services and other participants in financial markets. In this respect regulation is no longer concerned with systemic stability, but with the integrity and efficiency of the financial markets. In the US traditionally antitrust regulation has been an important instrument to guarantee fair prices to consumers. With the advent of the European-wide financial market and the mergers it will entail, competition law may also play a larger role in Europe.

Opportunistic behavior 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 are sometimes very complicated such as insurance, pension plans and long-term securities. In order to avoid that some buyers of these products are misled standardized disclosure rules may be imposed, reporting requirements and supervision of these financial institutions by regulators may be in order.

8. Regulatory Structure

It follows from the previous discussion that the need for government intervention as well as the choice of regulatory instruments depend 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 the 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 affect; and finally their importance for the whole financial system and the real economy.

According to these criteria, it is held by Mayer and Neven (1991) that *deposit taking*, which is the core of banking, has been found to be 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 means 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 of depositors' protection, but more urgently from the systemic risk of the collapse of the whole financial system.

The question arises whether failures of other financial institutions present the same dangers of systemic crises.

Also *investment firms* are subject to interconnections that can lead to a contagious loss of confidence. This is especially the case for market making functions. There are, however, according to Herring and Litan (1995, pp. 72-73), key distinctions between banks and investment firms that make a contagious transmission of shocks a less serious concern for systemic risk. First, the nature of customer relations, debt contracts and maturity of assets involve less liquidity risk. The funds of investors are kept in accounts that are segregated from the institutions own assets what is not the case in banking. Debt contracts by securities firms typically do not guarantee rates of return and are not redeemable at par, so that customers have little to gain from a run on

securities firms that are in difficulty. The portfolio of investment firms also typically consists of marketable securities that can easily be evaluated and transferred in the event of a failure. Second, the role of securities houses in intermediating funds from savers to investors in many countries is much less crucial. Hence, their failure is much less likely to cause significant harms to the economy. Therefore the need for regulation of investment firms is less compelling. However, there remain sound reasons for regulation. The activities of investment firms involve information asymmetries and may require regulation to protect investors against fraud and incompetence. In this respect the regulation of portfolio managers has an affinity with the regulation of (free) professions. In addition capital requirements similar to those for banks may be imposed in order to avoid undermining confidence in the functioning of markets in the event of a steep decline in asset prices.

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 not entailed such a collapse. Even if this might be called a systemic insurance risk, insurance companies are not involved in payments and liquidity functions, so that the consequences for the whole financial system and the real economy would not be so dramatic as for a banking crisis. Protection of the individual consumer against asymmetric information problems, however, may be more compelling than in the rest of the financial sector. The reason is that those insurance contracts generally are complicated, and involve not only financial but also more technical actuarial risks.

The elaborate financial regulatory system is continuously questioned at various levels.

9. Deregulation and the Regulatory Crisis

In the last decades awareness has grown that regulation not only entails benefits, but also imposes substantial costs on the economy. In this respect the traditional public interest view of regulation has been challenged by the new public choice approach. It implies the need for an evaluation of the externalities and the incidence of regulatory measures.

Structural regulation that limits market competition may eventually convey benefits to private financial institutions, by protecting them against outside competition and by promoting confidence in financial intermediaries. However, by restricting market entry it 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 the consumer.

Other types of regulation impose additional costs on the financial intermediaries when they 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.

Financial institutions often respond by changing their activities and by introducing financial innovation in an attempt to circumvent the regulatory restrictions. In particular off-balance sheet transactions, which may be a multiple of 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 respond by introducing new regulation it may lead to a regulatory dialectic. The dynamics of regulation boils down to a continuous tension between the desire for a stable financial system and an economic efficient system. The recent shift towards prudential regulatory measures is to be considered as an attempt to solve this tension.

The discussion, however, remains as to the level of regulatory restrictions required. It pertains to the perception of the fragility of the financial system. Based upon empirical evidence Benston and Kaufman (1995) observe that the worries about contagion are often unfounded and that there is no reason to claim that banking is more fragile. Hence, a combination of minimum capital requirements with a system of structured early intervention would be sufficient to avoid a systemic crisis. The question, however, arises whether the empirical evidence is not biased by the high regulatory burden in the past? Will deregulation not give incentives for higher risk strategies and enhance systemic risk?

In fact the debate boils down to finding the difficult balance between security and risk. As explained before, information asymmetries in financial markets create problems of moral hazard. Financial intermediaries may have incentives to take more risk than is in the interest of individual savers and depositors. Government regulation and intervention may be in order to reduce the costs of moral hazard to individual customers. When the government, however, provides a safety net through regulatory measures such as deposit insurance and the lender of last resort, it gives incentives to financial institutions to pursue high risk investment strategies.

According to the free banking school these moral hazard problems are better solved by suitable private sector instruments of internal and external disciplining of bank management together with the promotion of competition of banks. Banks will be disciplined by markets as deposit-holders have incentives to monitor the behavior of banks. There is no need for independent supervisory authorities. Contrary to this view, however, a free rider problem

arises in markets in case of a large number of investors who have little incentive to devote resources to the monitoring of financial institutions.

Certain episodes such as the Savings and Loan Crisis in the last decade in the US teach that moral hazard remains a difficult regulatory concern. Taxpayers had to bear collectively the huge cost of the deposit insurance bail-out. Deposit insurance undermined the incentives for saving banks to pursue prudent policies as they reduce the need for individual savers to monitor bank management. In addition Hubbard (1996, p. 386) argues that the regulator's incentives differed from those of tax payers. Regulatory supervision became lax at the first sign of trouble as regulators did not want troubled intermediaries to fail.

These experiences are currently shaping the regulatory reform of financial institutions. Proposals have been launched 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. The undesired risk incentives of the safety net has also to be reduced by supplementary prudential regulation such as capital adequacy and liquidity requirements.

10. The Changing Nature of Regulation

Recently a debate has been launched about the regulatory structure. The rising tide for market solutions implies an increasing role for self-regulation and private regulatory bodies. Self-regulation will arise when clubs can be formed. Clubs are professional organizations which regulate the behavior of members. Self-regulation has the advantage of flexibility but the danger of capture by members. Also outside private agencies, such as rating agencies may discipline risk behavior as the rating of an intermediary affects its funding costs. However, private regulatory failures may occur due to a collective action problem. As a result of this debate, it is increasingly argued that the control of risks, remains in first instance the task of individual institutions or of clubs of institutions. The role of the government then has to be limited to supervising these private regulatory systems.

In the same vein the traditional debate between rules versus discretion is taking a different direction. Whereas rules can be crude and not adapted to the situation at hand, discretion makes it 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. In the US it works through the operation of various trigger points as banks approach the critical area of balance sheet ratios. In this respect the

recent Basle Agreements are being criticized as not providing such a graduated response.

Moreover, the present system relying predominantly upon institutional regulation is being questioned. Banks, securities firms, insurance companies are being regulated and supervised by different regulatory bodies. In fact systemic stability is seen as requiring the application of different rules to different financial institutions. Institutional regulation becomes difficult to implement when the different financial intermediaries widen the scope of their financial activities, for example when universal banks engage in securities activities. Maintaining institutional regulation and subjecting universal banks to stricter capital requirements or providing a safety net also for their securities activities conflicts with competitive neutrality of regulation. Similar issues arise for financial conglomerates.

A level playing field may be promoted and regulatory efficiency maintained by introducing a system of functional regulation. Regulation by function is likely to emerge and regulation by institution to decline in the future as the distinction between banks and other financial intermediaries is fading.

More fundamentally the philosophy of regulation is analytically being reexamined in the new institutional economics literature. A strong analogy is pointed out between banking regulation and loan agreement covenants in 'corporate governance'. By relying upon contract theory the analysis of financial regulation is becoming a true interdisciplinary law and economics endeavor.

According to Richter (1990) the complex ongoing business relationships between savers, borrowers and financial institutions can be analyzed as a relational contract. By its nature it is an incomplete contract as analyzed by Hart (1994) that eventually may be in need of further regulation.

In repeat business transactions one may rely upon private contract enforcing mechanisms such as reputation, for example. Individual monitoring in banking, however, suffers from a collective action problem. Dewatripont and Tirole (1994, pp. 117-118) argue that unsophisticated and 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 needed. It may take the form of private regulation by an independent supervisory or regulatory firm. Public regulation of banks is a very complex matter and therefore should limit itself to a complementary role by light-handed regulation. 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, but introduce a number of options from which financial institutions should be allowed to make a selection. To summarize the

arguments, financial regulation has to be devised within the framework of an efficient governance of financial intermediaries. The trend clearly is towards a more comprehensive approach to risk management, stressing the importance of internal governance and the role of market discipline.

11. The International Dimension

The globalization of financial markets constitutes a major challenge to the regulation of financial activities and institutions which continues to be carried out by national governments. It creates several problems for which solutions are not easy 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.

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 trade in financial 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 locating 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. As is 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, however, be limits to this process. In particular 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.

The concern for the distortion of international competition certainly has been a major driving force behind attempts towards worldwide solutions for financial regulation. Recent international financial crises are increasing the urge for an international approach. International market integration also helps to explain the recent shift of emphasis from structural towards prudential regulation.

Through efforts of *international coordination* an answer is sought for the questions of what should be the right of access to foreign markets, and whose rules should apply in international financial services. In this respect a tendency is observed to give branches and subsidiaries of foreign banks the same treatment as domestic banks. For cross-border transactions of financial

intermediaries it is proposed (for example, by Hubbard, 1996, p. 426) that they should be monitored by the home country. Regulation and coordination can be limited as banks should be allowed to develop their own risk-assessment procedures which should only be subject to regulatory review.

Taking into account the concern for the threat of complete deregulation, however, stronger forms of international *harmonization* are also being 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, continue to be enforced by individual countries. They are, however, being criticized (for example by Herring and Litan, 1995) for their arbitrariness and potential inflexibility.

In the face of the possibility of a worldwide systemic crisis the lender of last resort function still remains largely the endeavor of national 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.

Finally, faced with the increasing need for worldwide regulation, an agreement that extends beyond the Basle countries on a set of minimum capital standards, as Goldstein (1997) has argued for, may be eventually attained. But international cooperation beyond these minimal standards, remains a difficult issue. In particular, faced with the fragmented supervision by many agencies to be multiplied by the number of countries, the prospects for international cooperation to reinforce supervision remain bleak. These difficulties to agree on the international dimension of financial regulation and supervision are enhancing the overall trend towards greater emphasis on discipline by the market rather than by regulators.

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