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SUMMARY

Banking deregulation

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Deregulation of financial services is well under way in many European countries. This has led to fears that economies are now more vulnerable to macroeconomic shocks. The authors focus on one aspect of financial deregulation, namely liberalization of the banking system. They show that measures such as the abolition of reserve requirements increase macroeconomic variability under some circumstances but reduce it under others. No general macroeconomic case can be made for banking regulation or for its liberalization.

Analysis of microeconomic issues is more fruitful. Asymmetric information and the risks of contagion in a panic can lead to runs against the banking system. To the extent that these are socially inefficient, public intervention may be justified. This presumption is stronger since the risks of bank runs have grown recently with the increased maturity mismatch – the finance of illiquid loans by liquid short-term deposits. To meet this danger, the authors recommend regulation of deposit contracts whilst preserving incentives for bank monitoring by private parties. Specifically, they propose an *ex post* liability of current *and former* depositors when banks default, thereby offsetting the incentive to withdraw funds at the onset of a crisis. Being quick off the mark would no longer be sufficient, and sophisticated depositors would press for greater disclosure and fuller monitoring of bank activities. The authors also recommend that remaining controls on deposit interest rates should be scrapped and that supervision of international banking should be cooperatively conducted by host and parent authorities.

Banking deregulation in Europe

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1. Introduction

The deregulation of financial services is *a la mode* in many countries and new financial products or markets are being advertised almost every day. In the UK, the 1986 Financial Services Bill provides for the integration of underwriting, position-taking and distribution of securities within banking conglomerates. Another proposal likely to take effect in 1987 will allow Building Societies to compete with Banks across a wide range of financial services: personal and corporate loans, insurance, unsecured lending, and equity participation. In France, the 1983 Law on Savings Banks allows for more personal (but not corporate) lending. The aim of the 1984 Banking Law is to integrate various types of credit institutions. Bank certificates of deposit and commercial paper ('Billets de Tresorerie') have been authorized and a financial futures market (MATIF) has been created. The 'universal type' banking system has been much more stable in Germany where the major reforms date back to the late 1960s. Certificates of deposit, floating-rate notes and zero coupon bonds have recently been authorized. Foreign-owned banks incorporated in Germany are permitted to lead foreign DM issues, subject to reciprocity. At the European Community level and in the GATT, there are pressures to liberalize trade in financial services on the grounds that deregulation and integration of financial markets will improve the allocation of savings and investment. At the same time, fears of financial instability caused by bank failures (such as the German Bankhaus Herstatt and the British secondary banking crisis in the early 1970s or, more recently, Banco Ambrosiano Holdings,

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Schroeder-Munchmeyer-Hengst and Johnson Matthey Bankers) have forced European governments to adapt their regulatory structure and to create formal deposit insurance mechanisms.

This process raises three major questions. First, does deregulation at the national or international level necessarily lead to excessive competition, overbanking and financial instability? Second, what regulatory structure do we need in today's banking system when financial innovations and security-related activities replace traditional on-balance-sheet lending? Third, who is going to regulate and supervise international banks operating in various countries? Answers to these questions are urgently needed as European banking markets are going through an unprecedented series of changes. Our objective is to study the costs and benefits of banking (de)regulation. As an argument can be made that bank regulation affects the ability of monetary policy to control the economy, we first analyse briefly the effects of deposit rate controls and reserve requirements on the variability of important macroeconomic variables. The main part of the paper, though, is concerned with the efficiency of the banking system and, in particular, with deposit insurance. It is remarkable to observe how little attention has been paid to this last issue in Europe, as compared to the continuing debate in the United States. This is probably due to the relatively low number of bank failures in Europe in the last 40 years and to the fact that formal deposit insurance systems have been introduced only recently.

Our main policy recommendations are as follows. First, we argue that macroeconomic considerations, related to the impact of monetary policy, provide no clear-cut argument for or against the kind of regulations currently under consideration: rather these should therefore be evaluated on microeconomic efficiency grounds. Second, we observe that short-term deposit funding has increased quite rapidly in most European countries in the last twenty years. This has created a source of potential instability and the need for deposit insurance systems, lender-of-last-resort facilities and prudential regulations. We suggest regulating the source of instability, the short-term deposit contracts, more closely while allowing banks greater freedom in their other activities. One of the proposals considered advocates the apportioning of losses resulting from bank failures to both current *and* former depositors. With such an *ex post* penalty system, the incentive to withdraw deposits early in a bank run disappears since there would be no way to avoid the losses. A major benefit of this proposal is to reduce substantially the risk of a systemic run. Third, we find little theoretical or empirical support for the regulation of deposit rates which still prevails in several countries. We recommend the abolition of these controls and of the related cartel-type agreements on interest rates.

Table 1. Reserve requirements in Europe

Countries with legal reserve requirements	Countries without legal reserve requirements
France	Belgium
Germany	Netherlands
Greece	UK[a]
Ireland	
Italy	
Spain	
Switzerland	

Source: Bingham (1985).
Note: (a) Since 1981, all banks have to keep $\frac{1}{2}$% of liabilities on interest-free account at the central bank to generate revenue for the Bank of England.

Finally, at the international level, we argue that the domestic nature of most deposit insurance and lender-of-last-resort systems calls for joint prudential regulation by the host and parent country authorities.

The paper is organized as follows. The first part deals with macroeconomic considerations. The second part addresses the issues of microeconomic efficiency, bank runs and deposit insurance. The third and fourth parts are concerned with two issues of specific European relevance: the regulation of deposit rates and the supervision of international banks. A final section summarizes our conclusions.

2. Banking deregulation: a macroeconomic view

There are two main issues in respect of the operation of monetary policy. First, it has frequently been argued that a required reserve ratio is necessary to constrain the money supply and the price level to a finite and determinate level, and to allow the authorities to exercise control over these magnitudes. Second, in an economy buffeted by various shocks, there may be a relationship between the regulation of bank reserves and deposit rates, and the variability of macroeconomic variables such as the money stock, aggregate demand and the price level.

2.1. The need for regulation and the demand for base money

Reserve requirements are the rule in many European countries (see Table 1). Is this form of regulation necessary to constrain money and credit creation and facilitate the control of inflation by central banks? This question has been raised in recent years by a number of authors (e.g. Wallace, 1981, 1983; Fama, 1983). We take the view that this is not the case, at least given the present technological environment. The

question is closely related to the demand for base money in the absence of regulation. In any reasonable model of the economy as we know it today there is such a demand, and the money stock and the price level are determinate and finite, even without regulation.

Indeed, transaction cost considerations and the fact that bank deposits are not entirely risk-free ensure that there would be a positive demand for base money, in the form of a demand for currency and/or a demand for bank reserves (held for precautionary reasons), even in the absence of legal requirements. This is in accordance with the view taken, for example, by Fama (1983). All we need is to assume an effective government monopoly in base money production,[1] and the impossibility of private banks producing perfect substitutes for base money. If private banks could produce perfect substitutes at zero (or constant and identical) costs, as suggested, for example, by Wallace (1981, 1983), Bryant and Wallace (1984), or Kareken (1984), then the central bank could do nothing which could not immediately be undone by private sector banks. However, real world uncertainties, information costs, monitoring problems, and the like, imply that it would be very difficult or impossible for private banks to establish a position where their liabilities are accepted as perfect substitutes for base money. Thus, we view the deposit contracts supplied by private banks as a differentiated product: a substitute, but one embodying a somewhat different set of characteristics (in particular including as an essential element the provision of cheque handling and similar transactions service facilities).

A demand for base money can occur as a demand either for currency or for bank reserves. A demand for currency would exist even in the absence of regulations, because for many types of transactions (especially 'small', everyday transactions) currency has a comparative advantage as a medium of exchange. It will remain so even under quite advanced financial technologies (Fama, 1983). The relative use of currency and bank deposits depends, of course, on the relative rates of return on those two assets, that is on the effective rate of return obtained by the owners of bank deposits, which will be influenced by deposit rate controls and reserve requirements (see, for example, Baltensperger, 1982b).

Even with no required reserves, rational (profit maximizing) banks would voluntarily hold a certain amount of reserves for precautionary

[1] That is, we will not discuss the issue of a competitive supply of base monies (currencies) in the sense of Klein (1974), Hayek (1978), Vaubel (1984), and others. Rather, our discussion centers around the desirability or undesirability of unconstrained competition among banks as producers of bank deposits (bank money). Also, we do not consider pure credit (or accounting) systems of exchange without a tangible medium of exchange, as they have been envisaged by Black (1970), Fama (1980, 1983), Hall (1982, 1983), Niehans (1982), or Greenfield and Yeager (1983).

Table 2. Reserve holdings of Swiss and German banks

	1975	1980	1982	1983	1984
Swiss Banks					
Cash liquidity[a]					
(% of short-term liabilities)					
Required cash	10.3	10.9	10.6	10.3	11.0
Actual cash	22.3	18.9	16.1	16.2	15.5
Actual/required	2.2	1.7	1.5	1.6	1.4
German Banks					
(millions of DM)					
required reserves	39,767	46,461	41,901	44,514	48,517
Actual reserves	40,301	47,122	42,232	44,941	49,123
Actual/required	1.01	1.01	1.01	1.01	1.01

Sources: *Monatsberichte der Deutschen Bundesbank*, various issues. *Das Schweizerische Bankwesen*, Schweizerische Nationalbank, various volumes.
Note: (a) Includes currency and deposits with central bank, postal checking system, and clearing center of Swiss Regional Banks.

reasons given the risk of deposit and reserve withdrawals. The level of reserve holdings in the absence of a legal requirement should be expected to depend, in part, on the degree of central bank accommodation to which the banking system is accustomed (which is related, in particular, to the kind of discount policy pursued by the central bank). The fact that banking systems in many countries today hold virtually no excess reserves (close to zero in Germany, see Table 2) is often taken as evidence that in the absence of reserve requirements, and given today's degree of money market perfection, banks would hold almost no reserves. However, this is misleading, since these examples are usually taken from monetary systems where the central bank pursues a highly accommodating policy with respect to bank reserves (in the short run, at least) and which therefore minimizes the need for banks to hold excess reserves. On the other hand, a bank which knows that the central bank is not inclined to follow such an accommodating policy will have a clear incentive to hold excess reserves. An example of such a system is provided by Switzerland, where the central bank adheres to a strict policy of base money control and the banking system knows that it has to adjust (as a whole) to the amount of base money autonomously determined by the central bank at any given point of time. As a result, Swiss banks hold considerable amounts of excess reserves (see Table 2). It must be pointed out, however, that Swiss banks typically increase their cash holdings at months' or quarters' ends, when balance sheet data have to be published, so that the data shown overstate the amount of excess reserves actually held, on average, during the

year. Nevertheless, they are indicative of the importance of central bank behaviour for banks' reserve holdings.

With zero required reserves, the money multiplier should be expected to be larger, of course, than with a positive requirement. But it would still be determinate, finite, and related to other variables (e.g. interest rates) in fundamentally the same way as with a reserve requirement. Thus, the money supply would still be controllable, as long as the actual reserve ratios held by banks and the nature of their dependence on interest rates and other determinants are known or can be modelled.

2.2. Regulation and macroeconomic variability

The level of reserve requirements can have an effect, however, on the variability of the money stock, the price level, and other aggregates. The same is true for deposit rate controls. By influencing the degree to which deposit rates can adjust to fluctuations in market conditions, controls also affect the variability of monetary aggregates, prices and other macroeconomic variables. In recent years, the deregulatory measures undertaken or discussed in various countries have been reviewed, especially in the United States, from such a macroeconomic perspective: Tobin (1983), Lindsay (1977), or Cagan (1979), among others, have, for the most part, expressed fears that financial deregulation may introduce new kinds of instability and handicap monetary policy. Kareken (1984) finds that deregulation in the US, at least to date, has had little impact on the effectiveness of monetary policy. A careful theoretical investigation by Santomero and Siegel (1985) argues that deregulation has substantial macroeconomic effects which, however, cannot unambiguously be said to be detrimental or desirable. The present discussion, which is based on Baltensperger (1982a) and in the spirit of Poole (1970), comes to a similar conclusion. Regulation and deregulation affect the behaviour of the macroeconomy and its response to various kinds of real and financial disturbances – a fact which should be noted when making and evaluating monetary policy. However, it is difficult, and probably not advisable, to decide on the desirability or undesirability of particular regulations on the basis of macroeconomic stability considerations. An unregulated system has a flexibility and elasticity that may be undesirable in some situations, but advantageous in others.

Reserve requirements, in particular, have frequently been judged from the point of view of monetary and economic stability. The focus has typically been on money stock control. Relatively high reserve requirements have usually been seen as beneficial on this account, a view best exemplified by the well-known proposal of 100% reserves

(e.g. Fisher, 1935; Friedman, 1959). However, the superiority of a high reserve requirement, in terms of its effects on economic stability, is not as easy to demonstrate as is often thought, once the focus is shifted from short-run money stock stability to the stability of aggregate demand and the price level as the ultimate objectives. It should be stressed that such a shift in emphasis is not a call for disregarding the importance of monetary stability. However, arguing for monetary stability in the sense of keeping the money supply on track along a given medium to long-term expansion path via appropriate changes in the monetary base is not the same as arguing that the money stock variability caused by some given external disturbances should be minimized via appropriate changes in monetary institutions and regulations. This is because the underlying variability may then simply show up somewhere else: if we are concerned about the effects of external disturbances on the economy, we should not just look at their effects on the money stock.

A simple macroeconomic model suitable for the analysis of the impact of regulation on the effects of different types of shocks, based on Baltensperger (1982a), is given in the Appendix. We conclude that the effects of regulatory changes on macroeconomic variability depend on the origin of the underlying disturbance and that it is difficult to make a convincing case for (or against) these regulations on such grounds. Our conclusion thus is that regulatory decisions should be based not on macroeconomic stability considerations of the kind reviewed here but rather on microeconomic efficiency grounds.

2.3. Bank failures and financial innovations as a constraint on monetary policy

The fear that restrictive monetary policies could lead to bank failures and financial instability, and that this can create a constraint on 'admissible' monetary policies, is sometimes used as an argument in favour of regulations aimed at reducing or eliminating the danger of bank failures (e.g. the view of deposit rate ceilings as a 'compensation' helping banks to survive these dangers). However, these arguments are not convincing. If monetary policy is more or less neutral in its long-run effects on the real economy, as might be expected to a first approximation, then it is difficult to see why variations in the money supply could create serious permanent problems for basically sound banks. With flexible wages and commodity prices, monetary policy would have no real effects in the short run. With sluggish, slowly adjusting wages and commodity prices, there would be some real effects, but of a temporary nature only. While this could, indeed, lead to liquidity shortages, it would force bankers to incorporate this risk into their management strategies through appropriate liquidity and capital ratios, and to adjust the maturity structure of their assets and liabilities (the extent to which this is

necessary depends on the degree of accommodating behaviour which can be expected from the central bank).

Of course, bank failures are bound to occur and it is the responsibility of the monetary authorities to guarantee the stability of the financial system through creating an appropriate legal and institutional framework. In particular, they have the duty of guaranteeing that bank failures do not lead to a systemic bank run or to undesired variations (shrinkages) of the money stock (the lender-of-last-resort function). In such a framework, there would be no constraint on the active use of monetary policy. This issue should not be confused with the (real) problems which may arise from changes in the regulatory framework, and which may then arise particularly severely when a restrictive monetary policy is pursued at the same time. Abolishing or relaxing a regulation which has previously served to protect the survival of certain groups of banks which would not have survived otherwise (in the same form) will in all likelihood, lead to difficulties for these banks. While this may be exacerbated by a tight monetary policy, it is not really caused by the latter.

A related, and frequently voiced, concern is that financial innovation and deregulation lead to more financial instability, as market participants and the authorities now face more unexpected developments and shifts ('disturbances') in financial markets (e.g. Tobin, 1983). But is it really true that deregulation can be said to lead to more financial instability? Admittedly, in a transitional stage this may be so, as changes in regulation (in both directions) involve a certain amount of uncertainty about their effect on market participants and their responses. In the long run, however, it is not clear why this should be the case. Furthermore, as pointed out by Kane (1981), to the extent that financial innovation is itself the result of existing regulations, and as more stringent and numerous regulations create an incentive for finding innovative ways around these regulations, deregulation may actually lead to a decline in financial innovation and, in this sense, increase the stability of financial markets. In this connection, it is interesting to note that in explaining the comparatively low degree of innovative activity apparently taking place in Germany and in Switzerland, their central bankers have pointed to the comparatively low levels of financial regulation (prudential controls excluded).

3. Banking deregulation and financial stability: a microeconomic view

In this part, we analyse first the potential market failures calling for bank regulation. We start with a brief review of the role of banks, followed by a discussion of the potential sources of instability and of

the need for public intervention. The current system of banking regulation is analysed and we discuss three proposals to improve the current regulatory framework.

3.1. The role of banks and the source of market failure

A bank or a financial intermediary is a firm whose assets include primary financial claims issued by borrowers such as individuals, governments, firms (or other financial intermediaries) and whose liabilities are sold as secondary claims to capital surplus units in various forms such as demand deposits, savings deposits, term deposits, subordinated debt (loan capital) or equity shares. (To keep pace with recent financial innovations, we include in our definition all the insurance-related activities such as letter of credit, and note-issuance facilities – the so-called 'off-balance-sheet' items). We therefore include commercial banks (public or private), savings banks, finance and leasing companies and mutual funds. The first step in an analysis of bank regulation is to understand the nature of the services provided by banks and the sources of market failure calling for public intervention. Although the services provided by banks are interrelated, it is convenient to distinguish three categories of increasing complexity: portfolio management, payment (transmission) services, and monitoring and risk-sharing mechanisms.

3.1.1. Portfolio management. The first service offered by banks is a 'portfolio management' service. Financial intermediaries help savers to acquire at low cost a diversified portfolio of financial liabilities issued by capital-deficit units. The purest example is the mutual fund which allows the holder of its shares to have access to a diversified portfolio of claims. Mutual funds' shares are valued at market prices every day and, in essence, this financial intermediary is a channel between deficit and surplus units which reduces transaction costs.

3.1.2. Payment mechanism. The second role of banks in the economy is to manage the payment system, that is, to facilitate and keep track of transfers of wealth among individuals. This is the bookkeeping activity of banks realized by debiting and crediting accounts. By keeping a record of the amount of funds invested by each party in the pooled portfolio, the bank is able to organize the exchange of claims among individuals that can be initiated by cheques, money orders or, with the coming new technology, by home banking or EFTPOS (electronic funds transfers and point-of-sale terminal) facilities.

If a bank were to offer only these two services – the issue of shares to finance a diversified pool of assets and the management of payment

services – its shares would be marked at market every day and shareholders would earn the market rate of return, adjusted for risk, less a fee retained by the intermediary for managing the investment pool and the payment mechanism.[2] The view presented so far is, in short, that espoused by the so-called new school, often referred to as the Fama–Black–Hall (FBH) school. (Fama, 1980; Black, 1970; Hall, 1982 and discussed in McCallum, 1985). Their primary conclusion is that banking activities, defined as investment services and payment mechanisms, do not require any particular regulation because there is nothing special to banking. However, this new school takes too simple a view of the economic function of banks by ignoring a third important series of services, the risk sharing (insurance) and monitoring facilities. These services create the need for public intervention.

3.1.3. Risk-sharing and monitoring services. An essential function of banks is to transform the risk faced by the parties or, to put it in modern terminology, to supply risk-sharing contracts. The risk-sharing service is an integral part of the portfolio and payment services and is presented here as an additional service for convenience only. There are many such risk-sharing facilities. The first one is that banks not only provide a diversified pool of assets, but also organize efficiently the distribution of the risky income earned on the asset pool. The debt holders (the depositors) usually receive a fixed payment (the interest) while the shareholders of the banks assume the risk in receiving the residual income. Other risk-sharing or insurance activities will include liquidity insurance (options for debt holders to withdraw the funds quickly at face value), interest rate insurance (floating-rate lending with ceilings on interest rates) and, in principle, any type of risk such as income variability.

According to Diamond and Dybvig (1983), a standard insurance market will not emerge because the information about liquidity needs is private so that the insurer could not distinguish the cash-constrained consumers from the others. However, a liquid deposit contract is a perfect instrument because cash-constrained consumers can withdraw their deposits early while the other consumers have an incentive to keep their deposits in the bank to benefit from a higher return:[3] banks act as insurance companies. Although difficult to measure, the risk-sharing

[2] Although tax considerations such as VAT and personal income tax will induce banks to offer a lower (taxable) interest rate in exchange of free services. With a 20% VAT and a 50% tax rate on interest income, the savings can represent as much as 70% of the value of the services.

[3] Haubrich (1985) and Jacklin (1984) also use a two-period deposit contract to provide an efficient risk-sharing mechanism in a world with imperfect information.

function is of great value because it permits the financing of risky projects with an appropriate distribution of returns among individuals.

In addition to risk-sharing services, banks perform a very useful function in reducing the costs of screening and monitoring borrowers. In many cases, private information held by borrowers result in financial contracting problems and in costly monitoring. Diamond (1984, 1986) has shown why banks can reduce these costs. Instead of monitoring borrowers themselves, depositors delegate this activity to a financial intermediary. Depositors will of course need to evaluate the financial intermediary itself, but by diversifying its loan portfolio across many borrowers, the intermediary reduces substantially the aggregate risk so that the cost of monitoring by depositors is substantially reduced.[4] A major result is that optimal financial contracting takes the form of loans and deposits and that it results in financial intermediaries holding an illiquid loan portfolio: the potential for market failure lies in these risk-sharing and monitoring functions. Two independent explanations have been advanced: the public good character of information gathering and monitoring, and the liquidity of par value deposits which can create a bank run.

The evaluation of the solvency of a bank and the monitoring of its activities is a costly activity which has the nature of a public good. As such, it may be supplied more efficiently by the public sector rather than by the private sector (rating agencies). And if large numbers of small scale depositors find it costly to undertake the fixed cost of processing and understanding bank ratings, however supplied, it may be more efficient for the government to remove this requirement by providing deposit insurance. Monitoring would then be conducted by the public sector and regulation would be the vehicle for making those assessments bite. It must be stressed that these arguments are not specific to the banking industry, though that may be the industry in which the interaction of small scale and the fixed cost of understanding the ratings is highest.

The second source of failure is specific to banking. The par value and liquid deposit features of the deposit contract result in incentives to withdraw deposits and run at the onset of problems. Because of asymmetric information, banks are unable to distinguish liquidity-driven withdrawals and prudential ones. There is a market failure because a bank run is an inefficient way of solving bank defaults. The reason is that bank assets include loans which cannot be realized easily

[4] Diversification is so complete in Diamond's model that (unsystematic) risk disappears completely, so that the monitoring costs of depositors go to zero. Imperfect diversification, fraud or moral hazard would, in the real world, necessitate monitoring of banks by depositors (Hellwig, 1985).

in a short time. In the case of a bank run, these illiquid assets have to be realized with heavy transaction costs, or else profitable production has to be interrupted if the loans are called in. Therefore, a bank run will reduce the efficiency of the risk-sharing contract (Diamond and Dybvig, 1983).

An alternative explanation of market failure stresses the 'contagious' nature of a run. Because of imperfect information on the solvency of other banks, a bank failure can trigger a run on other, solvent banks. As Bagehot put it long ago: 'The peculiar essence of our banking system is an unprecedented trust between man and man. And when that trust is much weakened by hidden causes, a small accident can greatly hurt it' (Bagehot, 1873). A large bank run can happen when one bank fails, because people will follow the crowd assuming that the value of banks' assets are highly correlated with one another. Whatever the source of the contagious run (panic or a signalling effect), it creates an externality because the failure of solvent banks will impair customer relationships and raise the future cost of credit (Bernanke, 1983). Appropriate disclosure of information should reduce the risk of a large run on solvent banks,[5] but it remains likely that some depositors will still withdraw: it only takes a few seconds for the careful treasurer of a firm to transfer funds. The financing of illiquid assets with volatile short-term deposits always creates the possibility of a costly and inefficient bank run.

No one should dare to guess the likelihood of a bank run in Europe, but it is possible that some accidents and failures may occur as the financial markets adapt to deregulation, financial and technological innovations and to the volatile economic environment. In particular, the developments of 'off-balance-sheet' instruments (such as options, futures, swaps and loan commitments) raise some concern while the accounting, risk management and supervisory systems are still in their infancy (BIS, 1986). These innovations further reduce the transparency of balance sheets, with the result that market participants will find it harder to evaluate the solvency of banks. Another worrying development is that, as part of their liability management strategy, banks have relied increasingly on (non-insured) money market funding. In

[5] There is a strong difference between the American view which favours disclosure of non-performing loans, international exposure and maturity mismatch and the European practice of low disclosure and hidden reserves (an EEC accounting proposal allows hidden reserves up to 5% of risky assets). The argument for the latter view is that low disclosure reduces the probability of a run, because events which would be perceived as bad by the public will go unnoticed while, if there is a run when banks are solvent, the regulators can release information to maintain stability. We doubt that the information provided by the regulators at a time of a run will be trusted by the public. The recent case of the Continental Bank in Canada shows that the Bank of Canada could not stop the run and that Continental Bank had to open its books to the accountants of other banks to prove its solvency and finally stop the run.

Table 3. Banking systems in Europe

	Total assets of banks (% of GDP)			Capital asset ratio (%)			Foreign liabilities (% of assets)		
	1965	1975	1985	1965	1975	1985	1965	1975	1985
Belgium	33	68	162	4.6	2.7	2.5	27	51	74
France	30	59	82	3.8	2.3	2.0	—	22	34
Germany	74	100	132	—	4.0	5.5	3	6	8
UK	44	100	168	—	—	4.2	24	50	71
Italy	62	100	90	2.0	2.6	2.9	7	9	16
Switzerland	156	156	240	5.8	5.5	4.7	20	23	24

Sources: *International Financial Statistics* (IMF) and Revell (1980).

Table 3 we show the size of several national banking systems relative to GNP, the capital asset ratio and foreign liabilities as a percentage of total assets. One observes, in all countries, an increase in banking activity (relative to GNP) and in the share of foreign liabilities in total funding. To a very large extent, these are interbank deposits that national monetary authorities will find difficult to control in times of crisis. Belgium and the UK are especially vulnerable with more than 70% of liabilities in the ownership of foreigners.

The existence of a large share of money market deposits in total funding does not imply a risk of a liquidity crisis if these deposits are used to finance liquid assets. Today, only France, the Netherlands, Germany and Switzerland have formal liquidity ratio rules. Since most of these regulations take a 'going concern' approach and assume that some fraction of the liquid deposits are permanent one ends up with a system which is *de facto* less stringent than a 100% liquid assets requirement. In the UK for instance, the volume of foreign currency deposits of less than 3-month maturity that were not covered by assets of less than 3-month maturity represented 13.8% of total foreign currency deposits at the end of 1985. In the case of Belgium and France, this number was 18% and 14% respectively[6]. If one looks at the mismatching of sterling deposits in the UK, the same measure rises to 41%. The Dutch regulation, however, is more stringent as there is a 100% liquid assets requirement on less than one month-maturity interbank deposits. A large supply of interbank deposits which are not backed by liquid assets obviously creates a potential risk of a liquidity crisis. The various ways to reduce the risk of bank runs are discussed in the following sections.

[6] Sources: *Bank of England Quarterly Bulletin*, *Rapport Annuel Commission Bancaire* (Brussels), *Rapport Commission Bancaire* (Paris).

3.2. Current forms of public intervention

Two types of public intervention are used to reduce the risk of bank failures and runs: deposit insurance and prudential regulation. By making deposits virtually risk free, a deposit insurance system reduces the risk of a run and allows the banks to follow an appropriate liquidation policy which is not constrained by withdrawals. Two forms of deposit insurance must be distinguished, discretionary and contractual.

3.2.1. Discretionary intervention. We include in this category all interventions that are at the discretion of a government: lender-of-last-resort (eventually at a subsidized rate), public guarantee, or nationalization. The main characteristic of a discretionary intervention is that it is not granted 'for sure', so that depositors may still withdraw in times of crisis. This uncertainty creates obvious incentives for depositors to monitor the riskiness of the financial intermediaries to whom they are lending. Until the recent creation of deposit insurance mechanisms, this was the only form of public intervention in Europe. However, there was a common understanding that public intervention was almost certain, especially for the larger banks. The case of Johnson Matthey Bankers shows that even smaller banks will be protected. In a discretionary intervention system, the costs of bailing out are shared by the central bank (the tax payers) and by the private banks. In the recent case of Johnson Matthey Bankers, the total cost of £200 million was shared by the parent (76%), the clearing banks (12%) and the Bank of England (12%).

3.2.2. Contractual Intervention. Examples include the deposit insurance or protection fund systems created recently in Europe (see Table 4). Usually these schemes are funded with premiums proportional to deposits: only in the Netherlands and France are the systems unfunded. Funded insurance was adopted in Belgium after 1984 when a bank failure (Banque Copine) produced adverse effects on banks' profitability when losses were apportioned among them. The extent of the coverage varies substantially across countries and it must be pointed out that the eligibility criterion for deposit insurance is the size of the deposit rather than the income or wealth of the deposit holder.

As is well known, a flat insurance premium system creates an obvious moral hazard problem. Banks may increase the riskiness of their activities as the insured depositors have very few incentives to monitor their bank. Various forms of risk will include a low equity ratio, riskier lending policies, foreign exchange risk and maturity mismatching. Because of moral hazard, the contractual deposit insurance system and

Table 4. Deposit insurance systems in Europe

System	Coverage	Financing
Belgium Official government system (1985)	Fully up to ceiling (BF 500,000)	Funded
France Banking industry (1979)	Fully up to ceiling (FF 250,000)	Unfunded
Germany Banking industry (1977)	Up to 30% of bank equity	Funded
Italy	Under discussion	—
Netherlands Banking industry (1972)	Fully up to ceiling (D.Fl. 135,000)	Unfunded
United Kingdom Official government (1979)	75% of deposits up to ceiling £10,000	Funded
Switzerland	none	—

Sources: Dale, (1984) and national sources.
Note: In France, losses are apportioned among the banks. There is a ceiling on the financial commitment of each bank which, up to now, has never been reached.

discretionary interventions of the Central Banks have to be complemented by prudential regulations, including capital and liquidity ratios, and constraints on asset concentration, foreign exchange, or maturity mismatching. Equity is particularly important in this respect. Not only does it reduce the risk of bankruptcy, but it also reduces the incentives for risk taking by banks. Indeed, the larger the equity, the larger are the losses of shareholders in case of bankruptcy. The linkage between deposit insurance, moral hazard, and prudential regulation has been discussed by several authors (e.g. Kareken and Wallace, 1978), always in a pure financial model where the objective is profit or market value maximization. Managerial incentives for safety will reduce the strength of the moral hazard argument, but it should not be disregarded as one needs only a few risky banks to destabilize the system, and new financial instruments – options and futures – provide large gambling opportunities.

The motivation for the recent creation of deposit insurance systems in Europe is the traditional one of protecting 'small' depositors and reducing the incentive for a bank run. However, this last objective is unlikely to be met as only 'small' deposits are insured. In Belgium, for instance, less than 15% of the banks' total liabilities are insured. In the UK, eligible deposits are only insured up to 75% of their value. For these reasons, the deposit insurance mechanisms have been augmented by lender-of-last-resort facilities. Therefore, the level of monitoring by private parties is likely to be small, a situation which is even reinforced by the low level of disclosure. Monitoring therefore rests esssentially

on the shoulders of bank supervisors.[7] The major shortcomings of the current system are, in our view, twofold: too few private incentives to monitor banks and the existence of a serious moral hazard problem. Three proposals to improve the current regulatory system are successively analysed.

3.3. Alternative banking structures: proposals

The three proposals share the common characteristic of deregulating banking markets and activities, with the exception of the short-term deposit contract. They also attempt to shift the costs of bank failure to the private sector so as to increase the incentives for monitoring. The first proposal requires some form of deposit insurance for all short-term deposits. In the second proposal, the losses incurred in the case of a bank failure are apportioned among current and former depositors through an *ex post* penalty system. Finally, the third proposal, based on the principle of 'corporate separateness', attempts to reduce the risks assumed by short-term depositors.

3.3.1. Proposal one: deposit insurance. Money market funding and liability management are permitted in the first proposal, but contractual deposit insurance for all liquid deposits must be enforced. Liquid deposit contracts with 100% fairly priced insurance permits the decomposition of the conventional deposit contract into two components: a risk-free asset (the insured deposit) and a risky component (a share of the deposit insurance company, technically a contingent liability on the bank asset). Once the risky component is separated from the risk-free component, the incentive for depositors to run disappears completely and the banking system becomes fully stable. Depositors have access to (risk-free) liquid deposits at their bank and to risky assets at the insurance companies. The main benefit of the proposal is that the banking system can be completely free of public regulation since the risk of a bank run has been eradicated.

The previous discussion should make clear why a private system is, in principle, preferable to a public one. The private solution allows economic units to select an optimal portfolio of assets made up of risk-free deposits and of the risky shares issued by the insurance companies. Transaction costs apart, the allocation of risks under the deposit insurance scheme is identical to the allocation obtained with risky deposits, except that the splitting up of the contract reduces the incentive

[7] Regulators must not only monitor banks but also take the decision to close insolvent banks in time as, in principle, insured depositors have no reason to withdraw their funds.

to run. As insurance companies will bear the risk of bank failures the system will work only if governments allow companies to fail; otherwise we would still have the moral hazard problem, but it would now apply to insurance companies. However, the risk of a run will still remain if insurance companies go bankrupt, so that residual insurance must be provided to depositors through lender-of-last-resort interventions. Losses caused by individual bank failures would be borne by the private insurance system and, in the case of a major banking collapse, the lender of last resort would take over. Eventually, the deposit insurance can be organized by the banks themselves. The banking industry would act as a 'banking club' which would regulate its members in much the same way as the club concept applies to the medical profession or the Stock Exchange (Goodhart, 1985b).

The difficulties of pricing insurance premiums and the volume of liquid deposits have been raised as important practical objections to the above proposal. However, insurance companies appear to price very complex contracts (such as shipping in the Middle East) and there exist private insurance contracts for corporate debt.[8] As in any private financial contract, there would be covenants to limit the risk taken by the banks; these covenants would be the free market equivalent of current public regulation. In particular, insurance companies will force banks to increase their equity, thereby increasing the exposure of shareholders and reducing the incentive to take over-risky positions. To encourage this development the present corporate tax system, which encourages debt relative to equity by allowing the deductibility of nominal interest payments, will have to be altered, (Dermine, 1985). Moreover, since depositors implicitly accept holding a risk-free asset and a risky component, it is not clear why they would not be willing to hold a risk-free insured deposit and a share of the insurance company. If, indeed, there is a shortage of insurance equity, it would be a signal that depositors care only for risk-free deposits and that banks should reduce risk. If a public insurance scheme is to be preferred, one would still favour a flexible premium system to put prudential pressures on banks, to reduce moral hazard and to allow for more deregulation. In this respect, it must be emphasized that the rules guiding the pricing of insurance will be very similar to those governing capital adequacy, which relate capital to asset structure, and are currently in use in several European countries. Properly priced insurance premiums should cover not only the costs of bank failure but also the costs incurred by lender-of-last-resort interventions.

[8] 'Prudential forms unit to guarantee other firms' debt', *Wall Street Journal*, Feb. 21, 1986. 'Aetna takes on swap insurance', *Euromoney*, May 1986.

A final question concerns the extent of the coverage. If the purpose of the deposit insurance is to reduce bank runs, one would have to insure all short-term deposits, including interbank assets. The minimum maturity would be related to the time necessary for public authorities to restore confidence (Merrick and Saunders, 1985). Deposit insurance would need to be compulsory to avoid the classical free-rider problem. Individually, depositors have few incentives to buy deposit insurance as they can hope to run and avoid the costs of a liquidity crisis. However, if the objective is only to protect the 'small and unsophisticated' depositor, then it would seem logical to use an income or wealth criterion to provide insurance rather than the current 'deposit size' system. This would solve the well known problem of brokered deposits whereby very large sums of money are divided by brokers into small insured bank deposits.

Flexible premium deposit insurance will reduce moral hazard and the probability of a bank run. However, since the risk of default by private insurance agencies will require additional public protection and, therefore, a supervision of insurance companies, we now consider a completely different proposal.

3.3.2. Proposal two: *ex post* penalty. The second proposal attempts to reduce the risk of a systemic run while increasing the incentives for bank monitoring by depositors. In the case of a bank failure, an *ex post* penalty is imposed on all current *and* former depositors.[9] The incentive to run would be reduced since there would be no way to avoid the losses accompanying a bank failure. The proposed system would work as follows. Any bank experiencing a liquidity crisis would have automatic access to a lender of last resort (public or private) who, from that moment on, would monitor the activities of the bank in the best interest of the depositors. In many cases, it will be in the interest of the bank's shareholders (or managers) themselves to call for this intervention when they are convinced that their bank is solvent and that they should not sell illiquid assets with heavy transaction costs. In other cases where the bank is insolvent, the managers may prefer to incur these costs to have time to gamble in the hope of recouping the losses. The intervention of a supervisor would then be necessary. To announce publicly the liquidity crisis, the bank would be closed for a day, a bank holiday. If in the future, the bank proves to be insolvent, the losses will be borne by shareholders and by all current and former depositors (the *ex post* penalty system). Depositors at risk would need to monitor the bank or

[9] This proposal was suggested to us by Don Mathieson of the International Monetary Fund. It is implicit in Diamond and Dybvig (1983).

hire an agent (a rating firm) and the incentive to run will be reduced since there is no way to avoid the losses.

To work properly, the system requires instruments to enforce the penalty on former depositors and a definition of the timing of failure. Some measure of abnormal deposit outflows could be used to define the exact timing. The only depositors not liable for losses would be those who have withdrawn their funds before the failure date. As to enforcement, one would need the means to reach non-residents. When the bank reopens after the holiday, it may be necessary to increase equity and, to attract new deposits, it will be made clear that they will not be held responsible for the previous losses incurred before the holiday. If the market does not trust the bank it will be necessary to impose directly a penalty on shareholders and former depositors to reinforce the solvency and credibility of the 'new' bank. After a few years, the supervision by the lender of last resort and the special status will be ended. Technical problems include the timing of failure, the enforcement of the *ex post* penalty and the definition of losses having occurred before the bank holiday. These are not easy problems to solve but they do not appear more complex than the pricing of flexible risk-related insurance premiums. The major difference between the *ex post* penalty and deposit insurance is that, in the first case, losses are borne by depositors while, in the second case, they are shifted to the deposit insurance agencies and, in the case of deposit insurance failure, to the public lender of last resort. The complete privatization of costs in the *ex post* penalty system is a clear advantage.

3.3.3. Proposal three: corporate separateness. The third proposal is more *ad hoc* and pragmatic in the sense that one form of regulation, corporate separateness, is assumed to improve the existing regulatory framework. Basically, banks will be forced to issue only risk-free liquid deposits, that is first-order claims fully collateralized by short-term and marketable assets marked to market every day. Alternatively, a limited liability company within a bank conglomerate should be created to finance marketable assets with short-term deposits. Corporate separateness has been suggested recently by Kareken (1986) and Chase (1985). Depositors who hold risk-free deposits have no reason to run and the monitoring pressure is put on the second-order depositors who bear the risk, so that banks can be deregulated. Should short-term interbank deposits be included in the senior claims category? The answer is positive if the only objective is financial stability, but the policy alters the character of financial markets by forbidding the financing of illiquid loans with short-term deposits (Diamond and Dybvig, 1986) and risk sharing between short-term and longer-term deposits. This would

increase the cost of intermediation and could have serious consequences for the structure of financial markets. Weaker forms of corporate separateness would require first-order claims for all liquid deposits to be partly collateralized by liquid assets. Constraints on intermediation would be reduced but liquid deposits would retain some risk.

A distinct argument in favour of corporate separateness is that the regulation of banks is difficult to achieve since the efficiency of world financial markets allows the banks to change their positions very rapidly and substantially. Corporate separateness is then perceived as the best way to avoid the moral hazard problem inherent in deposit insurance and lender-of-last-resort interventions. In this respect, one can extend the asymmetric information argument of Diamond (1984). Depositors or deposit insurance agencies will prefer to forbid or separate the activities of banks that cannot be monitored or diversified in a satisfactory way. With private deposit insurance or *ex post* penalty systems, it is likely that corporate separateness will emerge as a natural way to limit the exposure of depositors or of the insurance agencies.

We observe that the three proposals correctly attempt to shift the emphasis of regulations from bank activities to the deposit contract itself, the source of market failure. For us, a flexible insurance premium or an *ex post* penalty system would greatly improve on the current situation. We suggest that the legal aspects of an *ex post* penalty system should be analysed more fully and that corporate separateness should be considered as a form of regulation to limit moral hazard.

4. The regulation of deposit rates

For years a common characteristic of banking regulation in many European countries has been the control of interest rates on demand, savings or time deposits. A recent survey by the OECD (see Table 5) shows that some form of regulation or cartel-like agreement is still the rule in many European countries today. The recent history of higher inflation and interest rates has diminished the strength of these controls, but to date deregulation has been largely concerned with the pricing of large deposits. Many European countries are still far from the deregulated environment of the US where interest rates on savings and time deposits have been totally free (Calem, 1985). For instance, the regulation of interest rates on term deposits has been tightened in France since 1981, and in Belgium a new regulation of interest rates on savings deposits was implemented in 1985.

The existence of controls or cartel-like agreements on interest rates in the European Economic Community may seem to be in sharp contradiction with articles 85 and 96 of the Treaty of Rome on competition,

Table 5. Deposit rate regulation in Europe

	Market rate paid on demand deposits	Market rate paid on savings deposits
Belgium	No	No
France	No	No
Germany	No	Yes
Greece	No	No
Ireland	No	No
Italy	Yes	Yes
Netherlands	No	Yes[a]
Spain	No	No
Switzerland	Yes[a]	Yes[a]
United Kingdom	Yes[b]	Yes

Sources: Bingham, (1985) and national sources.
Notes: (a) 'Concerted' pricing; (b) At the end of 1984, 31% of M_1 was interest-bearing sight deposits, (Goodhart, 1985a).

but they have been tolerated as 'monetary policy instruments' of Member States. However, it seems that the position of the Commission is changing with a greater emphasis on competition in deposit pricing. Dassesse and Isaacs (1985) explain, in a recent study on EEC banking law, that before 1981 the view of the Commission was that interbank agreements on interest rates would meet the competition articles if the agreement was made upon the initiative and with the approval of the national monetary authorities: banking agreements would then be considered as 'monetary policy instruments' of Member States. However, they point out that the position of the Commission has recently changed in that 'the Commission is now of the opinion that interest rates should not be governed by inter-bank agreements, even if they are approved, authorized or promoted by the national authorities responsible for economic, financial or monetary matters. Interest rates should either be established individually by banks freely competing between them, or be regulated directly by the domestic supervisory authorities, if they choose to do so.'

The objective of this section will be to offer a critical analysis of the traditional arguments in favour of the regulation of deposit rates. These relate respectively to prudential, macroeconomic and welfare considerations; the merits of a bankers 'gentleman's agreement' in pricing will also be addressed. The three major conclusions are as follows. First, the traditional arguments in favour of deposit rate regulation do not stand up to theoretical and empirical analysis. Deposit rates should be deregulated and financial stability can be obtained through higher capital adequacy standards. Second, the practice of concerted pricing

should be abolished and anti-dumping regulations may be enacted to limit predatory pricing. Third, a supply of index-linked loans could improve welfare in countries which have experienced a permanent (even if mild) inflation in the past twenty years.

On prudential grounds, it is believed that deregulated banks would bid aggressively for funds and that the higher cost of funds would lead them to take on excessive risks. The regulation of deposit rates is seen as the optimal tool to obtain a proper balance between competition and financial stability. A second argument meets a macroeconomic objective. It is hoped that a reduced cost of funds will be passed on to the borrowers through lower loan rates; this will presumably increase investment and growth in the economy. A third argument is that the regulation of interest rates will stabilize the cost of bank funds, enabling financial intermediaries to lend on a fixed-rate basis. This would be welfare improving for risk-averse borrowers. Finally, a case is made in some countries for gentleman's agreements between banks to prevent destabilizing pricing policies[10]. Before we analyse the validity of these prudential, macroeconomic and welfare arguments, we consider the effectiveness of these controls. Do they effectively reduce the cost of funds or are they evaded fully or in part by a provision of free services and other forms of non-price competition? Empirical evidence on this matter is scarce in Europe but it points to some effectiveness of controls on deposit rates.

4.1. The effectiveness of deposit rate regulation

Deposit rate regulation is one form of price control which, in a highly competitive market, could be evaded by non-price competition means such as opening branches, advertising or bundling services (free chequing accounts for those with large deposits). The financial intermediary would not earn any rent from such price controls in this stylized competitive economy. However, if price controls are only partly evaded – the case of imperfect competition – some rents will accrue to the intermediaries. Empirical studies in the US report that banks return to depositors between one and two-thirds of the yield from investing deposit funds (Startz, 1983).

[10] We will not address a fifth type of argument in favour of deposit rate regulation which is popular in Belgium today. As the income from savings deposits is tax-free (up to 50,000 Belgian francs), the volume of these deposits has increased substantially with an adverse effect on tax revenues (at the end of 1983, they represent 41.3% of savings, time deposits and bonds issued by banks). Recent regulations (Commission Bancaire, 1985) limit the interest rate on savings deposits to restrain their volume (this rate is set at 4.65%, as compared to a Treasury Bill rate of 7.3% in August 1986).

Table 6. Interest rate margins in several European countries (% p.a.)

	Belgium	France	Germany	UK	Italy	Switzerland
Margin on demand deposits						
1965	5.0	3.4	3.9	5.5	1.4	4.0
1975	11.0	8.0	5.2	11.0	2.0	7.0
1985	8.7	9.0	4.8	11.0	1.8	4.7
Average margin						
1980–85	11.2	11.7	6.5	10.8	4.3	4.8
Margin on savings deposits						
1965	1.5	1.4	0.2	1.5	2.5	0.7
1975	4.0	1.0	0.0	1.0	5.0	2.1
1985	3.0	3.0	0.8	3.2	1.0	1.0
Average margin						
1980–85	5.6	4.3	2.8	2.5	3.4	1.3

Source: OECD financial statistics, various issues.
Note: Margin = T-bill rate minus deposit rate for all countries, except Switzerland where the bond rate is used. The interest margin on demand deposits applies to non-interest bearing deposits in all countries, Belgium and Italy excepted.

Empirical evidence on this topic is scarce in Europe. We report two sources of evidence that lend support to the effectiveness hypothesis. In a detailed analysis of the operating costs of Belgian banks, De Grauwe and Pacolet (1983) estimate the costs of demand deposits as between 2 and 6%, well below the interest margin on demand deposits in Belgium over the last twenty years. Table 6 presents evidence for other countries. A second type of evidence is provided by Dermine and Langohr (1986) in an analysis of the banking sector in France. Following the recent application of Tobin's q approach to industrial organization (Lindenberg-Ross, 1981), they seek to explain the determinants of the stock market value of 60 French banks listed on the stock exchange. They report a positive correlation between market value and the volume of demand deposits on which a zero interest rate regulation applies. Although evidence on imperfect competition in European countries is far from complete, we will assume that controls on interest rates are to some extent effective and proceed with the analysis of the prudential, macroeconomic and welfare arguments.

4.2. Deposit rate regulation as a a prudential device

A common argument for the regulation of deposit rates is that excessive competition will create overbanking, a high cost of funds and incentives for banks to take excessive risks. This argument appears to have very weak theoretical and empirical foundations. A well-established model

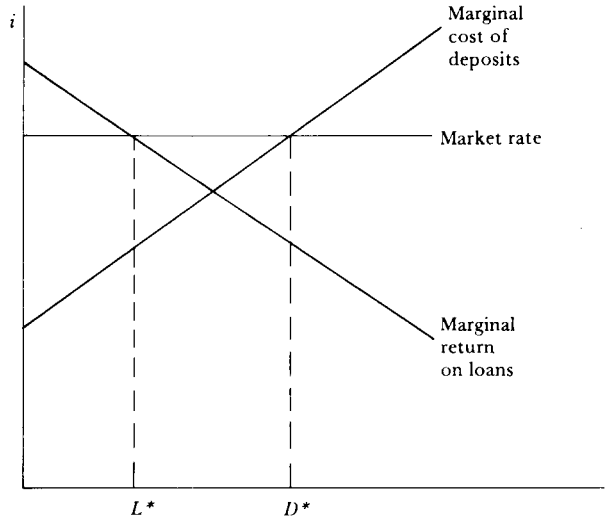

Figure 1. The Klein–Monti model

of the banking firm (Klein, 1971; Monti, 1972) establishes that a profit-maximizing bank operating in a well-developed financial market will equalize the marginal cost of deposits and the marginal return on loans to an exogenous market rate such as the Treasury Bill or the interbank rate. Figure 1 illustrates the basic ideas of the Klein-Monti model. The return on the interbank market or the Treasury Bill rate (the market rate) is assumed to be given to the individual bank while the increasing marginal cost of funds and the decreasing return on loans are caused by imperfect competition or by increasing marginal cost. The optimal level of loans and deposits are given by L^* and D^* where the marginal return and cost intersect the exogenous market rate, the peg of the system. The main result of this model is that the lending side is completely independent of the deposit side. Control of deposit rates will not affect the pricing of loans since banks take the market rate as the opportunity cost of granting loans.[11] Of course, one can argue that regulation of deposit rates will affect savings so that the market rate is endogenous. However, as the effect of deposit rate regulation on savings is empirically unclear, it is difficult to assess this macroeconomic effect on risk taking by banks.

[11] Baltensperger (1980) argues that the existence of joint operating costs will create a link between deposits and loans but it is unclear how a regulation on deposit rates will affect lending in this context.

Recent developments of this model (Dermine 1984, 1986) include the risk of bankruptcy and the existence of a deposit insurance system with flat-rate premiums. In this more complex version, the relationship between deposit and lending rates becomes recursive. The deposit side is independent – that is, the deposit rate is solely a function of the interbank rate – but the lending side depends now on the interbank rate, on equity and on the profit margin on deposits. The higher the level of equity or of the profit margin on deposits, the less it pays to finance risky loans: this is so because a bank should disregard, in its analysis of risky assets, the states of the world when it would be bankrupt since its liability is limited. Of course, with a higher level of equity or a larger profit margin on deposits, the risk of bankruptcy is reduced, and the bank, therefore, attaches a higher weight to the possible losses on its loan portfolio. Consequently, effective regulation of deposit rates which increases the margin on deposits will reduce the incentive for risk taking. But the same result can be achieved by increasing equity. It is not clear why this prudential cushion should be paid by depositors rather than by shareholders. Moreover, it can be shown that the prudential incentives that have been described would not even exist if deposit insurance premia were related to the risk taken by the banks. In this case, the lending side is independent of deposits as the bank will have to care about its potential losses in bankruptcy states since the insurance premiums will be related to these losses.

The theoretical rationale for deposit rate control on prudential grounds appears very weak since an increase in equity can achieve the same result with no distortion on the deposit market. Empirical studies conducted by Benston (1964) and Smirlock (1984) do not find evidence of any link between competition on deposits and risk taking by banks. Even so, deregulation of deposit rates may still increase the likelihood of financial instability. It is very likely that some banks which have subsidized loss-making activities with their cheap source of funds will be forced to default. The regulators will have to close these banks in time as financial history shows how tempting it is for bankers to gamble and recoup their losses once they are on the verge of insolvency.

4.3. Deposit rates and the cost of bank loans

In defence of deposit rate controls, it is often asserted that a lower cost of funds will be passed on to borrowers through lower loan rates, with a positive effect on investment and growth. To ensure clarity, it is essential to distinguish a standard microeconomic argument from an often bypassed macroeconomic one.

The microeconomic discussion of the previous section was concerned with the regulation of profit-maximizing banks, but there exist many public or 'cooperative' intermediaries in Europe for which profit maximization may not be the first objective. These firms could, in principle, pass on their deposit margins to the borrowers. However, assuming that an investment subsidy is desirable, the real question, from a public finance point of view, becomes the choice of financing for this subsidy. A control on the deposit rate is similar to a tax on deposits and the welfare cost arises from a distortion in the allocation of resources as well as from a change in the distribution of income. On the resource allocation aspect, it is not evident why a tax on depositors would be optimal, and on distributional grounds, it is certainly a regressive tax as wealthier depositors will have access to market rate instruments. This last effect can be reduced if the interest income on 'low yield' deposits is tax free (as in the case of France).

The loan subsidy argument could prove to be a fallacy as the macroeconomic impact on growth and investment remains to be clarified. As has been pointed out by Tobin (1970) or van Wijnbergen (1983), the total supply of risk-bearing funds will depend both on the interest rate elasticity of savings and on the substitution properties of the various supplies of assets. In particular, it matters a great deal whether higher deposit rates attract savings out of currency or out of risk-bearing assets. The effect on the market risk premium will be negative if savings are attracted out of currency while it could be positive if savings come out of risk-bearing assets. We know of no empirical studies establishing a macroeconomic case for deposit rate regulation.

4.4. Deposit rate regulation and fixed rate lending

The third argument asserts that borrowers prefer fixed-rate loans to floating-rate ones. In Belgium for instance there is still fierce opposition from consumer groups to a floating-rate mortgage proposal (Commission Bancaire, 1985). This argument is well grounded in economic theory which shows that risk-averse borrowers prefer fixed-rate loans to stabilize their income (Fried–Howitt, 1980 and Okun, 1984), and that a risk-neutral bank would lend to risk-averse borrowers on a fixed-rate basis. But even a risk-averse bank could lend on a fixed-rate basis if depositors also prefer a stable income on their deposits. On this interpretation, deposit rate control is interpreted as a way to enforce a risk-sharing contract between banks, depositors and borrowers. Indeed, under asymmetric information, it may be difficult to lock a net saver into low-yield deposits. While this argument may appear reasonable in a low-inflation world (like the one of the 1960s), its validity

can be questioned once the level of inflation becomes uncertain. Borrowers and depositors will be concerned about the stability of their real income and index-linked mortgages will be demanded by risk-averse borrowers if there are reasonable covariances between inflation, nominal wages and the value of their houses (Statman, 1982) or if the heavy liquidity constraint imposed by the nominal interest rate (the tilt problem) is avoided through indexed loans (Alm and Follain, 1984). The example of Finland in the 1950s and 1960s is worth considering. Finland moved to an indexed financial system up to 1967 (Kouri, 1985). A remarkable fact is that there was a large demand for indexed assets, also inflation was moderate (average rate of 4.74% over the period 1954–67). By the end of 1967, 77% of loans had an index clause and 35% of deposits were indexed.

In any case, the risk argument in favour of deposit rate regulation is weakened by the existence of financial futures markets and of modern hedging techniques which permit the supply of long-term fixed-rate assets financed by floating-rate deposits. Interest rate risk for individual banks is no longer related to the maturity mismatching of the balance sheet, as the risk can be fully hedged off-balance-sheet with new contingent contracts such as futures, options and swaps.

A final concern is the practice of concerted pricing which is common in many European countries (for instance Belgium, France, the Netherlands and Switzerland). In contrast to government regulation, concerted pricing offers the benefit of flexibility and responsiveness to market conditions which will prevent disintermediation, but it also raises the spectre of wide margins and abnormal returns. Anti-cartel controls could be enacted to prevent the emergence of abnormal rents, but one runs immediately into the problem of measuring this margin. Concerted pricing should be abolished and, since the fear of predatory pricing is often raised, one could rely on anti-dumping regulations. Here, one should distinguish marketing policies aimed at launching a new product (the observed negative margins on the newly authorized Money Market Deposit Accounts in the US) from dumping policies aimed at establishing a monopoly position.

In conclusion, our analysis of the prudential, macroeconomic and welfare arguments shows that there is little rationale for the regulation of deposit rates. The link between the interest rates on loans and deposits is very weak for the profit-maximizing firm and the tax-subsidy approach needs to be justified both because deposit rate regulation is a regressive tax and because the macroeconomic benefits are highly uncertain. The only convincing argument is that effective regulation creates a rent which acts as a substitute for equity but, if stricter capital ratios can be imposed, then the case for a complete deregulation of deposit rates in Europe is very strong indeed.

5. The international aspects

In the European context – especially in view of the efforts of the European Commission to create a common banking market – one has to extend the analysis to the international regulation of banks. Two views seem to be emerging on the appropriate design of international bank regulation. The first advocates that 'the principle of national treatment should be universally accepted as governing trade in financial services' (Walter, 1985, p. 117). All banks, domestic or foreign, operating in a particular country should obey the same regulatory prudential rules imposed by the national supervisor. This principle should fully provide for fair competition while accepting the sovereign prerogative on prudential and monetary policy matters. The second view argues for the 'home country' principle, whereby the control of the 'parent' bank should apply to the entire worldwide consolidated bank, branches and subsidaries included. This is the view held by the European Commission (Clarotti, 1984). In this section, we discuss the validity of these two principles, first reviewing the evolution of bank integration in the European Economic Community, then analysing the international aspects of regulation.

5.1. Banking in the EEC

The primary objective of the 1957 Treaty of Rome was the transformation of highly protected national markets into a common market. To this end, Articles 52 to 66 provide for the freedom of establishment and freedom to provide services, while Article 57 refers to the coordination of national legislation. This coordination may precede, coincide with or follow the abolition of restrictions. It has to be decided by the Council of Ministers, on a proposal by the Commission, at the same time as the directives relating to a particular sector are drawn up (directives, which are not laws, place an obligation on Member States to bring their own practices, and therefore laws, into line with the directives).

In June 1973 the Council adopted a directive on 'the abolition of restrictions on freedom of establishment and freedom to provide services in respect of self-employed activities of banks and other financial institutions'. As Clarotti notes, 'The application of the rules of the Treaty in the field of establishment is a reassuring one, in that very little discrimination remains in the Member States' (Clarotti, 1984, p. 201). However, this reassuring view should not give the impression of a common banking market, as the supply of cross-border services is seriously limited by controls on capital movements in many member

countries (France, Italy, Ireland, Greece, Spain and Portugal). Unless such controls are repealed, there can be no truly integrated banking market.

In December 1977, the Council adopted a 'First directive on the coordination of laws, regulation and administrative provisions relating to the taking up and pursuit of credit institutions'. In particular, the directive establishes the principle of home country control, according to which the supervision of credit institutions operating in several Member States will gradually be shifted from the host country to the home country. The 1977 directive is a first step toward the harmonization of regulations. It is a general programme which, without providing any precise regulatory rules, calls for further directives. Following this very pragmatic effort to harmonize regulations and integrate markets, the Council adopted in December 1983 a directive on the supervision of credit institutions on a consolidated basis. Another directive on a uniform format for annual accounts is under discussion and a Banking Advisory Committee has been set up to work on the harmonization of prudential solvency and liquidity ratios. This effort raises several issues, *inter alia* the respective responsibilities of the various national supervisors. Finally, the Commission launched a major new initiative in June 1985, with the aim of completely unifying the EEC's internal market by 1992.

5.2. The regulation of international banks

Two main issues arise in the context of international banking. The first concerns the extent of responsibility of the domestic lender of last resort and of deposit insurance systems. Do they cover branches and subsidiaries of domestic banks operating abroad? Do they cover branches and subsidiaries of foreign banks operating domestically?

The second issue concerns supervision and regulation. Does domestic regulation apply to all banks operating in the country (the national treatment principle)? Does it apply to the foreign component of domestic banks operating abroad (the home country principle)? The theoretical arguments on the origin of bank regulation allows us to organize the responsibilities. Since regulation is motivated by the moral hazard argument (the opportunities available to banks to exploit the lender of last resort or deposit insurance policies), one is led to conclude that supervision and control should be exercised by the responsible lender of last resort or deposit insurance agency. The principle of correspondence between supervision and effective insurance has been raised several times in the literature on the international lender of last resort (e.g. Guttentag and Herring, 1983; Dale, 1984) but, quite surprisingly,

the recent creation of national deposit insurance systems has not yet received much attention.

Current deposit insurance systems (e.g. in the UK, Belgium and Netherlands) cover the deposits of domestic and foreign banks operating domestically, but not those of domestic banks operating abroad. The various national deposit insurance systems are concerned with the risks taken by the insured banks and their supervision extends to all banks operating domestically. This legal framework of insurance on a domestic basis calls for regulation on a domestic basis and the national treatment principle should apply. However, the *de facto* responsibilities of deposit insurance are more complex and we believe that there is a good case for joint supervision by host and home country supervisors. Indeed, in many cases the parent bank is likely to be pressed to intervene (legal commitments in the case of branches, moral pressures coming from letters of comfort or from the home authorities, or simply self-interest if the credit of the parent bank is affected). The parent bank will often be involved in the crisis of its foreign affiliate and the deposit insurer of the parent bank will rightly want to control the bank on a consolidated basis (the home country principle). Domestic regulation is justified by the domestic organization of deposit insurance while home country control is called for by the likely responsibility of the parent bank.

The current form of implicit insurance provided by the lender of last resort leads to similar conclusions. The discretionary nature of lender-of-last-resort aid and fears that nationalistic attitudes will prevail in case of crisis make it difficult to allocate the full responsibility to the lender of last resort of the parent bank. A shared responsibility between the host and the parent lender of last resort will emerge and, on this basis, supervision should also be shared. Both the European Commission and the BIS Committee on Bank Regulation and Supervisory Practices (Concordat II, May 1983) call for supervision on a consolidated basis, but they seem to differ in interpretation. The BIS Concordat accepts dual regulation by the host and parent authorities while the European Commission wants to transfer control to the supervisor of the parent bank. Under the current system of shared insurance responsibilities, it seems that the BIS recommendation should prevail.

A possible structural change would be to require deposit insurance on a consolidated basis. The deposit insurer of the parent bank would cover the depositors' losses in subsidiaries or branches abroad. There are three difficulties, however, implied by the associated shift to home country control and consolidated supervision. First, information on a foreign banking system may be more difficult to obtain and interpret. Second, a possible shortage of foreign currency reserves can make the

deposit insurance of a foreign-currency deposits more hazardous (since the lender of last resort would not be able to print money). Guttentag and Herring (1983) report a tiering among Eurobanks chartered in countries having a balance-of-payments difficulties. Third, and probably more important, are the pressures of peer banks to reduce risk taking under an apportionment deposit insurance system. When losses are shared among the banks (the 'banking club' mentioned earlier), pressures by peer banks will attempt to limit the risks taken by domestic banks, but, because of imperfect information, the pressures on activities abroad are likely to be less stringent. This last argument has been used by the European Federation of Banks to oppose a consolidated insurance proposal by the Commission. Unless financial markets are more integrated, information more readily available and pressures of peer banks stronger on foreign operations, it seems wiser to limit the responsibilities of the various deposit insurance systems to their domestic markets. This implies that host countries should maintain the supervision on all banks operating domestically.

6. Conclusions

Deregulation and financial integration are creating very competitive financial markets. What ten years ago used to be the protected business of banks – commercial and personal loans, deposits and the management of the payment system – is gradually being competed away by new entrants such as savings banks, investment banks or finance subsidiaries of industrial and retail firms. Moreover, the risks involved in economic activity are being shared directly by many parties or through the use of sophisticated new financial instruments such as options and financial futures. The transfer of funds from surplus to deficit units is possible with lower transaction costs and risks are shared efficiently. But if the risks are being shared, they do not disappear and some accidents are bound to occur. Appropriate private or public mechanisms have yet to be put in place to reduce the risk of a systemic crisis and to protect the interests of various parties. As the banking industry is characterized by the financing of illiquid assets with short-term deposits, the fear of bank runs creates the need for public intervention. We recommend greater regulation of the deposit contract, while increasing incentives for bank monitoring by private parties. Three proposals have been discussed. Private deposit insurance with flexible premia would be a step in the right direction but public regulation will remain necessary as insurance companies could go bankrupt. Deposit insurance is no longer needed in the second proposal of an *ex post* penalty because it is imposed on all current and former depositors. The risk of a run is reduced since

there is no way to avoid the penalty and monitoring incentives are substantially increased. Technical aspects, such as the timing of bank failure and the enforcement of the *ex post* penalty, have to be solved but they do not seem more complex than the computation of a flexible risk-related insurance premium. The third proposal, corporate separateness, would complement the first two by separating the activities of banks that could not be monitored or diversified. Finally, since market failure is related to imperfect information and moral hazard, we suggest an increase in the disclosure of information by banks and a rise in the equity ratio. This last recommendation would not only increase the soundness of the banking system but also reduce the incentives for excessive risk taking.

Concerning the regulation of deposit rates which still prevails in several countries, we do not find any theoretical or empirical argument to support it and we recommend the abolition of controls or cartel-like agreements on deposit rates. Finally, in an international context, we observe that lender-of-last-resort activities and deposit insurance are conducted chiefly at the national level, and we recommend a joint supervision of the international bank by the host and parent authorities.

Discussion

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Analysis of the role and functions of banking has become a lively and exciting field in recent years, since many of the features of markets that interest theorists, such as informational asymmetries, performance monitoring problems, and bankruptcy costs, are crucial elements here. Accordingly, the study of banking has ceased to be primarily a preserve of institutionalists.

There are several strands among these theoretical developments. One, which the authors capture fully, is the capacity in which 'Banks act as insurance companies', in order to provide alternative forms of such insurance in cases where 'A standard insurance market will not emerge because the information about liquidity needs is private . . .'. The differences between the preferred habitats of savers, who want liquifiable assets, and borrowers who want to borrow on illiquifiable terms, can be regarded as leading each of them to want to deal in primary securities (the transfer of the funds from ultimate saver to ultimate borrower), while at the same time wanting to take out an insurance contract against the risk of being caught short. That insurance contract cannot, however, be provided in the open market, since the