

Competition and Stability: What's Special about Banking?

Elena Carletti and Philipp Hartmann*

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Abstract: This paper examines the relationship between competition policies and policies to preserve stability in the banking sector. Specificities of market structures and the relative importance of the three classical antitrust areas for banking are discussed, showing the predominance of merger review considerations for loan and deposit markets as well as the relevance of cartel considerations for payment systems. A core part of the paper is an analysis of the relative roles of competition and supervisory authorities in the review of bank mergers for the G-7 industrialised countries. A wide variety of approaches emerges, with some countries giving a stronger role to prudential supervisors than to competition authorities and other countries doing it the other way round. In search for explanations for this diversity the theoretical and empirical literature on the competition-stability nexus in banking is surveyed. It turns out that the widely accepted trade-off between competition and stability does not generally hold.

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* Carletti: University of Mannheim, Department of Economics, D-68131 Mannheim, email: carletti@rumms.uni-mannheim.de. Hartmann: European Central Bank, DG Research, and CEPR, Kaiserstraße 29, D-60311 Frankfurt, email: philipp.hartmann@ecb.int. We are deeply indebted to Charles Goodhart, who had an important impact on the intellectual and professional development of both of us. We are particularly grateful to Andrea Enria for his comments on an earlier draft of this paper and also to Clive Briault for discussions on competition considerations in a supervisory context. Further comments by our discussant Mike Artis and the other participants of the Bank of England conference in honour of Charles Goodhart, as well as by Oliver Burkart, Thomas Dietz, Christian Fehlker, Baron Frankal, Stephane Kerjean, Mark Carey, Myron Kwast, Patricia Jackson, Yoshi Nakata, Fabio Recine, Alessio De Vincenzo and Tsatsuya Yonetani very also very much appreciated. However, nobody of the persons mentioned above should be held responsible for any potential errors or imprecisions remaining in the paper. Any views expressed represent only the authors' own opinions and should not be associated with those of the European Central Bank or the Eurosystem.

1. Introduction

The speciality of the banking system from the perspective of stability is a widely recognised idea (see e.g. Goodhart [1987a] and Goodhart et al. [1998]). What is much less debated in the literature is the implications this special status has for market structures and competition policies. Similarly, not much research work has been dedicated to the implications different bank market structures and degrees of competitiveness have for bank stability and supervisory policies (see also Allen and Gale [2000b] and Canoy et al. [2001]). In this paper we want to look at two areas to address some of those questions.

First, we would like to discuss the institutional structure of competition policies, particularly of bank merger reviews. We want to analyse which government agencies are in charge of these reviews in different countries and what are the relative roles played by antitrust authorities and prudential supervisors. In this context we will also briefly look at how competition policy in banking more generally differs from that in other sectors. Second, since a whole variety of approaches emerges from this first set of issues, we then want to ask the question what the literature has to say about the relationship between competition and stability in banking. We will review the theoretical literature linking market structures with bank stability, supervisory tools and safety nets and then the empirical literature measuring the sign of the competition-stability nexus and testing hypotheses explaining it.

The paper is structured as follows. The next section briefly recalls the argument about why banks are ‘special’ from a financial stability perspective, describes the three classic areas of competition policy and explains the relative importance of them for the banking sector. Section 3 discusses the relative roles of competition and supervisory authorities as well as competition and banking laws in bank merger reviews in the G-7 countries plus the European Union (EU). Section 4 first surveys theoretical models discussing the relationship between different market structures and bank liability side and systemic risk as well as the relationship between market structures and bank asset side risk. Second it surveys empirical and historical papers testing the so-called ‘charter-value’ hypothesis, risk diversification effects of mergers, relationships between consolidation and interbank linkages and cross-country

comparisons of relative bank system efficiency and stability. The final section concludes.

2. Competition policy in banking: what's different?

It is widely assumed that banks and the banking system have a special status, mainly because they are regarded as more vulnerable to instability than other firms or sectors but also because less wealthy people may hold some non-negligible share of their wealth in various forms of bank deposits.¹ On the asset side, according to the traditional view banks specialise in assessing the relative viability and profitability of projects put forward by entrepreneurs and, based on their information production on these projects, they grant loans to the entrepreneurs. On the liability side, according to the traditional view banks are special in that they rely to a significant extent on (many small) short-term demandable deposits, which they pool and then invest in long-term loans to production firms. This maturity mismatch between assets and liabilities, together with the strong information content of their assets, makes banks play the additional role of providers of liquidity to depositors but - in the absence of deposit insurance – it also exposes them to the possibility of runs.²

Moreover, referring to more recent times banks are heavily involved in interbank lending markets and the payment system. Focussing on the wholesale side, they lend and borrow among each other in large amounts to cushion daily liquidity fluctuations. They are also heavily involved in conducting the large value payments resulting from their own and their customers' activities. In both ways, they are heavily linked to each other. For these physical exposures and for information asymmetries about their relative health, absent proper safety provisions there is a risk that the problem of one bank propagates to other banks, creating one form of systemic risk (the risk of interbank contagion). The other form of systemic risk is that aggregate shocks to the economy may deteriorate the viability of a larger number of relatively correlated projects at the same time, thereby bringing a larger number of banks simultaneously into trouble, since the typical bank contract does not allow for liabilities that are contingent on asset values.³

The vulnerability to runs and more recently to problems in the interbank market represents the source of concerns about bank instability originating from the liability side of the balance sheet. A second source of instability relates to bank risk-taking on the asset side. Because of their substantial financing from many small, relatively uninformed depositors and an often-existing public safety net in response to the previously mentioned vulnerability, banks can be prone to taking on 'excessive' risk in the choice of which projects to finance. The concern for a stable banking sector, together with that for consumer/depositor protection, provides the motivation for numerous special regulations and supervisory activities in this sector (incl. e.g. special bank licenses, 'fit and proper' tests for managers, capital adequacy requirements, etc.) as well as safety net arrangements in the form of deposit insurance and lender of last resort facilities.

Whereas the stability considerations are widely known and well analysed in the economic literature, the same cannot be said for bank competition and antitrust policies in banking. In general, competition policy refers mainly to three different types of business practices, cartels, abuse of a dominant position and mergers. *Cartels* refer to any agreement and/or coordination of market behaviours (such as concerted practices) between firms, which have as objective or effect the prevention, restriction or distortion of competition. Examples of anti-competitive cartels are agreements that directly or indirectly fix purchase or selling prices or any other trading conditions, that share markets or sources of supply, that limit production, markets, technical development or investment. Cartels can be horizontal or vertical. The latter concern agreements between suppliers and producers and the former between producers and distributors. For co-operation to be prohibited, competition has to be negatively affected to a considerable extent.

Abuse of dominant position relates to any possible anti-competitive behaviour exerted by one or more firms occupying a dominant position in a market. A company holds a dominant position when it can behave independently from both competitors and customers, who have limited possibilities to react to such behaviour. The main examples of abuse are charging prices or imposing terms and conditions that are unjustifiably burdensome or work in a way that impedes market access by other

competitors or induce them to abandon their operations. Being dominant is not in itself prohibited, what is prohibited is the abuse of a dominant position in the market.

A *merger* (or *concentration*) happens when two (or more) previously independent firms merge or when one firm acquires control over another (or several others), enabling it to exercise a decisive influence on its (their) operations. A merger is prohibited if it creates or strengthens a dominant position, which significantly impedes, directly or indirectly, the existence or development of effective competition. Alternatively, a merger may be authorised provided that it is amended in order to remove any adverse effects on competition. These so-called remedies are often ‘structural’ (in particular taking the form of divestitures) but could in principle also be ‘behavioural’ (e.g. forbidding future expansions). However, ‘behavioural’ remedies are often difficult to enforce.⁴

All the three elements of competition policy apply to the banking sector. However, given the market structures in this sector, cartels and mergers seem to play a greater role than abuses of dominant positions. The banking sector appears indeed fragmented in most countries, with potentially high concentration ratios only at the local level. However, in recent years a very large number of mostly national mergers has taken place (Group of Ten, 2001). Cartels in the banking sector include particularly agreements in the market for payment system services (services that exhibit some natural monopoly characteristics)⁵ and agreements of tie-ins.⁶

One important question is to which extent competition policy is applied to the banking sector. More specifically, it is interesting to investigate whether the specificity of this sector in relation to the stability issues raised above and related regulations and safety net arrangements, has any link to competition or competition policy. If it is true, as sometimes argued, that too much competition is harmful in banking, since it reduces banks’ margins and exacerbates the problem of excessive risk taking (see more below in section 4), then competition should be restricted in banking and competition policy should follow less stringent criteria. One way to achieve this would be to make banking an exceptional sector or even transfer the responsibility for competition policies from antitrust authorities to banking supervisors. By looking at the development and design of competition policy in

different countries we observe that competition policy in banking exhibits some peculiar features, indeed. For example, in the next section we will look at the institutional structure of bank merger reviews in the G-7 countries, asking whether competition or supervisory authorities have the lead in conducting the reviews.

It is also worthwhile mentioning here that in most countries competition policy was designed within an already existing regulatory framework and its application to the banking sector was not so straightforward. Even in the United States, where general competition law was introduced well before the banking laws,⁷ some competition law considerations were brought into the banking sector only in the 1960s.⁸ Before that time banking activity was not considered as a ‘form of commerce’ and, therefore, not subject to the general competition law. This reflected the view within the US Congress that excessive competition was harmful in the banking sector, creating an important source of bank failures.

In Europe fully-fledged competition laws controlling private economic power did not emerge nearly as early as in the US. The Treaty of Rome (1957), creating the European Economic Community, contained in articles 85 and 86 provisions designed to protect competition in the common internal market, i.e. to avoid distortions in trade between the member countries.⁹ Whereas in theory the Rome Treaty did not contain anything preventing the full application of articles 85 and 86 to the banking sector, in practice the European Commission did not apply them in this regard before the early 1980s.¹⁰ The prevailing idea was that banking was a special sector in which the conduct of business was heavily influenced by the monetary and financial policies of member state authorities, in particular by central banks and supervisory authorities in charge of financial stability and exchange controls (see e.g. Ghezzi and Magnani [1998]).

3. Institutional structures of bank merger review policies in G-7 countries

The specificity of the banking sector described above (leading to special licensing, regulation, supervision and crisis provisions) implies a different, more constrained business environment than in most other sectors. This can also lead to special characteristics how competition and antitrust policies work in the banking sector. As

for bank merger review in most countries not only competition authorities play a role in bank merger reviews, but also – to varying degrees across countries – bank supervisors have a direct involvement in the review process.¹¹ The economic rationale for this involvement will be addressed in greater depth below. At this stage it suffices to mention three potential reasons for it.

First, since a banking business requires a special license from supervisors, granted upon the fulfilment of certain minimum capital requirements, ‘fit and proper’ tests of managers etc., and a merger may create a new company or bring in new managers, it appears logical that banking supervisors have to check that the special corporate requirements according to banking laws and regulations would be fulfilled after the merger. Second, it is common practice in many countries that failures of (large) banks are dealt with through restructuring programmes, often involving the acquisition of the weak bank by a healthy one (or a merger), be it to avoid the systemic repercussions of a full-scale bankruptcy or to avoid the costs of it to the deposit insurance fund. Since prudential supervisors tend to have the best information about the situation, they usually play an important co-ordinating or even guiding role in such restructuring measures. Although many bank mergers are not related to failures and therefore the practical relevance of this argument may accordingly be lower, in the cases where they are it may still be easier for the supervisors to engineer a takeover when they have greater responsibility for mergers and acquisitions (M&As) in general (in particular for the competition review to control concentrations).¹² Finally, it may be that the very influential ‘charter value hypothesis’ (see e.g. the discussion of Keeley [1990] and others below), saying roughly that a too competitive banking sector will be prone to instability, has convinced some countries to counterbalance the competition-oriented antitrust review with a stability-oriented supervisory review of bank mergers.

In the remainder of this section we are summarising the relative roles of competition and supervisory authorities in merger reviews in the G-7 countries.¹³ We proceed by starting with the countries that have the strongest involvement of financial supervisors and the least involvement of competition authorities and finishing with the reverse cases. However, we recognise that this order can only be regarded as indicative, since our account is mainly based on the description of written rules on institutional

responsibilities. The actual review practice may still exhibit some differences to the impression given by the formal legal and administrative rules regarding the actual influence of different authorities. Finally, this order may not always correspond to the relative weight given to competition considerations, since in some cases a supervisory authority may be bound by competition law or by competition considerations in the banking law.

Before starting with our country account of merger review responsibilities, it is necessary to point out that in European Union (EU) countries a two-layer regime is in place for the competition review of concentrations, in that all mergers with a 'community dimension' are examined by the Merger Task Force of the European Commission (in the DG Competition), whereas transactions without 'community dimension' are left to the competent national authorities alone. The dividing line between cases that are relevant for the EU as a whole and cases that are only of national relevance is drawn on the basis of the size and geographical dispersion of turnovers.¹⁴ Therefore, the arrangements described below for the four G-7 countries belonging to the EU (France, Germany, Italy and United Kingdom) are only effective for bank mergers that do not reach the 'community dimension'. The other, i.e. larger cases are covered in the paragraph on the EU.¹⁵

France has exempted bank merger reviews (below the 'community dimension') from the general competition law and formal reviews by competition authorities. The main responsibility is rather with the 'Comité des établissements de crédit et des entreprises d'investissement', which is the one committee - out of a set of committees and commissions in charge of prudential supervision in the financial sector formally headed by the Governor of the Banque de France (or his alternate) - that deals with bank licensing. The criteria applied by this Committee are determined in the banking law, in which supervisory and other public policy concerns prevail over competition considerations (if any). For example, the examinations consider particularly whether the new institution would act in a way compatible with the smooth functioning of the banking system and with a sufficient security for customers.

In *Italy* the general competition law applies to merger reviews in the banking sector, but the responsibility for the reviews is with the Banca d'Italia, which is also the

prudential supervisor of this country. Actually, the supervision department conducts the merger review both from the antitrust and from the supervisory perspective (though in different sub-units). The Antitrust Authority is only required to give a prior non-binding opinion on all cases. Co-operation between both authorities is guided by a bilateral memorandum of understanding signed in 1996.

The *United States* has given authority to approve or prevent bank mergers to the relevant supervisory authorities (Federal Reserve Board, Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation and Office of Thrift Supervision). However, the Antitrust Division of the Department of Justice independently reviews the mergers as well and reports its analysis to the supervisor(s) in charge. Even if the merger has been approved by the supervisors, the Antitrust Division can within one month appeal to the court when its analysis contrasts with the decision of the competent supervisor(s).¹⁶ Also US banking law requires the supervisory agencies to take competition effects into account and not to allow anti-competitive mergers, unless 'the uncompetitive effects are clearly outweighed in the public interest' by the probable effect of the transaction in meeting the convenience and needs of the community to be served' (availability of banking services).

The *Canadian* approach is again different in that the banking laws assign the ultimate authority to block or approve a merger of financial institutions to the Minister of Finance. The minister takes this decision assessing the public interest upon receipt of two reports from the Competition Bureau, focusing on the competitive effects of the transaction, and the Office of the Superintendent of Financial Institutions, focusing on supervisory concerns. This implies – as confirmed in the Competition Act – that even if the Competition Bureau feels that a merger transaction should be modified or challenged before the Competition Tribunal, the tribunal can not make an order to this effect, if the Minister of Finance has issued a document to the Bureau of Competition stating that the transaction is '...in the best interest of the financial system in Canada'. However, within these constraints bank mergers in Canada are subject to similar competition reviews as the case for other industries.

Japan makes bank mergers subject to the same competition law as for other industries.¹⁷ So bank mergers have to be approved by the Japan Fair Trade

Commission, which is the sole authority implementing the Antimonopoly Act. The fragility of financial institutions (such as debt overhang or even a high probability of bankruptcy) have practically no consequences under the competition law, which focuses entirely on preventing anti-competitive effects on the different banking markets. However, in contrast to other industries, banks envisaging a merger have also to file an application for approval by the Financial Services Agency. This supervisory review is undertaken under the banking act, considering the availability of funds in a region and the convenience for customers, an adequate conduct of business (including e.g. the appropriateness of shareholders and managers) and the avoidance of disrupting the market (for example regarding fair competition among financial institutions). The competition and the supervisory review are conducted relatively independently with informal contacts between the two authorities. Formally the merging parties must fulfil the requirements by both.¹⁸

In *Germany* merger reviews are guided by special rules for banks within the competition law and by some paragraphs in the banking law. In applying the competition rules the Federal Cartel Office can let a merger pass without explicit approval of the Federal Supervisory Office. However, if it wants to block one, it has to request the opinion of the supervisor, which is formally non-binding though. The Supervisory Office examines the cases from the perspective of the banking law and can block a merger if the new shareholders are not regarded appropriate or the management not qualified. As for other sectors, bank merger decisions can be subject to higher political review in that the Federal Minister of Economics has the option to overturn a blocking decision and approve a merger for ‘reasons of the macroeconomy and common welfare’ (‘Ministererlaubnis’). In this case the minister has to ask the opinion of the independent Monopoly Commission. Generally, if Cartel Office and Supervisory Office come to different conclusions from their respective perspectives and cannot resolve their differences, then in practice the Economics (competition) and Finance (supervision) Ministers would have to find a solution.¹⁹

In the *United Kingdom* bank merger reviews are conducted under similar rules and procedures as for other industries. Cases raising significant competition concerns are subject to a report by the Office of Fair Trading to the Secretary of State for Trade and Industry, who can refer them to the Competition Commission for a formal

investigation. However, even if the Competition Commission finds that the merger is ‘against the public interest’, the Secretary of State has de facto the power to overturn this view and permit an anti-competitive merger.²⁰ The Financial Services Authority and the Bank of England, considering prudential and general stability concerns, are consulted during this process.

Bank mergers in the *European Union* that reach the ‘community dimension’ are examined by the Merger Task Force of the European Commission, applying the ‘Council Regulation on the Control of Concentrations between Undertakings’ (EC Merger Regulation). This regulation, which applies to all sectors, empowers the Commission to investigate the companies involved and declare a merger on the basis of competition considerations ‘incompatible with the common market’. In executing these powers the Commission is also entitled to request all necessary information from the competent national authorities. If the competent national authority is a supervisory agency – such as in France or Italy – then the Commission’s main national counterpart is that supervisory authority. Even if de jure this seems not to qualify the Commission’s focus on competition aspects in the review of bank mergers, the EC Merger Regulation states that ‘Member States may take appropriate measures to protect legitimate interests other than those taken into consideration by this Regulation and compatible with the general principles and other provisions of Community law’.²¹ This introduces a first possibility for the member states to interfere with the decisions of the Commission and pursue objectives other than those linked to competition policy.²²

Perhaps more important for the case of bank mergers is another route through which EU member states can resist to the Commission’s review policy. The so-called Second Banking Directive (European Council, 1989a, article 5) stipulates that national supervisory authorities have to be informed about ‘qualifying’ changes in equity holders and ‘shall refuse authorization if, taking into account the need to ensure the sound and prudent management of a credit institution, they are not satisfied as to the suitability of the ... shareholders’.²³ Another aspect of the national supervisory review is that the new corporate structure should not hinder efficient supervision. The formulation in the Directive (and potentially also the supervisory principle of efficient supervision) allows for different interpretations on the national level. It gives room for

discretion to supervisors, e.g. regarding their attitude towards ‘hostile’ takeover bids or towards the tendency of new managements to distribute cash to shareholders after the merger (market pressures to do this are often observed).²⁴

In sum, although the EU regime of bank merger review (for cases with ‘community dimension’) is strongly competition-oriented and although absent an EU-wide supervisory authority the Commission’s institutional competence for large bank merger reviews may appear unshared, in practice EU countries have reserved a relatively large degree of discretion through the involvement of their national supervisors, looking at the mergers from a prudential perspective. This implies a risk, for example, that national supervisory authorities adopt a reluctant attitude towards cross-border bank mergers to preserve their control of prudential policies and promote ‘national champions’.²⁵ If going beyond certain limits, this could also reinforce the ‘too-big-to-fail’ problem on the national level with all the adverse consequences for market incentives.

The differences of the relative roles of competition and supervisory authorities in various G-7 countries (and the EU) give rise to a number of possible interpretations. First, since part of the academic literature (discussed in the next section) has highlighted possible trade-offs between bank competition and bank stability the differences may reflect differential preferences across countries as to the weight given to financial sector competitiveness and financial stability in merger review decisions. Second, the differences may just reflect historically grown structures that were inherited from the past without a direct link to the efficiency-stability paradigm discussed in banking. However, this latter interpretation does not need to be disconnected from the former, since the historically grown structures may have been influenced by past experiences with financial crises or monopolistic banking systems.

Other relevant features that seem to be reflected in some way in the general merger review practice, i.e. applying to all sectors, in most G-7 countries are ‘failing firm defence’ or ‘merger rescue’ provisions. For example, the ‘Horizontal Merger Guidelines’ of the US Department of Justice stipulate that ‘a merger is not likely to create or enhance market power or to facilitate its exercise, if imminent failure ... of one of the merging firms would cause the asset of that firm to exit the relevant

market'. These Guidelines are also used by the US Federal Reserve in its bank merger reviews and the 'convenience and needs' phrase, referred to above, in both the Bank Holding Company Act and the Clayton Act provides the legal basis for the failing firm defence in US banking.

Although not defined in a statutory way as in the US, the EU Commission has also developed in its case-law a 'rescue merger' concept, which is akin to the US 'failing firm defence' in that without a causal link between the merger and the reduction in competition/increase in concentration merger disapproval can be avoided.²⁶ Such provisions appear particularly relevant in the case of banking, where – as written above – supervisors often resort to co-ordinating a takeover or a merger of a failing bank instead of going through a potentially costly public liquidation. In particular, if the conditions for such a 'failing firm defence' are met, then such actions should be unproblematic even from the perspective of competition policy.²⁷

However, in some countries there is also a broader notion of 'failing firm defence' that includes the consideration of other than pure competition considerations, namely more general social or economic objectives. For example, according to such a broader notion the merger review could weight potential anti-competitive effects from a merger against benefits, such as the preservation of employment, the preservation of technical achievements within a specific region or the availability of certain services in a specific region. The example of Canada, described above, illustrates that such a broader interpretation of the failing firm doctrine could potentially also include acceptance of anti-competitive merger effects to prevent harm to the financial system. We speculate that the fear of instability caused by bank failures may lead to the application of such a broader concept of 'failing firm defence'. Whereas the narrower concept of 'failing firm defence' could be read as avoiding any conflict between bank competition and bank stability, with this broader concept we enter the realm of having to weight competition and stability implications in bank merger reviews.

4. Survey of the academic literature on competition and stability in banking

We now turn to the issue what scientific research has to say about the relationship between competition and stability. Academic and broader research interest in the issue

has been triggered by the seminal article of Michael Keeley in the *American Economic Review* [1990], finding that the surge of bank failures in the US during the 1980s had (at least partly) been caused by various deregulation measures and market factors that reduced monopoly rents (denoted as ‘charter value’) and thereby increased the value of bank managers’ put option on deposit insurance funds.²⁸ Similarly, Edwards and Mishkin [1995] argue that the excessive risk-taking observed in the 1980s in the US was banks’ response to the erosion of profits due to competition from financial markets. This competition decreased their cost advantages in the acquisition of funds and undermined their position in the loan market.

Our aim is to review the existing literature on the relation between competition and stability, not to contribute to it here or to fill any gaps. The ultimate objective is to see whether an economic rationale for stability concerns and the special involvement of supervisors in the review of bank mergers can be identified. In the next sub-section we go through the theoretical literature and in the subsequent one through the empirical literature.

4.1 Theories on the relation between bank competition and bank stability

We organise the survey of the theoretical literature according to the effects that competition, either in the deposit or in the loan market, has on the two sources of bank instability that we have outlined in section 2. We first review the contributions analysing the effects of competition on banks’ vulnerability to individual runs and systemic risk on the liability side. Then, we survey the contributions looking at the effects of competition on bank risk-taking behaviour on the asset side. In reviewing this literature, we also look at normative aspects concerning the roles played by regulation, supervision, closure policies and deposit insurance for the relation between competition and stability. Note that only few of the papers we will discuss endogenise aspects of industrial organisation in their analysis. The majority of them just compares the equilibriums achievable in different market settings without taking into account any strategic interaction among intermediaries.

Market structure and liability risk

The relationship between competition, liability risk and optimal regulation has been largely ignored by the banking literature. Most of the contributions on bank runs and systemic risk pay very little attention to the strategic interaction between banks, ignore the effects of different market structures on bank stability and on the efficiency and effectiveness of prudential policy measures. Most of the traditional models assume in fact that banks operate in a perfectly competitive environment or in a monopoly setting.²⁹ In both circumstances, runs or systemic crises emerge in equilibrium either as a consequence of co-ordination failure among depositors or as a rational response by depositors to the arrival of negative information about banks' future solvency. These models do not provide insights into the issue in which market structure the banking system is more likely to be unstable. Neither do they explore the effectiveness of safety net arrangements and of other regulatory measures in different market settings.

A few models address the relationship between competition and liability risk. Smith [1984] analyses this issue in a framework *à la* Diamond and Dybvig [1983] where banks compete to attract depositors that have different probability distributions over the dates of withdrawal. In the case when an adverse selection problem is present, that is when depositors only know their own probability of withdrawals, there may not exist any Nash equilibrium. The equilibrium contract, either pooling or separating, is indeed destroyed by the possibility of banks offering positive profit contracts to a specific segment of depositors. When this is the case, the banking system is not viable or in other words it is unstable. Thus, competition for deposits makes banks fragile in an environment characterised by adverse selection problems. The author argues that this problem can be resolved by appropriate regulatory measures, such as ceilings on deposit rates.³⁰

Competition per se does not need to create instability. As shown by Matutes and Vives [1996], bank vulnerability to bank runs can emerge also independently of competition and can thus occur in any market structure. This result is obtained in a model *à la* Diamond [1984] enriched by duopolistic product differentiation, network externalities and bank failures. Matutes and Vives show that the distress probability of

a bank is endogenously determined by depositors' expectations, which are self-fulfilling, given the presence of scale economies. A bank perceived to be safer commands a higher margin and a larger market share, which in turn makes it safer because of better diversification. The self-fulfilling character of depositors' expectations implies multiple equilibriums. Possible equilibriums include corner solutions, where only one bank is active, and even equilibriums where none of the banks is active. This latter event is interpreted as a 'systemic confidence crisis'. It is due to a co-ordination problem among depositors, which arises for reasons similar to those encountered in the network literature, irrespective of the degree of competition in the deposit market. In the model the co-ordination failure can be solved by introducing deposit insurance. However, by ensuring that all banks remain in business, deposit insurance may preclude the realisation of desirable diversification and induce fiercer competition for deposits, which, in turn, increases the failure probability of banks. The net welfare effects of deposit insurance are ambiguous and cannot be assessed independently of the market structure.

Carletti et al. [2002] address more directly the effects of bank mergers on the competition and liquidity risk in the banking sector. They set up a model where banks compete for loans and engage in interbank lending in order to deal with liquidity shocks on the liability side *à la* Diamond and Dybvig. The competition effects of mergers, as measured by the level of post-merger loan rates, depend on the relative importance of increased concentration and potential cost reductions: Mergers lead to higher loan rates when the market power effect dominates and to lower loan rates otherwise. The stability effects of mergers, as measured by the probability that the interbank market experiences aggregate liquidity shortages and by the average size of shortages, depend on the structure of liquidity shocks, the relative cost of retail deposit financing as compared to interbank refinancing (determining reserve holdings) and the post-merger distribution of market shares (depending on the competition effects produced by mergers). The analysis displays various scenarios in which a merger raises either competition or stability concerns (in the sense of interbank money market liquidity risk) or both. The first two scenarios indicate the possibility of conflicts between antitrust and supervisory/monetary authorities in merger reviews, whereas the other cases illustrate that such a conflict need not arise.

Market structure and excessive risk taking

We now review the theoretical literature on the effects of competition, either in the loan market or in the deposit market, on banks' risk taking behaviour. This literature (the so-called 'charter value' literature very much inspired by Keeley's article) focuses in particular on the incentive effects of high charter values for bank risk taking. In a framework of relationship banking Besanko and Thakor [1993] show that increased competition induces banks to choose riskier portfolio strategies. In the course of the relationship with their borrowers, banks acquire private information that generates informational rents. As long as banks appropriate at least part of these rents, they have an incentive to limit their risk exposure so as to enjoy the value of the relationship. However, as soon as the banking industry becomes more competitive, relationship banking decreases in value and banks take more risk, particularly when deposits are backed by a risk insensitive insurance scheme. Boot and Greenbaum [1993] obtain similar results in a two-period model in which banks can acquire funding-related reputational benefits and improve their rents through costly monitoring.³¹

Other papers focus on how competition for deposits affects banks' risk taking and on how proper regulation can correct the perverse link between competition and excessive risk taking. Cordella and Yeyati [1998] address the relationships between competition for deposits, banks' risk taking behaviour and different deposit insurance arrangements in a model of spatial competition where banks choose privately their portfolio risk. They show that with fixed-rate deposit insurance, enhanced competition increases deposit rates and risk through lower product differentiation and lower margins. In contrast, when deposit insurance premiums are risk-adjusted, deposit rates and asset risk are lower than under a flat-rate pricing scheme. Thus, when risk-based deposit insurance premiums can be implemented, banks can credibly commit to reduce asset risk, thus lowering the cost of funds and improving their overall performance despite competition on deposits.

Matutes and Vives [2000] examine the link between imperfect competition in the deposit market, banks' risk taking and deposit insurance in a model where banks are subject to limited liability and their failure implies social costs. A first result of the

model is that in the absence of deposit insurance deposit rates are excessive (and thus bank asset risk high) when the failure costs are high and competition intense. A second result is that when deposits are insured through a flat rate scheme, competition leads to excessive deposit rates even without failure costs and banks take the maximum asset risk. Both deposit regulation (deposit limits or rate ceilings) and investment restrictions are needed to remove the perverse effect of competition. Finally, when deposit insurance premiums are risk adjusted, deposit rates and bank asset risk are lower than in an economy without deposit insurance. However, both may still be excessive so that it may still be optimal to introduce deposit regulations.

The relation between competition for deposits, excessive risk taking and regulation is also analysed by Hellman et al. [2000] in a dynamic framework where banks choose privately their asset risk and compete for deposits. In line with the charter value literature, competition erodes profits and therefore induces banks to gamble in their investments. A possible way to restore prudent bank behaviour is to introduce capital requirements. However, in a dynamic setting, they turn out to be a Pareto inefficient policy: As long as deposit rates can be freely determined, in a dynamic setting banks have incentives to increase them so as to expand their deposit base and earn a higher margin from gambling (market-stealing effect). Adding deposit rate controls as a regulatory instrument allows Pareto optimal outcomes in this model. By increasing charter values, deposit rate controls prevent the market-stealing effect, thus increasing banks' incentives to behave prudently.

An alternative regulatory instrument to create charter value and control banks' risk taking in competitive markets is analysed by Perotti and Suarez [2001]. They develop a dynamic duopolistic model where banks compete in the deposit market and can invest in either prudent or speculative lending. Whenever a bank fails, the regulator has to decide whether to close the failing institution or to merge it with another bank, either an incumbent (rescue or merger policy) or a new entrant (entry policy). The two policies imply a trade-off between stability and competition. By reducing competition and increasing charter value, a rescue involves monopoly inefficiency but also prudent bank behaviour; in contrast, entry implies more efficiency but riskier bank behaviour. The optimal policy instrument is a combination of active rescues followed by entry. This creates ex ante incentives for banks to remain solvent to acquire failing

institutions while at the same time limiting the ex post market power that surviving banks get through the rescue. Thus, the use of active merger policy and temporary entry restrictions can endorse stability.

Not all papers, however, find a clear positive link between competition and risk taking. In a model in which banks compete for loans and can use costly monitoring or credit rationing to deal with a moral hazard problem on the part of the entrepreneur, Caminal and Matutes [forthcoming] show that a monopoly bank may face a higher risk of failure than a competitive bank. The idea is that a monopoly bank uses more monitoring and less credit rationing to deal with the borrower's moral hazard problem. This may induce a monopoly bank to grant larger loans than competitive banks and lead to a higher probability of failure, since loans are subject to multiplicative uncertainty. As a consequence, the relationship between market power and failure probability is ambiguous.

In a similar spirit, Nagarajan and Sealey [1995] show that the effects of competition on excessive risk taking depend on how charter values are determined. Their focus is on how regulatory policies, and in particular forbearance policy, affect charter values. When higher margins are the result of a forbearance policy that extends the expiration of equity holders' call option, they may not result in higher quality of bank assets. Conversely, high charter values provoke excessive risk taking when they are generated by a non-optimal forbearance policy.³²

Summing up the discussion of available theories, whereas most papers find some trade-off between bank competition and stability, the claim that they are generally negatively related is not necessarily robust. First of all, there are scenarios in which increased loan competition reduces asset risk-taking or increases the ability of the interbank market to insure against liquidity shocks. Second, while ill-designed policies may generate or reinforce a trade-off between competition and stability in banking (e.g. risk-insensitive deposit insurance, static capital requirements or non-optimal forbearance), theory suggests that there are policy options that would ensure competitive and stable banking systems (e.g. risk-based deposit insurance, mixed approaches to failure resolution through mergers etc.).

4.2 Empirical examinations of the relationship between bank competition and bank stability

Similar to the theoretical literature on the relationship between market structure/competitiveness and risk in banking, the empirical literature on this topic is also relatively small. We nevertheless review the few published empirical research papers we could find that come up with some figures on the issue at stake. Overall one can distinguish four types of studies: the first type regresses measures of bank risk on measures of bank market power, the second group of papers assesses the potential diversification or risk reduction effects of combining different businesses in a merger, the third type measures changes in bank stock return correlations as an indicator of the implications of consolidation for systemic risk and the fourth type discusses the relative efficiency and risk in bank sectors of different countries that are more or less competitive.

Did the erosion of banks' market power cause the increase in US bank failure rates during the 1980s?

In the seminal paper by Keeley [1990] two pooled estimations are undertaken. First, capital-to-asset ratios for 85 large US bank holding companies between 1971 and 1986 are regressed on their market-to-book asset ratio (Tobin's q , as a measure of market power or 'charter value') and a set of controls. The parameter of q in this regression is positive and highly significant, indicating that more competitive banking markets are associated with reduced capital cushions in banks. Second, interest rates on large certificates of deposits (CDs) for 77 large bank holding companies between 1984 and 1986 are regressed on q and a number of control variables. The parameter for q is negative and very significant, indicating that reduced market power (lower q) is associated with higher risk premiums reflected in CD rates. Both estimations suggest that the erosion of 'charter values' in the US has contributed to the greater banking fragility during the 1980s.

Do mergers diversify risk?

If bank mergers diversify risk, then any related increase in market power through concentration would be associated with lower risk and higher bank stability. Paroush [1995] provides a simple description of how asset-side risk concentration can be diversified through a bank merger. He then argues that the merger of Manufacturers Hanover Trust Co. and Chemical Bank in the US provides an example in which the loan concentration across 4 sectors (consumer, business, real estate and international loans) of the combined bank is lower than the concentration of loans in each predecessor bank. Benston, Hunter and Wall [1995] test with data for 302 US bank mergers between 1981 and 1986 whether the behaviour of takeover bid prices reflects risk diversification as a motive for the acquisition or rather the increase of the deposit insurance put option value. They find some evidence that the pre-merger variance of target bank earnings and the pre-merger covariance between target and acquiring bank earnings are negatively related to bid prices, which is consistent with the former hypothesis but not with the latter (which would predict the opposite signs). However, they also caution that there is an older literature that argues that post-merger institutions change portfolios to take on new risks and transform the diversification benefits into increased cash flows at ultimately unchanged failure risk.

Craig and Santos [1997] also refer to this earlier literature and then compare the pre- and post-merger risk characteristics of 256 acquisitions by US bank holding companies between 1984 and 1993. They find that the sample banks show increased post-merger profitability and reduced post-merger risk, as measured by the standard deviations of the returns on equity and on assets, as well as the z-score measure of default risk (all up to 4 years after the transaction).³³ Only the coefficient of variation and the covariance of returns between acquirer and acquired show a more mixed picture, which the authors dismiss for statistical reasons.

Boyd and Graham [1991, 1996] go a step further by asking the question whether large (supposedly more diversified) banks fail less often than small banks (below 1 billion dollar of assets) in the United States. To avoid a 'too-big-to-fail bias' they include in the failure category also banks that have received any form of government support to survive. It turns out that over the entire sample period of 1971 to 1994 the cumulate

number of failures over all banks is 17% for large banks and 12% for small banks. When dividing the sample in three sub-periods they find that the annual failure rate for large banks is higher than the one for small banks for the earlier periods (1971 to 1978 and 1979 to 1986) whereas this picture is reversed for the more recent period, which also exhibits greater failure rates more generally (1987 to 1994). The authors emphasise that the results on the earlier periods may appear reversed when saved banks are not included in the failure category.³⁴

On the basis of these diversification studies it seems somewhat difficult to draw firm conclusions on the competition-stability nexus in banking. However, there are some indications that in more recent times concentrations resulting from mergers in the US may have been associated with lower risk of individual banks after merger, which is in line with the predictions of the ‘charter-value’ literature. One reason for this result could be that the recent relaxation of branching restriction across US states has increased the diversification potential of mergers.

Does bank consolidation increase interbank linkages?

In a background study to the Ferguson Report on financial sector consolidation (Group of Ten, 2001) de Nicolo and Kwast [2001] track the correlation of stock returns between 22 large and complex US banking organisations (LCBOs) from 1988 to 1999. They interpret these correlations as measures of direct and indirect interdependencies arising from the inter-firm on- and off-balance sheet exposures (including payment and settlement system linkages) and from correlated exposures to financial markets and non-financial sectors, respectively. Therefore these measures are taken as indicators of systemic risk. The authors show that these inter-LCBO stock return correlations increased over the sample period, particularly for more traditional institutions, as did the total market share of LCBOs in banking. In fact, they find these correlations themselves to be highly correlated with market shares, which is consistent with the idea that systemic risk in the US banking system has increased over time, partly as a consequence of consolidation. While this study does not try to assess whether the consolidation observed was also associated with any (adverse?) effects on competition, its claim on increased interbank linkages through consolidation of

LCBOs gives a different picture from the individual bank risks discussed in the context of the ‘charter value’ literature or the diversification literature.

Do countries with more competitive banking sectors face a greater risk of bank instability?

A few descriptive historical studies examine the efficiency and stability properties of banking systems in different countries during different periods, where competitiveness is often one factor in efficiency. For example, Bordo, Redish and Rockoff [1995] compare the Canadian and the US banking systems’ performances between 1920 and 1980. They observe a much greater stability (in terms of failure rates) of Canadian banks as compared to US banks and speculate that this might have been partly related to the oligopolistic market structure of Canadian banking. However, an analysis of nominal and real deposit and loan rate levels in Canada and the US provides practically no evidence of higher monopoly rents in the former compared to the latter. Due to their balance sheet structures Canadian banks were clearly more profitable than their US counterparts, suggesting that Canada had both a more stable and a more efficient (and not a less competitive) banking sector than the US during this period.

Capie [1995] studies the stability and efficiency of the UK banking system between 1890 and 1940. He finds this period to be very stable with no banking panic or financial crisis. Inter alia, this also reflects the milder effect of the Great Depression on Britain. Regarding market structure there occurred an on-going trend of banking consolidation leading from a system with many banks to an oligopoly, with the London clearing banks basically operating a price cartel and other restrictive practices. However, despite high prices for banking services to consumers Capie finds little evidence of abnormal profits, which leads him to the conclusion that they were also quite inefficient. Overall, the experiences with this episode seem to be consistent with the hypothesis that less competitive banking systems can be quite stable.³⁵

Regarding more recent times, Hoggarth, Milne and Wood [1998] compare the relative performances of the UK and the German banking systems during the last decades. It turns out that banking profits in the UK were consistently higher than in Germany but

also much more variable (similar to asset prices). Higher UK profitability can be explained by higher non-interest income and lower staff costs and greater German stability by lower and more stable inflation as well as less competition, particularly from foreign entrants. The experiences of these two countries could therefore be regarded as reflecting two cases, one less competitive but more stable system (Germany) and the other more competitive but less stable (UK). Staikouras and Wood [2000] undertake a similar exercise for Greece and Spain during the last decade, finding that Spanish banks as a whole are both more profitable and more stable than Greek banks, except that the sub-group of Spanish commercial banks is less stable. This leads them to think that the Spanish banking sector is more competitive than the Greek one, which still has a larger public involvement. This latter comparison is consistent with the hypothesis of no trade-off between competition and stability, similar to the historical comparison between Canada and the US above, whereas the Germany-UK comparison is consistent with the presence of a trade-off.

The main conclusion from this survey of the empirical literature is that there does not appear to be a single ever-valid relationship between competition and stability in the banking system. This conclusion is also well reflected in the main results of the Ferguson report (Group of Ten [2001], ch. 0.2 and III) on the effects of consolidation in the financial sector. The 'key findings and policy implications' section of this report states that the 'potential effects of financial consolidation on the risk of individual institutions are mixed, the net result is impossible to generalise, and thus a case by case assessment is required ... In part because the net impact of consolidation on individual firm risk is unclear, the net impact of consolidation on systemic risk is also uncertain' (p. 3). In a recent study of the Netherlands Bureau of Economic Policy Analysis about competition and stability in banking more generally (Canoy et al. [2001]) the intricate relationship between these two market dimensions becomes also very clear. While the study focuses on 'trade-offs' between competition and stability, one main policy conclusion still is that 'many forms of competition do not endanger financial stability' (p. 161). In sum, it depends on the specific case and circumstances whether a change in competition (e.g. a merger or a concentration) is associated with an increase or decrease of risk in the banking system. In our view this insight about the complexity of the competition-stability nexus rather increases the importance to be placed on clear and well designed rules for the relative roles of antitrust

authorities/competition policies and supervisory authorities/prudential practices regarding bank mergers.

5. Conclusions

In this paper we have discussed the relationship between competition and stability in banking. We briefly described the application of classic antitrust tools to the banking sector and analysed in greater depth how the responsibility for bank merger reviews is shared between competition and supervisory authorities in G-7 countries and the EU. We then surveyed the theoretical and empirical literature on the link between bank competition and bank stability.

We found an amazing variety of relative responsibilities and national approaches regarding the institutional structure of bank merger reviews, with countries like France and Italy giving the lead on merger reviews to supervisory authorities and the European Union (for mergers with ‘community dimension’) and the United Kingdom to competition authorities. However, whereas the EU Commission’s approach is very competition oriented, the Second Banking Directive preserves a relatively large degree of discretion to national supervisory authorities in the EU to block bank mergers, e.g. if they are not satisfied with the new shareholders. Regarding the legal basis for bank merger review procedures there is also variety, some countries dealing with the issue in the competition laws and others in the banking laws. Like mergers also cartel cases play a greater role in the banking sector, in particular regarding payment systems that are characterised by natural monopoly features. However, despite the large number of bank mergers occurring in many countries during the last years, abuses of dominant positions have so far remained of rather low importance in antitrust practice.

The theoretical literature does not seem to be conclusive on the relationship between competition and stability. Theories of bank runs and systemic risk largely disregard the implications of different bank market structures for the safety of the sector. Theories based on the idea of ‘charter value’ argue that market power mitigates bank risk taking, since high margins act as a buffer against portfolio risk and increase the cost of bankruptcy. However, a more recent strand of literature suggests that stronger

competition does not necessarily worsen stability. Concerning bank liability side risk, it argues that coordination problems among depositors causing bank fragility can emerge independently of competition. Also, it shows that some bank mergers can make liquidity shortages in the interbank market more likely. As regards asset side risk, it argues that there can be cases in which a concentrated banking sector would be riskier than a competitive sector. Finally, it is also pointed out that some policies, such as risk-adjusted deposit insurance premiums, could mitigate any trade-off between competition and bank risk taking.

Regarding the empirical literature, some papers support the influential ‘charter-value’ hypothesis claiming a negative relationship between competition and bank stability, others don’t. For example, most studies on the diversification effects of mergers show that concentration can go hand in hand with lower individual bank risk, at least for more recent data. Regarding systemic risk related to interbank linkages, at least one study argues that consolidation and increased risks have gone together in the last decade. Finally, historical analyses comparing the experiences of different countries come to different results, depending on the period and country considered. For example, it is argued that for the middle of the twentieth century Canada had both a more efficient and a more stable banking system than the US, whereas a comparison of Germany and Britain for more recent decades indicates that Germany has a less competitive but more stable and Britain a more competitive but less stable banking system.

On the basis of the theoretical and empirical survey, the idea that competition is something dangerous in the banking sector, since it generally causes instability can be dismissed. In the light of the importance of the market mechanism for the prosperity of industrial countries, competition aspects need to be carefully considered, also in banking. One implication is that there should be well-defined arrangements about the relative roles of competition and supervisory authorities. And countries that have given only weak roles to competition authorities e.g. in bank merger reviews may be well advised to ensure that competition concerns are not neglected. However, beyond this it is very hard to draw any strong conclusions, because both the theoretical and the empirical literature suggests that the stability effects of changes in market

structures and competition are extremely case-dependent. It appears that there is much room for research to bring more light into this rather opaque issue.

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¹ A different view on the problem is that banks are special because they represent the availability of funds, so that governments want to have a tighter control over them. See Hellwig [1991].

² For theoretical foundations of these issues see Diamond and Dybvig [1983], Diamond [1984] and Diamond and Rajan [2001].

³ See Carletti [1998] for a survey of bank stability and De Bandt and Hartmann [2002] for a more detailed survey on systemic risk in banking and payment systems.

While the sources of fragility on the liability side seem to be more specific to banking from a theoretical perspective, most of the widespread banking crises in history seem to have been associated with aggregate shocks and not with long chains of pure contagion resulting from an initially idiosyncratic problem.

⁴ See OECD [2000] for many examples of bank merger reviews.

⁵ Agreements in payment systems include uniform commissions (either interbank or to customers) and rules of admission and exclusion to networks for credit cards, eurocheques and automated teller machines (ATMs).

⁶ Agreements of tie-ins generally refer to a firm selling (buying) a product or service to (from) another firm under the condition that the acquiring (selling) firm also has to buy (sell) another product or service from (to) the selling (buying) firm or, at least, that it commits not to buy (sell) it from (to) another seller (buyer). For example, a bank could try to oblige a customer to buy another financial service before getting a loan. However, there seems to be some tendency to allow tying between traditional commercial banking services, such as loans, deposits and trust services.

To further forms of agreements are reciprocal agreements and exclusive agreements. The former refer to linking the sale (purchase) of a product to the purchase (sale) of another product by the respective counterparty. For example firms that acquire intermediate goods from a company could favour this company when selling their final products. Exclusive agreements include all contracts that preclude a customer of an undertaking to buy products or services from competitors.

⁷ The two main general competition laws, the Sherman Act (agreements and monopolistic practices) and the Clayton Act (price discrimination, tying and exclusive dealings, mergers and acquisitions, interlocking directorates), were enacted in 1890 and 1914, respectively.

⁸ Competition considerations were integrated in the Bank Holding Act of 1956 and the Bank Merger Act of 1960, even if the application of competition laws to bank mergers was clearly stated only with the Philadelphia National Bank case in 1963 and subsequently in 1966 with the amendment of the Bank Merger Act. However, important checks and balances include for example the attribution of the competence for the merger reviews to the supervisory bodies (see section 3) and the general rule that an anticompetitive merger can be authorised if its anticompetitive effects are clearly outweighed by special benefits for the convenience and the needs of citizens and community in its whole. This particular exemption seems however to apply only to mergers with failing institutions.

⁹ Article 85 refers to agreements, mergers and acquisitions. Article 86 addresses abuses of dominant positions.

Germany was probably the first large European country adopting a full-scale competition law domestically, the ‘Gesetz gegen Wettbewerbsbeschränkungen (GWB)’ coming into force in January 1958, which grew out of the American antitrust law experience, the war allies’ de-cartelisation practices in the occupied Germany and the German *ordo-liberal* school. In contrast to the Community law defined by the Rome Treaty, the GWB contained an explicit mentioning of banking and insurance as exceptional sectors in which special rules would apply.

¹⁰ The European Court of Justice confirmed the full application of these two articles to the banking sector only in the Zuechner sentence of 1981.

¹¹ Whereas in sections 2 and 4 of this paper we discuss competition and competition policies and their relation to financial stability more generally, for reasons of space we have to constrain the discussion of institutional structures and responsibilities in this section to concentrations, more precisely to merger review procedures, which not only in the European context currently attract particular interest. Detailed cross-country descriptions of responsibilities for cartels and abuses of dominant positions in banking could be usefully addressed in another paper.

¹² We will come back to this point at the end of this section, when discussing the ‘failing firm defence’.

¹³ The information provided in this section is mainly based on the extensive country studies described in the two OECD reports [1998 and 2000]. Brief summaries on merger review procedures in G-10 countries are also given in Group of Ten (2001, annex V.1). Where necessary, we clarified or complemented the information in those reports through conversations with officials.

¹⁴ In the case of banking, since a 1997 amendment of the EC Merger Regulation, income figures are used as a measure of turnovers. 'Community dimension' is reached when (a) the aggregate world-wide income of the merging banks is more than 5,000 million euro and (b) the aggregate community-wide income of each of the merging banks is more than 250 million euro. See Article 1 of the Regulation for a more detailed description of the thresholds (European Council [1989b]).

¹⁵ Note however that in special circumstances mergers with community dimension can be referred to national antitrust authorities and then reviewed under the national laws. These circumstances concern the cases when the merger produces effects only on local markets (see article 9 of the EC Merger Regulation).

¹⁶ In practice, however, in most cases the merger applicants negotiate with the supervisor(s) and the Antitrust Division a solution that is acceptable to all. So, it happens not very often that the Antitrust Division files a suit under US antitrust law to block a bank merger that was approved by supervisory authorities.

¹⁷ However, the Antimonopoly Act stipulates that financial institutions cannot hold more than 5 % of the outstanding equity of a domestic corporation, whereas non-financial companies can.

¹⁸ In principle this means that if one authority blocks the merger it cannot go forward, irrespective of the decision of the other.

¹⁹ In Germany, as in most other countries, the parties of a merger request can appeal against a blocking decision to the courts.

²⁰ However, he cannot block a merger that would not cause a threat to competition.

²¹ Council Regulation (EEC) No 4064/89, art. 21(3).

²² Some ambiguity may arise about the interpretation of this clause. According to Ghezzi and Magnani [1998], it implies that the member states can eventually block mergers previously authorised by the Commission but they cannot authorise mergers that have been blocked by the Commission.

²³ The factors considered in this assessment of the suitability of shareholders are the same as for the licensing of a new bank. They include the reputation of shareholders, the existence of possible conflicts of interest, capital adequacy, the organisational structure of the new company and the commercial rationale behind the operation.

²⁴ Takeover regulations are of course also relevant. Since we want to focus on the relative roles of bank supervisors and competition authorities, and not on securities regulators and regulations, we do not discuss the additional issues they raise here.

²⁵ Danthine et al. [1999, ch. 6] for example highlighted such a risk, referring however to banks' preferences and the role of competition authorities. See Kerjean (2000, p. 16f.) for a description of the Banco Santander Central Hispano (Spain) – Champalimaud (Portugal) case of 1999 that brought the potential for conflict between EU competition policy and national interest/prudential considerations to the forefront.

²⁶ The rationale behind such provisions is that when a failing firm is on one side of the transaction then the market structure after merger may not be worse than the market structure after the failure of the firm. For example, when the firm fails then most of its business may go to one main competitor, implying a similar increase in concentration as with a merger. Usually, the application of 'failing firm defence' provisions are subject to a number of conditions that are there to ensure that only those cases pass where any alternative (failure or alternative takeover) would be worse from a competition perspective.

²⁷ The Japanese contribution to the 1996 OECD report on 'failing firm defence' provisions describes two bank mergers in this country that involved one party in serious difficulties; San-in Godo Bank with Fuso Bank and Iyo Bank with Toho Sogo Bank (OECD [1996], p. 69f.).

²⁸ More precisely, 'charter value' is defined as the present value of future rents from holding a banking license.

²⁹ 'Traditional' contributions on bank runs include Diamond and Dybvig [1983], Jacklin and Bhattacharya [1988], Chari and Jagannathan [1988], Calomiris and Kahn [1991]. Contributions on systemic risk include Allen and Gale [2000], Freixas et al. [2000] and Chen [2000].

³⁰ The link between competition and liability risk is also analysed by De Palma and Gary-Bobo [1996] in a model that focuses on the relationship between Cournot competition on the loan market and depositors' withdrawal decisions. The analysis leads to multiple equilibriums: In the safe equilibrium banks offer a small amount of loans at a high interest rate and bear no bankruptcy risk. In the risky equilibrium, banks supply a large amount of loans but are subject to a positive probability of runs when depositors receive a bad signal. Since depositors are uninsured, the results suggest that a deregulated system with imperfect markets is potentially highly fragile.

³¹ Covitz and Heitfield [2000] also argue that competition can lead to higher bank risk and even to higher loan rates. In a model characterised by overlapping moral hazard problems between banks and borrowers, they show that when borrowers' moral hazard is strong (as for example during times of economic recessions) and banks' moral hazard is weak, competition leads to higher loan rates, lower bank monitoring and higher bank risk. In contrast, a monopolistic lending environment may lead to lower loan rates, higher bank monitoring and lower bank risk.

³² Koskela and Stenbacka [2000] find an unambiguous positive relationship between competition and stability but their framework is somewhat different. Banks compete in the loan market but, absent any moral hazard problem, stability refers to bankruptcy risk of borrowers. Under the assumption of a mean-shifting investment technology, it is shown that a monopoly bank charges higher lending rates than competitive banks, which leads to lower investments and thus a higher probability of bankruptcy.

³³ The z-score used in this paper is a statistic derived from historical profits, equity and asset stocks measuring the number of standard deviations below the mean that a bank's profits would have to fall before its equity became negative. See Goodhart et al. [1998, p. 90] for a brief summary of credit scoring techniques more generally.

³⁴ There is also a literature about the risk and diversification effects of commercial banks moving into other financial service areas, such as securities underwriting or insurance. See Lown et al. [2000] for a review and some new results. We do not cover this literature here, since this type of financial consolidation has a less clear link to concentration.

³⁵ However, in private communication the author clarified to us that he regards the system with many banks at the start of the period as not very competitive either.