Competition and regulation in banking

Xavier Vives[1]
IESE Business School and UPF

[1] This introduction draws from my joint work with Douglas Gale, Carmen Matutes and Jean-Charles Rochet, and from the overviews in Vives (2001, 2006). Financial support from the Spanish Ministry of Education and Science (project SEJ2005-08263) is gratefully acknowledged.

1. Introduction

Banking has evolved from a tightly regulated to a mostly liberalized industry subject to competition. The move has been contentious since it has been claimed that stability has suffered. This section takes stock of what we know about the relationship of competition, regulation and stability in banking from the perspective of theory, in the essay by Elena Carletti, and empirics, in the essay by Hans Degryse and Steven Ongena. The picture that arises is somewhat complex but illuminating.

The relations between competition, regulation and stability in banking have been subject to intense debate. A somewhat simplistic idea has been that banking is fragile, competition exacerbates this fragility, and regulation has to come to the rescue. In fact, the banking sector was tightly regulated until the liberalization process started in the 1970s and on. The general benefits of competition impinged upon the liberalization of the industry and a question is whether the pendulum has not swung too far with too much competitive intensity. In order to open the appetite for the chapters in this section, let us provide some introductory insights on why banking is fragile, the relation between competition and stability, and the role and the optimal design of regulation.

2. Fragility in banking

Banks provide transaction services and risk sharing. They also finance and monitor entrepreneurial projects, which are illiquid and opaque because of asymmetric information problems such as adverse selection and moral hazard. Altogether banks perform a central function in overcoming asymmetric information problems in an economy. We could say that banks protect entrepreneurs that need finance from the liquidity needs of investors. The standard deposit contract, redeemable at par, and loan provision to opaque entrepreneurial projects are complementary to the function of a bank.[2] However, their liquidity creation role leaves banks vulnerable to runs. A deposit redeemable at par leaves banks exposed to failure when returns are low. This possibility

[2] For different versions of the story see Diamond and Dybvig (1983); Holmström and Tirole (1997, 1998).

has desirable incentive properties [3] but may lead to failures, panic, and systemic crises with potentially a major impact on the economy given the central role played by financial intermediation.

The coordination problem of depositors, who may decide to call back their short-term deposits, can make a sound bank fail. Two views of crises have been advanced: the multiple equilibrium panic view[4] and the information-based view[5]. According to the former, runs are triggered by events unrelated to the fundamentals ("sunspots"), while according to the latter runs are triggered by bad news on the assets of the bank. Those views have been reconciled introducing asymmetric information and linking the probability of a run to the strength of fundamentals.[6] To this the danger of systemic risk owing to contagion from the failure of an entity should be added.[7]

In summary, banking is fragile and institutions face an important probability of failure, a potentially severe moral hazard problem, and failure has associated a large social cost, which may be of a systemic nature.

3. The nature of competition in banking and stability

The standard model of perfect competition is not appropriate for the banking sector. Financial intermediation arises in fact in response to the incompleteness of markets. Main sources of frictions in banking that lead to imperfect competition are switching costs and networks, particularly in retail banking, and asymmetric information, particularly in corporate banking. These frictions raise entry barriers and explain the

[3] In Diamond and Rajan (2001) the demand deposit contract creates a coordination problem for investors that prevents the banker from extorting rents on his abilities to collect illiquid loans. In Calomiris and Kahn (1991) or Gale and Vives (2002) it disciplines bank managers subject to a moral hazard problem.

[4] Diamond and Dybvig (1983).

[5] Gorton (1985), (1988); Jacklin and Battacharya (1988).

[6] See Rochet and Vives (2004), and Goldstein and Pauzner (2005). Postlewaite and Vives (1987) provided an early model with a unique equilibrium where the probability of a crisis is determined by the realization of the liquidity needs of depositors, which are private information.

[7] See, e.g., Allen and Gale (2001).

importance of reputation in the sector. The exercise of market power is therefore a natural phenomenon in banking.[8]

The specificities of the banking industry do affect the desirability of competition in the sector. Competition is not the culprit for the fragile character of banking. A monopoly bank can be subject to a run. Fragility comes from the coordination problem faced by investors that generates multiple equilibria, some of which may imply the collapse of institutions or the whole system.[9] However, more competition, by raising deposit rates, may exacerbate the coordination problem of depositors.[10] Another matter is that the intensity of competition can be excessive in banking. On one hand competition erodes rents that provide banks with a charter value and incentives to monitor projects.[11] Furthermore, an increase in the number of banks, that face an adverse selection problem in the loan market, lowers the average credit worthiness of successful loan applicants (that pass a screening test).[12] On the other hand, competition tends to lower the rates that firms have to pay for loans and therefore may improve the average quality of loan applicants and/or lower the need to ration credit. For example, better terms for entrepreneurs means that they make more profits and become more cautious, affecting in turn the probability of failure of the bank. When both banks and firms have to monitor their investments there is a potential ambiguous relationship between market structure and risk taking.[13]

Indeed, a bank faces both adverse selection and moral hazard problems when lending to firms. A higher rate set by the bank will tend to draw riskier applicants -adverse selection- and/or induce the borrower firms, which have also limited liability, to choose riskier projects -moral hazard. Banks may find optimal then to ration credit instead of

[8] Vives (1991).

[9] Matutes and Vives (1996).

[10] Rochet and Vives (2004) and Goldstein and Pauzner (2005).

[11] Keeley (1990).

[12] See Broecker (1990), Riordan (1993), Marquez (2002) for theories of excessive competition in the credit market due to a winner's curse problem.

[13] Caminal and Matutes (2002), Boyd and de Nicolo (2005).

raising the interest rate. A bank with market power has more incentive to alleviate this asymmetric information problem by investing in monitoring the projects of firms and establishing long term relations with customers.[14] This effect tends to increase the availability of credit to firms. Market power has also the usual effect of increasing the lending rate and therefore increasing the tendency towards credit rationing to avoid the increase of the average riskiness of the pool of applicants. Even abstracting from the possibility of banking failure market power presents a welfare trade-off since more bank market clout diminishes the moral hazard problem faced by the bank but aggravates the problem for the entrepreneur. The result is that some market power tends to be good unless monitoring is very costly.[15] If to this we add the possibility of banking failure the analysis becomes more complex. In principle a first effect of higher lending rates due to market power is to depress investment and, under plausible assumptions, to decrease the overall portfolio risk of the bank. More rivalry then should increase the probability of failure of the bank and have adverse welfare consequences. However, more competition may destroy also incentives to monitor and therefore reduce lending. If the latter effect is strong enough a monopolistic bank may be more exposed to aggregate uncertainty (because it tends to ration credit less) and be more likely to fail.[16]

All in all it seems plausible to expect that, once a certain threshold is reached, an increase in the level of competition will tend to increase risk taking incentives and the probability of failure of banks. This tendency may be checked by reputational concerns[17], by the presence of private costs of failure of managers, or by regulation.

4. The role of regulation

Fragility and potential excessive risk taking in banking have led to the establishment of facilities to stabilize the system and prudential measures to check risk taking. The Lender

[14] Besanko and Thakor (1993), Petersen and Rajan (1994, 1995).

[15] Caminal and Matutes (1997).

[16] Caminal and Matutes (2002).

[17] Because a better reputation lowers the cost of outside finance to the bank (see Boot and Greenbaum (1993)).

of Last Resort facility (LOLR), typically at the central bank, and deposit insurance are two of the basic policy instruments to stabilize the system.

A potential problem is that the policy of a well-intentioned LOLR may be time inconsistent. Ex post, once an institution is in trouble, it is typically optimal to help whenever this salvages the value of projects monitored by a bank. However, if bankers anticipate the help they will tend to exert a suboptimal level of (unobservable) effort. For example, ex ante the central bank may want to commit to close the bank if the returns are low enough (pointing to a solvency problem), while helping the bank if the returns are only moderately low (pointing to a liquidity problem). Such a commitment provides incentives for bank managers to monitor the projects they finance. In this way the central bank may implement the second-best solution in a competitive banking system. Building a central bank with a "tough" reputation can alleviate the time-inconsistency problem.[18]

The LOLR facility and the deposit insurance system may introduce distortions into the decisions of financial entities. Indeed, they reduce the incentive of depositors to monitor the bank and, coupled with the bank's limited liability, they may give rise to excessive risk taking. Competition for deposits may be excessive and the situation may be made worse with flat premium deposit insurance since the latter increases the elasticity of the residual supply of deposits faced by a bank.[19] Risk-based deposit insurance moderates risk taking incentives but still banks may take too much risk in the presence of a social cost of failure. On the asset side limited liability will induce banks to take excessive risk except if the risk position of the bank can be assessed by investors (e.g. with enough disclosure) and investors are not protected.

The need for regulation is particularly acute when charter values are low -and therefore incentives to take risk are high- and the social cost of failure is high -and therefore banking failure has a large impact. With either very high disclosure requirements or risk-based insurance, banks pay if they take more risk and capital requirements may be a

[18] See Gale and Vives (2002).

[19] Matutes and Vives (1996 and 2000).

sufficient instrument to control risk taking. Otherwise, capital requirements may need to be complemented with restrictions on the bank portfolio. Both risk-based (deposit) insurance and disclosure requirements have been proposed to limit risk-taking behavior in a move towards the top and the bottom rows of Table 1.[20] This movement has been accompanied by a reform of the 1988 Basel Accord on capital requirements to adjust them better for risk (so-called Basel II). The three pillars on which modern regulatory reform is based are capital requirements, supervision, and market discipline.

Table 1. Banking regimes, the incentives to take risk on the liability and asset sides, and regulatory instruments when charter values have low values and the social cost of failure is high.

	Risk-taking incentives		
Banking regimes	**Liability (rates)**	**Asset (investment)**	**Regulation**
Free banking (observable risk/high disclosure)	Medium-low	Absent	Capital requirements
Free banking (unobservable risk/low disclosure)	Medium-high	Maximal	Capital requirements and asset restrictions
Risk-insensitive insurance	High	Maximal	Capital requirements and asset restrictions
Risk-based insurance	Low	Absent	Capital requirements

5. What next?

The issues discussed in this introductory chapter are dealt at length in the survey of the theoretical literature in the chapter by Elena Carletti. The chapter by Hans Degryse and Steven Ongena reviews the empirical evidence on the source of bank rents. Those authors analyze the implications of market structure and frictions on banking performance. It is found that average market concentration results in significant spreads in both deposit and loans markets. Increases in competition are met by institutions trying to obtain fee

[20] Table 1 is taken from Vives (2006) and is based on Matutes and Vives (2000) as well as Cordella and Yeyati (2002) and Hellman *et al*. (2000).

income from stable relationships with customers. Switching costs are found to be an important source of rents. However, the evidence on the link between the duration of relationships and spreads is ambiguous so far. There are also some intriguing differences between banks in the US and Europe. Indeed, only banks in Europe seem to extract rents with higher loan rates from their relationship borrowers. As far as location goes it is found that close borrowers tend to pay a higher loan rate but that distance has a small effect on credit availability. Finally, regulation continues to be a very relevant source of bank rents. In Europe competition policy authorities have an important role to play to ensure that cross-border mergers are not unduly prevented.

The picture that follows from the two chapters is complex and a host of issues is left open and in need of further research. The very model of banking competition would gain with a better integration of competition on both sides of the balance sheet of the bank as well as a careful consideration of both depositors and borrowers. We need to understand better also the relationship between competition and fragility. A better understanding of the relationship would yield insights on how to design more effective regulation. For example, our knowledge of the impact of capital requirements is still somewhat fragmentary. An improved theory of bank capital would help here. On the empirical side we would need more work targeted to check the impact of electronic banking and the interplay with traditional banking, to ascertain the impact of competition on risk-taking incentives and failure probabilities, and to analyze the incentives and consequences of mergers. New knowledge would be welcome also to design an appropriate competition policy for banking that is consistent with the regulatory frame.[21] Finally, it is necessary to study more deeply the role of banks, competition and the appropriate regulation for emerging economies.

[21] Some headway is made by Perotti and Suárez (2002).

References

Allen, F., and Gale, D. (2001), "Financial Contagion" in *Journal of Political Economy*, 108, 1, 1-33.

Besanko, D., and Thakor, A. (1993), "Relationship Banking, Deposit Insurance and Bank Porfolio", in C. Mayer and X. Vives (eds.), *Capital Markets and Financial Intermediation*, Cambridge: Cambridge University Press.

Boot, A., and Greenbaum, S. (1993), "Bank Regulation, Reputation and Rents: Theory and Policy Implications", in C. Mayer and X. Vives (eds.), *Capital Markets and Financial Intermediation*, Cambridge: Cambridge University Press.

Boyd, J., and De Nicoló, G. (2005), "The Theory of Bank Risk Taking and Competition Revisited", *Journal of Finance*, 60, 3, 1329-1343.

Broecker, T. (1990), "Credit-Worthiness Tests and Interbank Competition", *Econometrica*, 58, 2, 429.

Calomiris, Ch., and Khan, C. (1991), "The Role of Demandable Debt in Structuring Optimal Banking Arrangements", *American Economic Review*, 81, 3, 497-513.

Caminal, R., and Matutes, C. (1997), "Can Competition in the Credit Market be Excessive?", London, CEPR Discussion Paper No. 1665.

Caminal, R., and Matutes, C. (2002), "Market Power and Banking Failures", *International Journal of Industrial Organization*, 20, 9, 1341-1361.

Cordella, T., and Yeyati, E. L. (2002), "Financial Opening; Deposit Insurance, and Risk in a Model of Banking Competition", *European Economic Review*, 46, 3, 471-485.

Diamond, D., and Dybvig, P. (1983), "Bank Runs, Deposit Insurance and Liquidity", *Journal of Political Economy*, 91, 401-19.

Diamond, D., and Rajan, R. (2001), "Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking", *Journal of Political Economy* , 109, 2, 287–327.

Diamond, D., and Rajan, R. (2000), "A Theory of Bank Capital", *Journal of Finance*, 55, 6, 2431-2465.

Gale, D., and X. Vives (2002), "Dollarization, Bail Outs, and the Stability of the Banking System", *Quarterly Journal of Economics*, 117, 2, 467-502.

Goldstein, I., and Pauzner, A. (2005), "Demand Deposit Contracts and the Probability of Bank Runs", *Journal of Finance*, 60, 3, 1293-1327.

Gorton, G. (1985), "Bank Suspension of Convertibility", *Journal of Monetary Economics*", 15, 2, 177-193.

Gorton, G. (1988), "Banking Panics and Busines Cycles", *Oxford Economic Papers*, 40, 4, 751-781.

Hellmann, T. F., Murdock, K., and Stiglitz, J.E. (2000), "Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?", *American Economic Review*, 90, 1, 147-65.

Holmström, B., and Tirole, J. (1997), "Financial Intermediation, Loanable Funds and the Real Sector", *Quarterly Journal of Economics*, 112, 3, 663-691.

Holmström, B., and Tirole, J. (1998), "Private and Public Supply of Liquidity", *Journal of Political Economy*, 106, 1, 1-40.

Jacklin, C., and Battacharya, S. (1998), "Distinguishing Panics and Information-Based Bank Runs: Welfare and Policy Implications", *Journal of Political Economy*, 96, 3, 568-592.

Keeley, M. (1990), "Deposit Insurance, Risk, and Market Power in Banking", *American Economic Review*, 80, 5, 1183-1200.

Marquez, R. (2002), "Competition, Adverse Selection, and Information Dispersion in the Banking Industry", *Review of Financial Studies*, 15, 3, 901-926.

Matutes, C., and Vives, X. (1996), "Competition for Deposits, Fragility, and Insurance", *Journal of Financial Intermediation*, 5, 2, 184-216.

Matutes, C., and Vives, X. (2000), "Imperfect Competition, Risk Taking and Regulation in Banking", *European Economic Review*, 44, 1, 1-34.

Perotti, E., and Suarez, J. (2002), "Last Bank Standing: What Do I Gain if You Fail?", *European Economic Review*, 46, 9, 1599-1622.

Petersen, M., and Rajan, R. (1994), "The Benefits of Lending Relationships: Evidence from Small Business Data", *Journal of Finance*, 49, 1, 3-37.

Petersen, M., and Rajan, R. (1995), "The Effect of Credit Market Competition on Lending Relationships", *Quarterly Journal of Economics*, 110, 2, 407-43.

Postlewaite, A., and Vives, X. (1987), "Bank Runs as a Equilibrium Phenomenon", *Journal of Political Economy*, 95, 3, 485-491.

Riordan, M. (1993), "Competition and Bank Performance: A Theoretical Perspective", in C. Mayer and X. Vives (eds.), *Capital Markets and Financial Intermediation*, Cambridge, Cambridge University Press.

Rochet, J.-C., and Vives, X. (2004), "Coordination Failures and the Lender of Last Resort: was Bagehot Right After All?", *Journal of the European Economic Association*, 2, 6, 1116-1147.

Vives, X. (1991), "Banking Competition and European Integration", in A. Giovanni and C. Mayer (eds.) *European Financial Integration*, Cambridge: Cambridge University Press.

Vives, X. (2001), "Restructuring Financial Regulation in the European Monetary Union", *Journal of Financial Services Research*, 19, 1, 57-82.

Vives, X. (2006), "Banking and Regulation in Emerging Markets", *The World Bank Research Observer*, 21, 2, 179-206.