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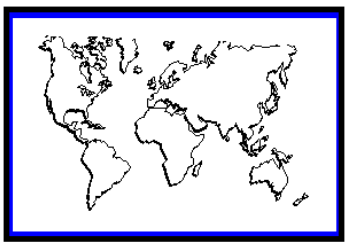

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Economic Integration and Banking Mergers Strategies

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Abstract

In this work we develop a spatial model to explain local megers and acquisitions (M&As) in European retail banking systems as strategic reactions to changes in regulation and economic integration. We show that local banking concentration increases market power and contributes to build new barriers to entry. Local M&As yield positive social results in the first economic integration stages, but could damage welfare in more advenced stages in cases where they serve to safeguard price agreements in front of foreign competition.

Our results seem to conform to experiences of most European banking markets during the last two decades.

1 Introduction

It is generally accepted that economic integration increases economic growth and improves welfare provided that two conditions are satisfied: i) bigger firms are created in the sectors exhibiting economies of scale and/or scope; ii) competition is strengthened across the integrated area[1].

The two recent stimuli to higher integration in Europe, which are the launching of the Single Market and the creation of the EMU area, have triggered unprecedented waves of firm mergers and acquisitions in many leading economic sectors. In the banking industry, on which this paper concentrates, economic restructuring is probably not taking place under the two general conditions specified above. On the one hand, it is not sure that the new and bigger banking firms reap economies of scale and/or scope. The empirical research does not provide unanimous results in this field, although recent studies which take into account the gains in terms of reputation and risk diversification provide better conclusions for economic performance. On the other hand, banking mergers put a brake to advances in competition, especially in retail banking, since the bulk of mergers and acquisitions in that segment is taking place between firms of the same country. Note that, in little-tradable sectors as retail banking, merging

[1] This is, for instance, the idea supporting the forecasts of the Cecchini Report on the positive effects of the European Single Market.

operations between two partners reduce the number of firms in the relevant market when partners are domestic, but keep it constant when members belong to different countries.

The counter effects of local banking concentration on competition have been stressed in many recent contributions. Bikker and Groeneveld (1998) and Brandt and Davis (1999), for instance, show that market power has increased in the European banking systems in recent years as a result of the merger waves, and a similar conclusion is obtained by Dymsky (1999) regarding the United States.

Consequently strategic reactions of the banking firms might damage economic and social welfare if the current banking concentration patterns persist in the coming years.

Our main objective in this work is to analyse the strategic reactions of banks triggered by the recent European financial integration processes. More specifically we want to explain theoretically i) why advances in economic integration favour banking mergers and acquisitions (M&As) within the borders, ii) the relationship between those operations and barriers to entry, and iii) the consequences of these reactions on national welfare.

In order to characterize the problem conveniently and to justify our theoretical approach, in the first part of the work we present some stylised facts of the European banks behaviour along the last fifteen years. We focus especially on the evolution of interest margins, profit rates, concentration indexes and foreign bank penetration. In the second part we elaborate a dynamic spatial model (by enlarging the static Salop (1979) general framework) to derive bank reactions in the face of administrative and institutional changes in the financial environment. Our approach allows to determine the optimal number of bank branches and the price level in each context, and to measure the consequences of bank responses on economic and social welfare.

The modelling rooted in spatial economics has been applied to investigate other kind of problems in the banking industry. Thus Matuters and Padilla (1994) built a spatial framework with three commercial cores to analyse the best strategies concerning branches and cash dispenser networks in two alternative price-regulation scenarios. Fuentelsaz (1999) explored the effects of both the demand density and the degree of competition on the size of bank branch networks. Our approach differs from the previous ones mainly in incorporating dynamic features which are crucial to analyse the stability of the collusive solutions and the reactions of banks in the face of cost-of-entry reductions. We show that banking M&As inside the borders are rational responses of domestic banks that set obstacles in each of the two traditional entry ways available to foreign banks which are creating new branches and acquiring domestic established banks. Furthermore, our study shows that M&As activities entail welfare losses when they exceed certian upper limit.

The remainder of this paper is organized as follows. Section 2 highlights some general features of the European banking experience during the last years. Section 3 presents the theoretical framework and derives equilibrium conditions under different competition degree scenarios. Section 4 investigates the effects of economic integration on bank strategies, and determines the conditions under

which entry is feasible. Section 5 explains the rationale and the effects of local mergers. Finally, in Section 6 we summarize the main results and derive some policy implications.

2 Recent banking developmentes in the EU

Until the mid 1970s European national banking systems were tightly regulated and protected from foreign competition. As a result, national markets enjoyed high stability and exhibited oligopolistic developments. The local banking firms reacted strategically in two ways. In the first place, they reached collusion agreements in prices (rates and/or fees) and, in the second place, they shifted competition to the area of branches opening. In some cases, collusive agreements were encouraged by national govenments (Vives 1999). Two important implications were: i) prices and profits reached high standards, and ii) the density of the branches network increased substantially in all countries. Although some liberalising actions were set in motion in most European countries in the second half of the seventies, this status quo did not change in the essential until the late 1980s. Some empirical studies demonstrate that banking firms operated under conditions of imperfect competition in a very large part of that area in the years preceding the creation of the European Single Market (Lloyd-Williams, Molyneux and Thornton 1994, Molyneux, Lloyd-Williams and Thornton 1994, Chiappori, Pérez Castrillo and Verdier 1995, and Vander Vennet 1995), at the same time as branches networks became very dense in the more colluded national markets (see Table 1 for the relevant years)[2].

The signature of the European Single Act in 1985 and the consubstantial measures to achieve the European Single Market (ESM) seven years later changed the European banking environment substantially. The ESM is the first great leap forward in the process of economic liberalization and integration in the EU. In the field of finance and banking, it established measures to liberalize and deregulate the provision of services inside national borders, and to harmonize prudential rules at European level. The Second Banking Directive, promulgated in 1989 and in force since 1993, established the principles of home country control and mutual recognition in the exercise of banking activities, and it is the best regulatory frame for a true European banking market.

The enlarged market and the new possibilities to provide across-border financial services has vitally intensified the competitive environment in each country. Potential entry by foreign banks and the increase in the number of other financial intermediaries have been important competitive weapons in this process[3]. Here, again, domestic banks have responded promptly to those institutional and environmental changes by adopting several operative and strategic measures. First of all, they have reduced interest-rate margins,

[2] These works refer to the banking markets of Germany, United Kingdom, France and Spain. The analysis by Maudos and Pastor (1999) concentrates on the Spanish case in the period 1985-1996, and shows that Spanish banks enjoyed market power in determining prices along this period.

[3] Some non-bank financial intermediaries, such as insurance companies, car dealers and supermarket chains, provide some financial services in close competition with banks.

a proof of the pressure they suffer in their classical intermediation activities. Table 2 indicates that these margins dropped continuously in six representative European countries along the period 1991-1998, and Graph 1 shows that this trend persisted for the EU average until the third quarter of 1999. An inquiry carried out by European Communities (1997) revealed that interest rates applied by banks decreased on both sides of the banks' balance sheets (credits and deposits), owing mainly to the creation of the ESM.

Second, as a consequence of the general dropping in interest rates, European banks have looked for alternative sources of income, such as fees and commissions, as a way to restore their degree of competitiveness and profits. Table 3 shows that non-interest income as a proportion of operative income increased in each country of our sample between 1990 and 1998. However, since the development of non-interest income did not fully offset the reduction in the interest margin during the first part of the 1990s, profits decreased until 1994 (Table 4 and Graph 2). Third, European banks had invested more and more in communication networks and information technology, particularly in the wholesale and industrial segments.

The fourth response is consolidation via mergers and acquisitions, and deserves special analysis because it has important consequences for efficiency and social welfare. In fact, banking mergers and acquisitions have increased substantially (between 50 and 90 deals per year in the period 1986-1994), and those with domestic partners have been clearly predominant in each European country[4]. Table 5 and 6 largely illustrate this phenomenon for the period 1995-1999. This is in sharp contrast with the USA experience in which the lifting of across-border barriers have estimulated multi-state M&As in the banking sector. In the EU, local consolidation has been frequently encouraged by national authorities as a way to make domestic champions big enough to not fail (Dantine et al 1999 and Vives 1999). As a result, local concentration indexes have achieved high levels in almost all European countries. As seen in Table 7 the assets of five largest credit institutions as a percentage of total assets increased steadly in all countries but France along the period 1985-1999.

When analysing the effects of M&As it is important to refer to the economic results. Recent empirical studies coclude that increasing the scale of banking operations brings about positive results when account is taken of the gains that the new entity obtains in terms of reputation and risk diversion (Boot and Greenbaum 1993, Hughes and Mester 1998). However, it seems that there are differences depending on the nature of the deal. Thus, according to the study of Vander Vennet (1997), referred to the period 1988-1993, whereas domestic mergers merely improve profitability and operational effciency, across-border acquisitions do reduce average costs[5]. The survey of Van Rooij (1999) goes in

[4] Gual (1999) stresses that these kinds of mergers are more likely when local banks resort to traditional ways to compete, such as reductions in unitary costs and prices.

[5] Akhavein, Berger and Humprey (1997), and Berger (1998) also found that domestic mergers improve profits but not costs efficiency in their analysis of the big bank mergers of the eighties and nineties, respectively. The rise in ROE (return on equities) since 1995, as shown in Table 4 and Graph 2, could be a sign of profit efficiency brought about by domestic M&As.

the same direction and points that local mergers do not improve cost efficiency with respect to banks which do not merge. This is consistent with the thesis that market power considerations inside the country have been an important steering force in domestic M&As. In fact, it turns out that a direct relationssship exists between local concentration and the ability to reap monopoly surpluses (Bikker and Groeneveld 1998, and Neven and Von Ungern-Sternberg 1998).

Another important feature which goes in the same direction is that the rate of foreign penetration in domestic markets have hardly reacted to economic openess and integration, and remain very low. Data in Table 8, covering the period 1985-1997, indicate that market shares of foreign branches and subsidiaries as a percentage of domestic assets is well under twelve per cent in almost all cases. This proofs that European markets remain quite segmented across national baundaries, particularly in retail banking. Although there are several barriers to entry (very dense branch networks, customer fidelity to domestic banks, disadvantages in information for foreign banks, etc.) that explain partially this outcome, the increase in market power in domestic banks is also responsible for this situation. This is so because 1) entrant banks are obliged to make important structural adjustments to compete effectively with domestic banks in the new environment they have to face (Dietsch and Lozano-Vivas 2000), and 2) adjustment costs increase with local concentration degree[6]. Consequently, local M&As make domestic banks acquisition by foreigners more expensive and operate, in this way, as a new obstacle to enter into the domestic retail market.

EMU is the second milestone in the important process of European integration of the last two decades. As in the case of the ESM, monetary union has supressed some sources of market segmentation and has thus contributed to lower the entry cost and to increase the degree of competition in the banking sectors of the Euro zone. The obstacles eliminated by EMU are: currency risks and the expertise of domestic banks in the elaboration and implementation of national monetary policies (Vives 1999). Furthermore, EMU makes market practices more transparent and pricing more uniform across the union[7]. The domestic banks strategic reactions have been similar to the case of the ESM launching. However, since the scope for further shrinking in the intermediation margin hardly exists, more emphasis is put on local merging operations. In fact, Tables 5 and 6 prove that there has been an important increase in the M&As activity in the two EMU years. Even though the reasons advanced by some banking firms to justify local mergers are related to retailing costs (reducing the potential spare capacity created by over branching), and increasing diversification, recent empirical works suggest that market power remains a predominant motive in the retail segment (Dantine et al. 1999). Consequently the same implications of M&As for entry barriers may be drawn

[6] This is true when, as in the cases we examine here, changes in concentration obey to market power motives.

[7] There are some obstacles resilient to the effects of the Single currency, which are deemed to brake across-border takeovers in the coming years. In addition to the segmenting factors cited above we should mention differences in corporate culture, legal and fiscal restrictions, and political interferences guided by a wrong interpretation of national interests.

here. This leads us to make some considerations about the effects of local merging on national welfare.

As pointed out by Vives (1999), some level of market power delivers positive welfare effects mainly for two reasons. First, market power makes banks less risky, and consequently less inclined to bankruptcy. Second, it helps to achieve the optimal number of firms in the cases where sunk costs are endogenously large and require that this number be small. This eventuality is more likely in wholesale and investment banking, where only a reduced number of large-sized banks may undertake the appropriate investments in new technologies. However, if market power goes beyond certain upper bounds, the reduction in the number of players turns out to be excessive and the solution worsens welfare. It is an empirical issue to discern where the threshold lies and in which cases it has been surpassed. In the retail segment the welfare effects of domestic M&As are negative when they serve to preserve collusive price agreements. The upward trend in the average EU intermediation margins since the third quarter of 1999 (Graph 1) could be a symptom of the agreemnt's strength.

To sum up, the protected and segmented environment in which European banking systems evolved until the mid 1980s gave rise to high (colluded and/or regulated) prices and dense branches networks. Segmentation has been reduced progressively through economic and finacial integration in which the ESM and EMU are important milestones. Competition has increased potentially at the same pace but has been dampened in practice (especially in the retail segment) by M&As within borders. This strategic response may have negative effects on welfare if it goes beyond a certain upper bound. In Section 3 we elaborate a model to explain both the rationale and the welfare effects of these strategic bank reactions.

3 The Model

Let us consider an economy with μ individuals uniformly distributed along one circumference sized 1. There are banking services provided by N banks through a total network of S branches. Individuals demand for those services on the basis of the price, p, and the distance (d) to the supplier branch. We assume that the utility (U) of the representative individual, x, who consumes bank i services is expressed by this additive and separable function:

$$U_{xi} = \omega - zd_{xi} - \frac{1-\alpha}{\alpha} q_{xi}^{\frac{-\alpha}{1-\alpha}} \tag{1}$$

where ω, z and α are constant parameters, and q_{xi} is the quantity of bank services that individual x buys from one branch of bank i. The individual demand may be obtained by equalysing marginal utility to the service price of bank i:

$$\frac{\partial U_{xi}}{\partial q_{xi}} \equiv U' = p \rightarrow q_{xi} = p_i^{\alpha-1}; \quad \alpha \leq 1 \tag{2}$$

Since it is worthwile for banks to offer their services as far as possible from competitors, they will try to maximize the distance between their branches, and consequently the whole set of branches will be homogenously distributed keeping the same distance between them $1/S$. Obviously, prices must lay under an upper bound so that individuals can resort to banks and buy their services. Finally, we assume that banks must carry out two kinds of costs to operate in the market: a fixed cost, F_i required by the general centralized functioning, products design, normal owners remuneration, etc., and a unitary cost, c, per each branch opened.

Let us denote s_{it} the number of branches that bank i keeps open at the moment t, and p_{it} the price in each of its branches; let p_t be the price level applied by the rest of competitors, and δ the discount rate[8]. The profits (Π_t^i) and bank value (V_t^i) of bank i at a moment t will be:

$$\begin{array}{c} \Pi_{i,t+h} = s_{i,t} p_{i,t}^{\alpha} \mu \left[\frac{1}{S} + \frac{p_t^{\alpha} - p_{it}^{\alpha}}{z\alpha} \right] - F_i - c s_{i,t} \\ V_t^i = \sum_{h=0}^{\infty} (1-\delta)^h \Pi_{i,t+h} \end{array} \tag{3}$$

From now on we will omit the time subscript when possible.

By assuming that profits of the same bank are time independent, optimality requires profit maximization in each period. For that, banks decide in each period about the two strategic variables under their control, namely prices and the number of branches.

Let's first analyse the Nash framework in which each bank determines its own price by assuming that competitors do not change their prices:

$$\frac{\partial \Pi_i}{\partial p_i} = 0 \rightarrow p_i^{\alpha} = \frac{1}{2} \left[\frac{z\alpha}{S} + p^{\alpha} \right] \tag{4}$$

The symmetric behaviour of firms leads to:

$$p = \left(\frac{z\alpha}{S} \right)^{\frac{1}{\alpha}} \tag{5}$$

The optimal number of branches is obtained in a similar way:

$$\frac{d\Pi_i}{ds_i} = 0 \rightarrow \frac{S - s_i}{S^2} + \frac{p^{\alpha} - p_i^{\alpha}}{z\alpha} = \frac{c}{\mu} p_i^{-\alpha} \tag{6}$$

$$S = Ns = \frac{\mu(N-1)}{cN} p^{\alpha} \tag{7}$$

From the last expression we derive that in the Nash solution the number of total branches increases with price and population density, and decreases

[8] Since differences between banks rely only on fixed costs, a symmetric equilibrium may be expected for all variables except for individual profits. Differences in fixed costs are rooted on historical factors which determine efficiency.

with unitary branch costs. Furthermore, the number of banks (N) affects s negatively and S positively.

Suppose now that there are absolute entry barriers that allow firms to reach price agreements. With high colluded prices, firms compete by opening new branches, and this makes the price agreement more stable. Once the price is settled by (p^C), the optimal number of branches for each individual bank is given by (7).

The collusion price ranges between two extreme values. The maximum value is determined by cotrasting the discounted profits of one firm under two alternative scenarios: a) the firm complies with the agreement, and b) the firm distrusts the agreement. Let's examine these scenarios in turn.

In the first case, the firm gets the profit Π^Cduring the whole time horizon. To analyse the second situation, we take into account that the profit of a non-compliant firm lasts only one period and is obtained by assuming that all the rivals adhere to the collusion price. The optimal price for this breaking period, p^b, and the profit associated to it , $\Pi^b$are:

$$p^b = \left[\frac{z\alpha}{2S} + \frac{p^\alpha}{2}\right]^{\frac{1}{\alpha}} \rightarrow \Pi_i^b = \frac{\mu s^C}{4z\alpha}\left(\frac{z\alpha}{S} + p^\alpha\right)^2 - cs^C - F_i \tag{8}$$

The collusion agreeement breaks in the second period, and since then the Bertrand-Nash price (p^B) prevails. This price leads to this per year profit:

$$p^B = \left(\frac{z\alpha}{S}\right)^{\frac{1}{\alpha}} \rightarrow \Pi_i^B = \frac{\mu\alpha z}{NS} - cs^C - F_i \tag{9}$$

The maximum collusion price, p^C, is the price for which the two scenarios bring about the same amount of discounted profits:

$$\frac{\Pi^C}{\delta} = \Pi^b + \frac{(1-\delta)\Pi^B}{\delta} \rightarrow p^C = \left[\frac{z\alpha(4-3\delta)}{\delta S}\right]^{\frac{1}{\alpha}} \tag{10}$$

To obtain the minimum collusion price we take into consideration the stability condition, according to which for the agreement to be credible, the agreed price must overcome a minimum level (p^m). Under this level, non compliant deviations trigger retaliation and the agreement collapses. For prices between p^m and p^C firms find compliance worthier than breaking from it, in the sense that even whitout any price reaction they obtain a profit which is higher than that derived from retaliation. Consequently, p^m is obtained as follows:

$$\frac{\mu p^\alpha \left[z\alpha(2N-1) - Sp\alpha\right]^2}{2z\alpha N(N-1)} < \frac{\mu\alpha z}{NS} \rightarrow p > p^m \equiv \left[\frac{\alpha z}{S}2(N-1)\right]^{\frac{1}{\alpha}} \tag{11}$$

Expressions (5), (10) and (11) can be presented as particular cases of equation (12)

$$p = \left[\frac{z\alpha(1+\gamma)}{S}\right]^{\frac{1}{\alpha}}; \quad \begin{array}{c} \gamma = 0 \\ 2N-3 \leq \gamma \leq 4\left(\frac{1-\delta}{\delta}\right) \end{array} \tag{12}$$

The relationship between the three important variables, namely the number of banks (N), the total amount of opened branches (S), and the equilibrium price (p) deserves special consideration, and we analyse it with the help of Figure 1. The line $S(p, N)$ corresponds to equation (7) and indicates that higher prices (as a result of an increased collusion degree) are linked to an increase in total branches. Curves $p^B(S)$ and $p^C(S)$ correspond to equations (5) and (10), respectively, and reflect a negative relationship between price and branches for the two extreme values of collusion degree. The line $p^m(S, N)$ (equation (11)) reflects a similar relationship to the latter but corresponding to the collusion degree which brings about the lowest collusive price p^m.

The equilibrium point lies along the curve $S(p, N)$ between B and C, depending on the collusion degree. However, for the reasons explained above, there is a discontinuity which makes segment Bm non operative and consequently the equilibrium is either Nash competitive (point B) or shows a cetain degree of stable collusion (segment mC)[9]. When the number of banks (N) increases, curves $S(p, N)$ and $P^m(S, N)$ shift downwards, and a new segment BC is obtained with lower prices and bigger amounts of total branches.

For given values of N and (stable) γ the equilibrium point is derived solving for (7) and (12):

$$S = Ns = \sqrt{\frac{\alpha z\mu(1+\gamma)(N-1)}{Nc}} \tag{13}$$

$$p = \left[\frac{z\alpha(1+\gamma)Nc}{\mu(N-1)}\right]^{\frac{1}{2\alpha}} \tag{14}$$

4 Economic integration and entry

We analyse here the effects of economic integration advances on bank strategies by assuming that these institutional changes reduce fixed costs of foreign banks (F_f) planning to operate in the domestic country. Economic integration and financial openness are in fact cost-of-entry reductions for new foreign competitors. In this sense, it seems reasonable to assume that the removal of barriers in capital movements and banking setting-up inherent to the ESM,

[9] If the agreement is explicit, the optimal strategy for each bank is (p^C, s^C). For any other collusive price, $p \in (p^m, p^C)$, the optimal response is to fulfil the agreement. Uncertainty and certain costs associated to negotiations for new agreements may explain this result.

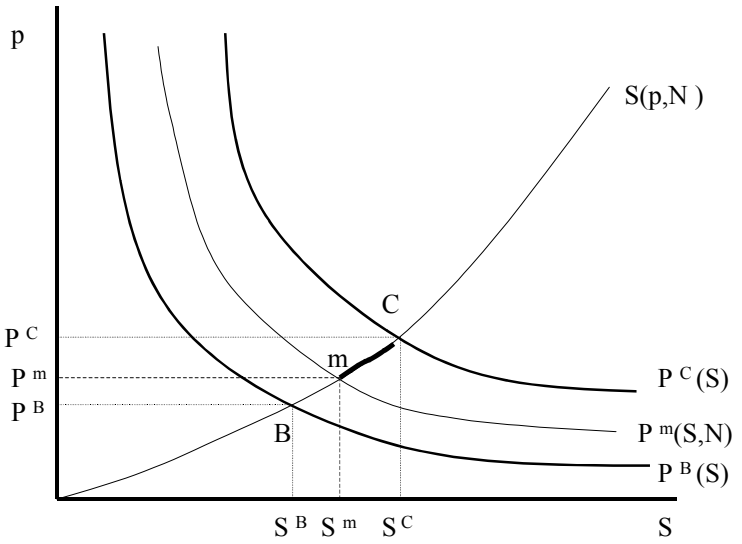

Figure 1: Equilibrium and stability

and the EMU environment gives rise to two important fixed cost reductions for foreign banks. However, some fixed costs remain, fragmenting national markets to some extent. Some examples are advertising expenditures necessary to operate in the host country, and the advantages of domestic banks built upon their historical relationships with customers.

The potential entrants can gain access in two ways: by creating a new entity with its own branches' network, and/or by acquiring an already settled bank. Let's examine each of these strategies in turn.

4.1 Coming in through a new branches' network

The possibility of new foreign competitors breaks the symmetry of the model and requires that we introduce in the analysis the time necessary for a bank to start business and open new branches. During this time span domestic banks can modify their price policy in order to point out to potential entrants a new collusive behaviour. We will assume that the foreign candidates will fulfil the existing agreement provided that the price in the domestic market satisfies $p^m \leq p \leq p^C$. Given this price, foreign banks will decide on entry or not entry and, in the first case, on the number of branches. Denoting S_d and S_f the total number of branches of domestic and foreign banks, respectively, the optimal branches strategy of foreign banks (considered as price-takers) is derived as follows:

$$\frac{\partial \Pi_f}{\partial s_f} = 0 \rightarrow \mu p^{\alpha}(S_d + S_f - s_f) = c(S_d + S_f)^2 \tag{15}$$

This together with the free entrance condition (profits come down to zero)

we obtain both the number of bank entrants and the number of branches they want to open:

$$N_f = \sqrt{\frac{\mu p^{\alpha}}{F_f}} - \frac{cS_d}{\sqrt{\mu p^{\alpha} F_f} - F_f}; \quad s_f = \frac{\sqrt{\mu p^{\alpha} F_f} - F_f}{c} \tag{16}$$

If entrance takes place, the individual profits of domestic banks will be:

$$\Pi_i = \frac{cs_d F_f}{\sqrt{\mu p^{\alpha} F_f} - F_f} - F_i \tag{17}$$

This result reveals that when entrance cannot be precluded, the already (domestic) settled firms will have a clear incentive to set prices at the lowest level which is the Nash equilibrium one. But foreign banks are not ready to enter at any price. In fact, there is a minimum or indifference price (p^L) under which foreign competitors do not find coming in worthwile. Since at this threshold the first foreign bank is indifferent to entering or not, it is derived from (16) by setting $N_f = 1$:

$$p^L = \left[\frac{1}{\mu}\left(\sqrt{cS_d} + \sqrt{F_f}\right)^2\right]^{\frac{1}{\alpha}} \tag{18}$$

This relationship shows that p^L increases with S. As indicated above, domestic banks are interested in reducing p in so far as the value of this variable does not come under p^B. By doing so they restrict entrance and preserve a higher market share. However, when in this downward way p finds p^L before p^B the process stops since at that level entrance is precluded. From the preceding reasoning some considerations can be made:

- To the extent to which price collusion leads to an oversized branches network, this kind of price agreement makes entrance more difficult when economic integration takes place.

- The strategic reactions of domestic banks to advances in economic integration restrict entrance, but a variety of cases can be discerned depending on the initial value of foreign banks fixed costs. In Figure 2 we represent four situations which differ on the position (directly related to fixed costs) of the curve $p^L(S)$ derived from equation (18)[10].

In case A, entrance costs are very high and curve $p^L(S)$ cuts $p^C(S)$ above point C. As can be seen entrance is completly obstructed for any equilibrium of the internal market since even the highest collusive price is lower than the minimum price required by foreign competitors. In case B the entrance costs are lower and the curve $p^L(S)$ cuts $S(p, N)$ somewhere between points B and C. Obstruction to entry is also completly operative, but is generated

[10] Given that in the analysis of these situations stability is not a focal point, for simplicity we do not include the line $p^m(S, N)$ in Figure 3. We will take it into account in later figures.

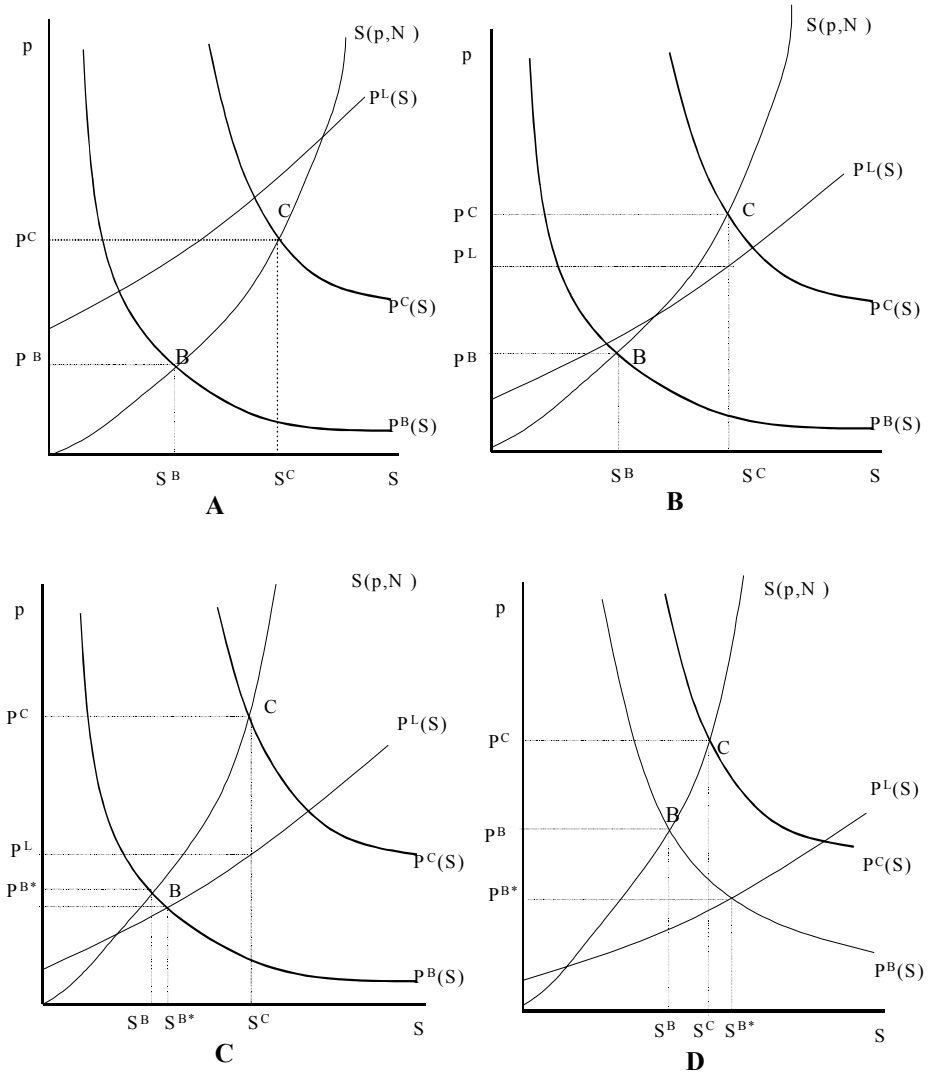

Figure 2: Reactions to economic integration

by mechanisms which differ according to the initial domestic collusion degree. When the collusion degree is high and $p > p^L$ the strategic reaction of the settled banks will be to reduce p until the level p^L,whereas for initial situations in which $p < p^L$ no reaction is needed to maintain entrance locked. In case C the curve $p^L(S)$ cuts $p^B(S)$ under point B, and the possibility of entry depends upon the initial situation. If the initial number of branches is lower than S^{B*}new banks will come in, and S will eventually achieve that value. However, if initially $S > S^{B*}$, price reductions will be an effective break for potential entrants. Finally, case D shows a situation in which entrance cannot be avoided even with the maximum collusion degree.

- If domestic settled banks anticipate changes in entry costs they will react in such a way that entrance will be totally blocked even in cases where it would have been possible (cases C and D). The reason is that when entrance cannot be avoided foreign entrants spill negative effects, in terms of smaller market share and lower price, over the already settled banks similar to those arising when the latter expand their own branches. In both cases, the equilibrium point moves away the initial $S(p, N)$ segment and shifts downwards along the curve $p^B(S)$. But there is an important difference because the positive effects in terms of scale economies are reaped only by the firms that enlarge their branch network. Consequently, if domestic banks anticipate the reduction in entrance costs sufficiently they will enlarge in advance and prevent entrance.

- The number of banks, N, affects the possibility of entry in the sense that it impacts on price and branch strategies. To examine these effects we represent in Figure 3 the basic curves of Figure 1 for two different initial number of already settled banks. The increase in N (going from N_0 to N_1) shifts $S(p, N)$ downwards and $p^m(S)$ upwards, and shrinks the optimal segment (identified by the dark line). The first shift reflects the fact that a higher value of N increases competitiveness in branches opening and allows lower prices for any previous value of total branches. The second shift indicates that increasing the number of banks reduces the possibility of maintaining stable collusive agreements. The net result is that if a higher N exists at the moment where reduction in entrance costs takes place, the possibility of a price war (represented by the unstable segment length) leading to a competitive Nash equilibrium will be reinforced. Domestic banks will have augmented difficulties since the enlargement of the branch network under this context entails increased operating costs and lower prices.

4.2 Coming in through across border acquisitions

As in the previous section we assume that there are foreign banks able to work with lower fixed costs than domestic banks (owing, for instance, to efficient centralized services located abroad), so that $F_f < F_i, i = 1, .., N$. This means that the acquired bank will improve cost efficiency as a result of the acquisition. Furthermore, the best candidates to be absorbed will be the less efficient in the domestic market because they will undergo the highest post acquisition

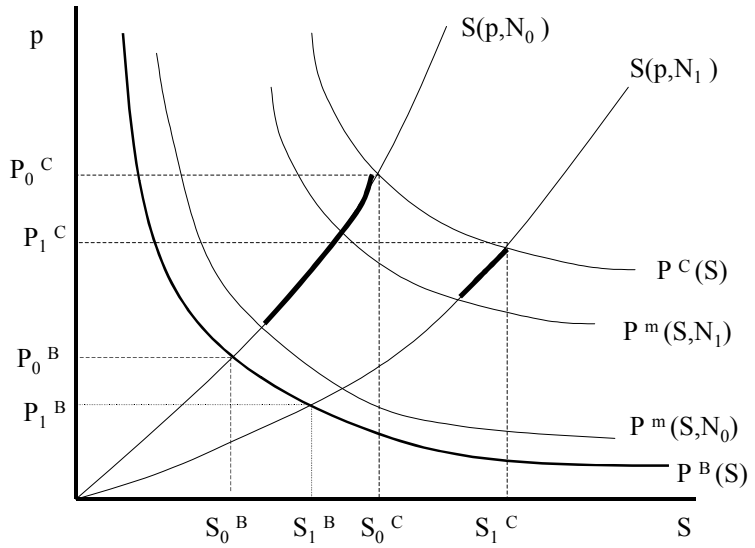

Figure 3: Stability conditions and the number of firms

revaluations[11]. Under these conditions, acquisitions are always worthwile.

We also assume that, in order to acquire one domestic bank, foreign banks have to pay some extra premium, β, that can be justified by several factors. First, domestic governments frequently show important reticences entailing additional costs in terms of licensing. Second, the size of the absorbed bank may generate problems of portfolio selection. And third, reticences from the board of directors compel foreign banks to make an acquisition public offer (APO) as the only way to guarantee purchase. In any case, this premium implies that for the transnational acquisition to be profitable, the following condition has to be met:

$$V_f \geq (1+\beta)V_N \tag{19}$$

which implies that

$$F_N - F_f \geq \frac{\beta}{N}\left(\mu p^{\alpha} - cS - NF\right) \tag{20}$$

The equality condition of (20) could be represented by a positive sloped line in the space (p, S). For the points above this line, inequality would prevail indicating that acquisition is not worthwile. The converse would happen below the line. Furthermore, this line would shift when parameters of expression (20) change. It is particularly interesting to note that reductions in N would shift

[11] We rank domestic banks according to their fixed costs following an increasing order, and denote F_N the fixed cost of the best candidate to be acquired.

the line downwards, making acquisitions more difficult, and that reductions in F_f and/or β would shift the line upwards making acquisitions easier.

By comparing the two entry ways, it seems that high degree of competitiveness in prices prior to economic integration, and low number of banks and branches favours entry creating new branches, whereas high values of N and reductions in β help entry through acquisitions.

5 Domestic mergers and entry

It can be easily shown that in closed economies with banking markets not excessively concentrated domestic banks find incentives to merge provided that the resulting gains in efficiency are sufficiently important. It is interesting to analyse to which extent a process of economic integration generates additional stimuli for domestic merging. In other words, we want to examine whether economic integration favours mergers between domestic banks even in cases where they were not profitable under a closed environment. The traditional point of view, as presented by Werden and Froeb (1998), is that economic integration does not help local mergers because freedom of entry weakens market power. This argument is valid when barriers to entry are completly exogenous and consist mainly of sunk costs. However there are many other barriers (defined in a wide sense) that depend positively upon the strategic responses of firms already settled to advances in economic integration[12]. In the following lines we use the theoretical frame developed in the preceding sections to explain the rationale for domestic mergers as a reaction to economic integration, and also their impact on size barriers and their likely effects on social welfare.

5.1 Rationale

As far as the economic justification of domestic mergers is concerned, our model provides at least two explanations. First of all, note that the reduction in price (from the collusive value, p^C, to the limit level, p^L,to prevent entry) may curtail profits considerably or even inflict losses. Since merging activities allow to reduce fixed costs, they would operate in fact as an appropriate mechanism to ease the process and rescue profits. Let's examine in more detail the conditions under which mergers are profitable for domestic banks.

[12]For example, by introducing consumers which are imperfectly informed about the banking offers, such as in Grossman and Shapiro (1984), we would get that the optimal advertising effort is an inverse function of N, and this circumstance makes entry more difficult.

On the other hand, to the extent that the harms impinged by an entrant are equally distributed among all the established firms, if N is small the existing banks will have more incentives to take actions for preventing entry. Some illustrative examples are: a) powerful domestic banks absorb other weaker banks as a defensive strategy or simply to avoid that these banks be acquired by foreign ones; b) important domestic banks undergo very costly advertaising campaigns to sustain some internet branches which are not profitable. The goal here is not to capture new customers (since advertising uses an annonimous or independent brand, and not the own bank image nor that of their conventional branches) but to prevent that foreign banks use the electronic banking as a way of entry.

Under the parameters of economic integration potential mergers take both the equilibrium price and the number of branches as given, and the profitability condition for merging is:

$$\Pi^M - 2\Pi^{WM} > 0 \rightarrow \nabla F N(N-1) > (\mu p^\alpha - cS)(N-2) \tag{21}$$

where Π^M denote profits of the new merged firm, Π^{WM} profits of the merging companies, and $\bigtriangledown F$ is the fixed costs reduction as a result of the merger. This reduction is obtained by substracting the fixed costs of the merged firm from the total fixed costs of the two merging banks.

Expression (21) can be represented in the space (p, S) in a similar way to condition (20). Both lines have the same slope and devide space in two areas: that containing the profitable merger points (below the line), and that composed of the non profitable ones (above the line). Both lines coincide for the parameter values satisfying the following condition:

$$\frac{F_N - F_f}{\nabla F} = \frac{\beta}{N-2} \tag{22}$$

From this expression it is apparent that the lower N is the highest the foreign bank advantage in fixed costs must be to find acquisition profitable.

The second explanation of domestic merging is related to the dynamic properties of price agreements. As explained above, price collusion stability requires that the agreed price be above a minimum level. This limit is represented by the curve $p^m(S, N)$ in Figure 1. Furthermore, this level raises with the number of firms because the increase in N pushes the curve $p^m(S, N)$ upwards. When the reduction in prices imposed by economic integration destabilizes the domestic market, local mergers (by reducing N) may be a way to recover stability.

Figure 4 makes the point clearer. Suppose that reductions in entry costs put the line $p^m(S, N)$ in the position illustrated in graph (a) of that figure. The strategic reaction of domestic banks will set the price level below the line $p^L(S, N)$ making then the collusive agreement unstable. Instability triggers further reactions and the process ends in point B in which a Nash competitive price prevails with a smaller number of total branches. By equalizing p^L and p^m we obtain the critical value of entrance costs under which domestic collusion breaks:

$$F_f = \left[\sqrt{\frac{\alpha\mu z}{S} 2(N-1)} - \sqrt{cS}\right]^2 \tag{23}$$

If domestic banks merge ($N_0 > N_1$) the curve $p^m(S, N)$ will move downwards as indicated in graph (b), and the collusive stability will be recovered in point C'. In this case, local mergers are a strategic reaction to preserve collusive price agreements. From the above reasoning it is easy to understand that some mergers which are not profitable in a relatively closed economy will be worthwile and justified (from the domestic banks point of view) after a certain degree of economic integration.

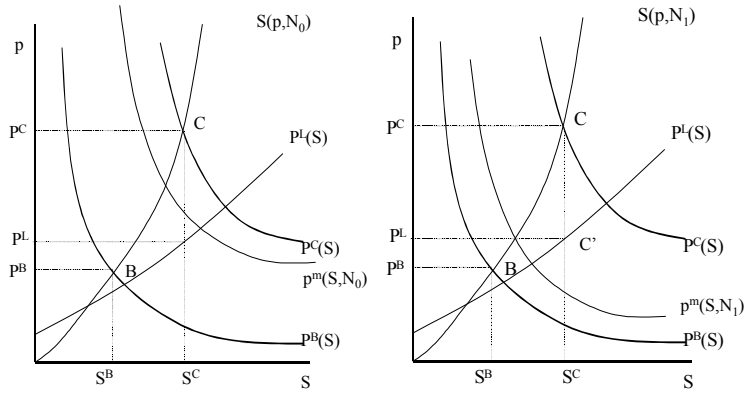

Figure 4: Local mergers and market stability

5.2 New barriers to entry

In our model there are two important ways through which domestic mergers may set themselves up as barriers to entry. The first one may be explained with the help of equation (21). Here we have seen that in the face of cost of entry reductions a process of internal merging (by reducing N) makes acquisitions by foreign banks less likely.

The second one is related to dynamic game strategies. At the beginning of this section we assumed that, when entrance is feasible, entrants will adhere to the prevailing internal price since the profits from not complying with it in the first year do not compensate for the subsequent costs provoked by breaking of agreement. However, things may be different if the equilibrium price forced by the new competitive environment (economic integration) inflinges losses to domestic banks. In this case, the threat of durable losses along the following periods will be scarcely credible, and foreign banks will enter with a price lower than the equilibrium one. As a result they will reap the non-complying profits of the first period, and subsequently the price will move to an intermediate level between the initial value and the new competitive one.

To the extent that mergers generate bigger and more efficient domestic firms, they also contribute to making local banks strategies more credible. In this sense they also allow to maintain higher local prices that deter entrance for dynamic strategic reasons.

5.3 Effects on welfare

Given that in our analysis local mergers take place as a response to the changing environment, their effects on welfare must be obtained by comparing the new situation not to the initial one but to that created by economic integration had domestic banks not merged. Our theoretical framework allows to evaluate the effects of mergers under several scenarios:

-When domestic banks reduce prices down to the line p^L and some domestic banks encounter solvency and risk problems induced by that process, domestic mergers contribute to solving those problems. Additionally, they improve cost efficiency through a general sector restructuring. In this case, mergers will be clearly positive since they aid at maintaining the price imposed by the new competitive environment.

- If in the previous scenario we encounter the possibility of entry by acquiring weak domestic banks, foreign banks will compete with strong domestic banks in those acquisitions. Under fair competition, the property change will imply efficiency gains and prices will not depart from the competitive level. Again, the results on welfare will be positive.

- Let's analyse now the situation in which mergers serve to maintain price collusive agreements (which otherwise would be destabilized by economic integration). In that case domestic mergers prevent prices from falling in the same degree as in the previous scenarios, although assess the effects on welfare without ambiguity a more formal analysis is needed.

Social welfare without domestic mergers (W^{WM}) is equal to the consumers surplus plus the profits of banks operating in the Nash equilibrium associated to the current branch network:

$$\begin{array}{c} W^{WM} = \mu \int_0^1 U_x dx - pq + \sum_{i=1}^N \Pi_i = \\ = \mu\omega - \frac{\mu z}{S}\left(\frac{5}{4} - \alpha\right) - cS - \sum_{i=1}^N F_i \end{array} \tag{24}$$

Social welfare with mergers (W^M) is obtained maintaining the indifference price. Consequently:

$$W^M = \mu\omega - \frac{\mu z}{4S} - \left(\frac{1-\alpha}{\alpha}\right) p^{L^\alpha} - cS - \sum_{i=1}^{N-1} F_i \tag{25}$$

and the welfare effect of those mergers will be:

$$W^M - W^{WM} = \frac{\mu(1-\alpha)}{\alpha}\left(\frac{\alpha z}{S} - p^{L^\alpha}\right) + \nabla F \tag{26}$$

The first component in the right side of this expression measures the effects of mergers on competition and has a negative sign. Furthermore it increases in absolute value with S since $\partial p^L / \partial S > 0$. The second component reflects the cost efficiency gains associated to mergers. We expect that they are not very significant for two main reasons. First, because the most profitable mergers

(those in which the less efficient banks were absorbed and allow bigger cost reductions) were already made in previous steps of economic integration; and second because it has to be measured in comparison with the case in which the acquirer is a (more efficient) foreign firm. Acquisition by a foreign firm would allow paying an extra shares price to domestic residents. The latter alternative is more relevant in late stages of economic integration.

Consequently it seems reasonable to conclude that the last kind of merger responds to a clear defensive motivation and might damage social welfare.

6 Concluding remarks

In this work we have developed a spatial model to explain the behaviour of European banks in the last decades as strategic responses to changes in regulation and economic integration.

We obtain that: a) in a protected environment domestic banks react with collusion agreements in prices and enlarge their branches network within the country; b) The first steps in liberalization and economic integration (for instance, the setting-up of the European Single Market) intensify competition and bring about reductions in both prices (intermediation margin and even individual interest rates in both sides of the balance sheets) and profit rates. Facing those changes domestic banks react undertaking local mergers and acquisitions which serve to reverse the profits trends after some periods. c) Additional advances in economic and financial integration, such as EMU, introduce new competition doses. Local banks respond with renewed internal waves which go with incresing prices and profits.

It turns out that local M&As in retail banking increase market power and contribute to build new barriers to entry. In the first integration stages, local banking concentration yield social welfare gains because it allows to reach and maintain lower price levels imposed by potential foreign competition. Local firms find this outcome bearable because of the ensuing fixed cost reductions. However, in more advanced integration stages, local M&As may serve to safeguard some market power and price agreements which would be broken or destabilized otherwise by foreign competition. In those cases, domestic banking concentration prevents prices from falling and goes with profit efficiency instead of cost efficiency. Consequently, in latest stages of economic and financial integration local M&As might damage social welfare.

In general terms, these results are in harmony with the experiences of most European countries during the last two decades, and allow to derive two policy implications. First, European authorities in charge of safeguarding competition should examine local mergers with caution; and second, if banking concentration has to be encouraged by cost effiicency and risk diversification reasons, national authorities should promote across border, instead of internal, operations[13]. The last prescription is especially advisable in advanced stages of economic and financial integration.

[13] Across border mergers would also permit to acquire local expertise and to gain size to compete in international (and more tradable) market segments.

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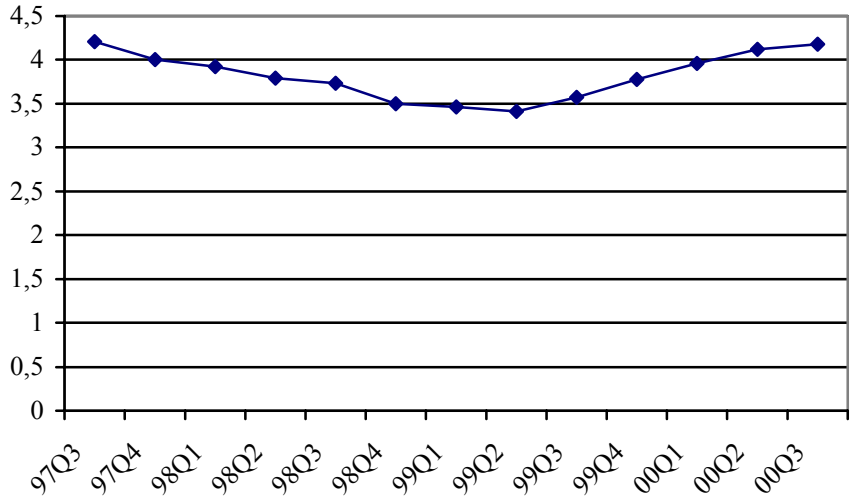
Graph 1
Euro area banks' margins
(1977 Q3 - 2000 Q3, percentage points)



Graph 2
Return on equity (before tax) in the Euro area
(Percentage points)

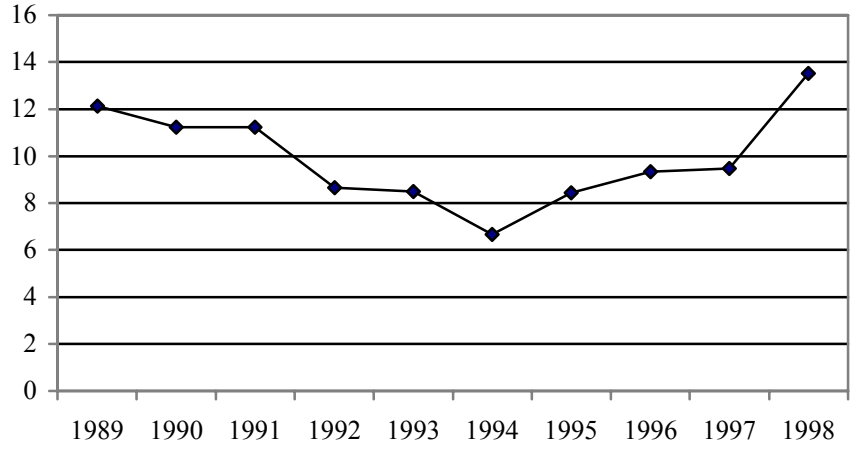


Table 1
Number of branches per 1,000 capita

	1980	1985	1990	1995	1996	1997	1998	1999
AT	0.45	0.54	0.58	0.58	0.58	0.58	0.57	0.57
DE	N/a	0.61	0.63	0.59	0.58	0.57	0.55	0.54
ES	0.62	0.76	0.83	0.93	0.95	0.97	0.99	1.00
FR	0.45	0.47	0.45	0.44	0.44	0.44	0.43	0.43
IT	0.22	0.23	0.31	0.41	0.43	0.44	0.46	0.47
PT	0.11	0.15	0.20	0.35	0.38	0.41	0.43	0.48

Source: European Central Bank (2000b), p. 45

Table 2
Banks' margins
(Percentage points)

	1991	1992	1993	1994	1995	1996	1997	1998
AT	1.89	1.83	1.92	1.90	1.84	1.66	1.59	1.37
DE	1.70	1.69	1.62	1.73	1.54	1.48	1.35	N/a
ES	5.13	4.57	4.35	3.98	4.24	4.03	3.88	3.57
FR	N/a	3.21	3.06	2.79	2.72	2.60	2.39	N/a
IT	3.46	4.11	3.98	3.17	3.33	3.15	2.80	N/a
PT	4.38	3.90	3.43	2.75	2.24	1.86	2.11	1.79

Source: European Central Bank (2000a), p. 28

Table 3
Non-interest income
(As a percentage of operating income)

	1990	1995	1996	1997	1998
AT	42	39	41	43	47
DE	N/a	25	25	29	33
ES	17	27	31	33	36
FR	N/a	34	38	45	52
IT	N/a	31	35	39	46
PT	20	27	35	35	41
EURO weighted	N/a	30	32	36	41

Source: European Central Bank (2000b), p. 50

Table 4
Return on equity (weighted)
(Percentage points)

	1990	1995	1996	1997	1998
AT	10.1	9.2	9.1	8.9	8.4
DE	N/a	14.1	13.3	12.8	19.3
ES	23.1	15.2	16.1	17.1	17.4
FR	N/a	3.2	4.3	7.4	9.6
IT	N/a	6.3	8.3	5.9	13.3
PT	13.0	8.2	8.5	10.4	10.0
EURO weighted	N/a	10.2	11.2	11.4	15.8

Source: European Central Bank (2000b), p. 54

Table 5
Number of domestic M&As of credit institutions (a)
In parenthesis: number of deals within the European Economic Area (b)

	1995	1996	1997	1998	1999	Rate of total (b) with respect to total (a)
AT	14 (0)	24(0)	27(1)	37(0)	20(0)	0.8%
DE	100(15)	117(0)	109(2)	189(6)	240(10)	4.4%
ES	4(0)	4(1)	1(0)	5(2)	5(1)	21.1%
FR	60(0)	61(0)	46(1)	52(1)	51(2)	1.5%
IT	68(0)	56(0)	45(0)	52(0)	64(0)	0.0%
PT	5(1)	5(0)	1(0)	1(0)	0(0)	8.3%

Source: European Central Bank (2000b), p. 36 *and 38.*

Table 6
"Large" M&As of credit institutions with European partners*

	MERGERS		VALUE (Millions $)
1995	Barings (UK)	ING (NL)	1.1
	National &Provincial (UK)	*Abbey National (UK)*	2.2
	S. G. Warburg (UK)	SBC (SW)	3.2
	Kleinwort Benson (UK)	Dresdener Bank (DE)	1.6
	Lloyds Bank (UK)	*TSB (UK)*	15.3
1996	Crédit Communal (BE)	Crédit Local (FR)	3.1
	Banque Indosuez (FR)	*C.N. de Crédit Agricole (FR)*	1.2
	MeesPierson (NL)	*Fortis (NL)*	1.4
	Stadshypotek (SU)	*Svensa Handelsbanken (SU)*	3.3
1997	Creditanstalt (UT)	Bank Austria (AT)	1.5
	Foreningsbanken (SU)	*Sparbanken Sverige (SU)*	1.4
	Cariplo (IT)	*Ambroveneto (IT)*	3.9
	Bayerische Hypobank (DE)	*Bayerische Vereinsbank (DE)*	5.1
	Merita (FI)	Nordbanken (SU)	4.3
	BBL (BE)	ING (NL)	4.5
	UBS (SW)	*SBC (SW)*	19.8
	Standard Federal Bancorp. (USA)	ABN Amor (NL)	2.0
	Banco di Napoli (IT)	*Mediocredito Centrale (IT)*	1.5
1998	*Kredietbank (BE)*	*Cera Bank, ABB Insurance (BE)*	13.6
	Crédit Mutuel (FR)	*CIC (FR)*	2.2
	San Paolo di Torino (IT)	*IMI (IT)*	10.0
	Banco de Santander (ES)	*Banesto (ES)*	4.0
	Unicrédito (IT)	*Credito Italiano (IT)*	11.0
	Genérale de Banque (BE)	*Fortis (BE)*	11.2
	Banca Agrícola Mantovana (IT)	*Monte dei Paschi di Siena (IT)*	1.6
	BHF Bank (DE)	ING (NL)	1.5
	Bankers Trust (US)	Deutsche Bank (DE)	9.1
	Banco Real (BR)	ABN Amro (NL)	2.1
1999	*Banco Central Hispano (ES)*	*Banco de Santander (ES)*	11.3
	Paribas (FR)	*BNP (FR)*	13.0
	Scottish Widows (UK)	*Lloyds TSB (UK)*	11.1
	Argentaria (ES)	*Banco Bilbao Vizcaya (ES)*	

**Writing in italics indicate that both mergers (left and right sides of the table) belong to the same country.*
Source: Jiménez (2000), p.341

Table 7
CR5- assets of five largest credit institutions as a percentage of total assets

	1985	1990	1995	1996	1997	1998	1999
AT	35.88	34.67	39.19	38.96	48.25	50.07	50.39
DE	N/a	13.91	16.67	16.08	16.68	19.15	18.95
ES	35.06	34.91	47.30	46.00	45.20	44.60	51.90
FR	46.00	42.50	41.30	41.20	38.00	39.20	42.70
IT	N/a	29.19	32.36	32.11	30.71	38.73	48.33
PT	61.00	58.00	74.00	80.00	76.00	75.22	72.60

Source: European Central Bank (2000b), p. 42

Table 8
Market share of total foreign branches and subsidiaries as a percentage of total domestic assets

	1985	1990	1995	1996	1997
AT		2.8	3.5	3.6	3.3
DE			4.2	4.0	4.3
ES	8.0	8.9	11.8	11.4	11.7
FR			12.2	9.8	
IT	2.6	2.8	5.4	7.1	6.8
PT	2.3	3.8	9.4	7.7	10.5

Source: European Central Bank (1999), Table 5.1b