

## Chapter IV

### The impact of financial sector consolidation on monetary policy

#### 1. Introduction

This chapter examines whether financial sector consolidation has affected the environment in which monetary policy decisions are made, how they are put into practice or how they are transmitted to the rest of the economy, and whether it may do so in the future. Central banks implement policy by influencing the market for central bank balances in order to maintain a specific short-term interest rate near a target level. The reactions of financial firms and participants in asset markets to changes in current and expected future short-term interest rates then lead to changes in longer-term interest rates and asset prices more generally, which in turn affect spending by firms and households and hence output and prices. The behaviour of financial firms and markets is therefore a key influence on both the implementation and transmission of monetary policy. Consolidation within the financial sector may alter this behaviour, with potentially important implications for how central banks implement their policy decisions and the impact of those decisions. Moreover, if consolidation affects how financial firms and markets react to other shocks, that too may need to be taken into account in monetary policymaking. Any consequences are likely to depend on the form of consolidation – eg within industry, across industries, or across borders – the reasons behind it – eg technological change, economies of scale, or the search for market power – and the initial level of concentration in the financial sector.

The following sections consider the economic arguments for thinking that consolidation may matter, review some of the – admittedly limited – evidence available from relevant empirical studies and report the assessments by central banks surveyed. Section 2 focuses on the implementation of monetary policy and how consolidation might affect the market for central bank balances and the markets in which monetary policy operations are conducted. Section 3 turns to the possible impact of consolidation on the transmission of monetary policy to the rest of the economy through various channels. Is it likely that consolidation amplifies or damps the impact of a given change in the proximate instrument of monetary policy? Might it speed up the transmission of a policy change or slow it down? Might it change the relative importance of different channels? Section 4 considers briefly some further possible consequences of consolidation for monetary policy, such as changes in the way financial shocks are transmitted across markets and borders, changes in the liquidity and volatility of financial markets, and changes in the information content of variables monitored by central banks. Section 5 draws attention to some important caveats that need to be remembered, pointing out the need for further research. Section 6 offers some tentative conclusions.

#### 2. The impact of consolidation on the implementation of monetary policy

Whether consolidation within the financial sector affects the implementation of monetary policy depends on whether it affects the market for central bank balances, or the market or markets used by the central bank to adjust the supply of such balances. Hence any impact on the volatility and price elasticity of financial firms' demands for central bank balances, or on the degree of competition in the relevant markets, could be relevant to monetary policymakers.

All the central banks of the G10 economies currently implement monetary policy by manipulating conditions in the market for central bank balances in order to bring a particular short-term interest rate in line with their target.<sup>151</sup> Central bank regulations with regard to clearing, overdrafts, payment of interest on balances and required minimum levels of balances all influence deposit-taking institutions' demand for central bank balances. At the same time, central banks are monopoly suppliers of such balances and adjust that supply through transactions with financial firms to set the policy interest rate at the desired level. These monetary policy operations include outright purchases of government securities, term and overnight repurchase agreements, and currency swaps.

In addition to their market operations, many central banks use other mechanisms to limit volatility in the market for central bank balances. These include standing facilities that help to keep the overnight interest rate in a desired range. The top of the range is set by the rate on a lending facility to which institutions may turn to obtain central bank balances, and the bottom by the rate on a deposit facility that provides an outlet for excess balances. Minimum reserve requirements can also serve to damp volatility in the market for central bank balances by increasing the willingness of some institutions to adjust their demands within a maintenance period in response to movements in the overnight interest rate. Also, the move towards clear announcements by central banks of a target value for their policy interest rate has probably helped to focus market expectations on the target rate, and thereby increased the influence of intertemporal arbitrage by financial firms in keeping the actual rate near the target.<sup>152</sup>

### **Potential effects of consolidation**

Consolidation could affect the key financial markets for the implementation of monetary policy – the market for central bank balances and those in which policy operations are conducted – through two possible routes. First, consolidation could affect the degree of competition. For example, a reduction in the number of active participants in the interbank market for central bank balances could reduce competition if there are barriers to entry. Barriers to entry could arise due to features of the regulatory environment or other institutional arrangements, or because of the search costs or other informational disadvantages facing potential new entrants. In that event, there would be a danger that some market participants might try to exploit their market power or greater knowledge of liquidity conditions, leading to higher costs of liquidity for other market participants. Such an outcome might impede the arbitraging of rates in the market for central bank deposits into other markets. Moreover, if the ability of market participants to act in this way depended in part on market conditions, the result could be unexpected volatility in very short-term market rates and a more variable cost of liquidity for other market participants. Similarly, a reduction in the number of counterparties for central bank monetary policy operations, if it were sufficient to generate some market power for the remaining firms, might allow some counterparties to obtain funds at rates below those that would prevail if they were all price-takers. The implementation of monetary policy would be made more difficult if the cost of liquidity to non-counterparty participants in the interbank market became higher or more variable as a result. The importance of these effects would depend on the regulatory environment and operating procedures for monetary policy operations and, over a longer horizon, on whether changes in those regulations and operating procedures could be implemented to ensure the efficient operation of the markets following consolidation.

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<sup>151</sup> Borio (1997) presents a very useful summary of the implementation of policy in a variety of industrial nations as of September 1996. Updated descriptions of procedures for the Bank of England, the Swiss National Bank, the Bank of Canada and the European Central Bank can be found in Bank of England (1999), Swiss National Bank (1999), Howard (1998) and European Central Bank (1998) respectively.

<sup>152</sup> See Borio (1997), p 89.

Consolidation could affect the markets involved in the implementation of policy through a second route if the larger firms created by the consolidation were to behave differently from their smaller predecessors, even aside from any changes in the degree of market competition. For example, a change in the size and number of deposit-taking institutions may affect the ability of central banks to estimate the demand for central bank balances and so to supply the funds necessary to achieve the desired target for the policy rate. Also, by internalising what had earlier been interbank transactions, consolidation could reduce the liquidity of the market, making it less efficient at reallocating balances across deposit-taking institutions, increasing market volatility, and perhaps affecting the extent to which changes in conditions in the market for central bank deposits are arbitrated into other short-term markets. If these effects were sufficiently large, consolidation could conceivably cause such arbitrage to break down, thereby cutting the link between monetary policy actions and the real economy.<sup>153</sup> Even if the market were not impaired to that extreme degree, the implementation of monetary policy could become more complicated. Central banks are likely to be able to adjust over time to relatively gradual changes in the level of demand for central bank balances caused by consolidation. But changes in the volatility of demand or the liquidity of the market might lead to increased volatility in the policy rate or other short-term market rates. Of course, central banks might be able to combat such an increase in volatility by, for example, increasing the frequency of fine-tuning operations.

### **Evidence on the effects of consolidation**

While studies have compared the implementation of monetary policy across countries with different degrees of financial sector consolidation, the effects of consolidation on policy implementation have not been explicitly studied.<sup>154</sup> The task force, therefore, circulated a questionnaire to the central banks of the G10, Australia and Spain, asking for information both on the effects of consolidation on the implementation of policy over the past decade and the expected effects in the future. The responses from the central banks indicate that the effects of consolidation both on competitive conditions in key financial markets and on the behaviour of larger market participants have generally been minimal. Consolidation is not expected to pose a significant problem for the implementation of policy going forward.

### **Evidence on the market for central bank balances**

The structure of the markets for central bank balances differs widely across countries judging by the evidence from central bank respondents, with the number of active participants ranging from just four or five in a few countries to about 200 (see Table IV.1). Nonetheless, consolidation has reduced the number of participants in this market in many countries, and it was commonly expected to continue to do so. Nearly two thirds of the respondents indicated that consolidation over the past 10 years had caused the number of market participants to decline either somewhat or considerably. Over the coming 10 years, a similar fraction expected this pattern to continue. However, several respondents noted that other factors – including financial difficulties at some deposit-taking institutions, increased concerns about risk and changes in operating procedures – have also contributed to the decline in market participation.

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<sup>153</sup> See Friedman (1999).

<sup>154</sup> See eg Borio (1997).

Table IV.1  
**Number of firms active in markets relevant for monetary policy implementation**  
 (April 2000)

Country	Interbank market for central bank deposits		Open market operations	
	Number of active firms	Central bank estimate of effective minimum <sup>a</sup>	Number of counterparties	Central bank estimate of effective minimum
Australia	52 <sup>b</sup>	n/a <sup>c</sup>	27	5
Belgium	5 <sup>d</sup>	30 <sup>e</sup>	15	10-25
Canada	15	3 <sup>f</sup>	13	5-10
France	200 <sup>g</sup>	n/a <sup>h</sup>	65-71	n/a
Germany	150	20-30	545	10-25
Italy	59 <sup>k</sup>	30-40	40	>25
Japan	40-50	n/a <sup>p</sup>	50	n/a <sup>q</sup>
Netherlands	85 <sup>i</sup>	55-110 <sup>j</sup>	14	>25
Spain	90	n/a	45	n/a
Sweden	4	3-4	8	<5
Switzerland	20 <sup>l</sup>	10	15 <sup>m</sup>	10-25
UK	15 <sup>n</sup>	5	20	5-10
US	200 <sup>o</sup>	20-30	29	10-25

n/a = not available

<sup>a</sup> Responses from euro area central banks generally refer to the minimum number of participants for the euro area as a whole. However, in the case of Germany, the number shown is the estimated number needed in Germany alone.

<sup>b</sup> There are 52 institutions with exchange settlement accounts at the Reserve Bank of Australia. <sup>c</sup> The minimum number of participants is likely to be significantly less than the current number. <sup>d</sup> Number of firms actively participating in the euro overnight market. <sup>e</sup> This is an estimate of the number that market participants would prefer to have. <sup>f</sup> The Bank of Canada estimates that at least three participants would be needed and that a somewhat higher number would be preferable. <sup>g</sup> Precise figures are not available. Twelve institutions are selected in calculating the EONIA rate; 52 are participants in the TELMA system, which allows them to participate in refinancing operations of the Eurosystem, and more than 200 institutions participate in the RTGS TBF. <sup>h</sup> The important point is that no institution can be in a position to become a price-maker. <sup>i</sup> The number of active participants is not known. Currently, 85 institutions have reserve requirements and it is likely that all of them participate in the market at least to a certain extent. <sup>j</sup> The minimum required is 5-10 per euro area country. <sup>k</sup> There are 24 institutions with a market share of 1% or more. There are 59 with market shares of ½% or more. <sup>l</sup> Of the 20 participants, two account for the bulk of the activity. <sup>m</sup> Fifteen institutions participate on a regular basis, while about 30 more participate on an irregular basis. <sup>n</sup> It is difficult to define active participation. About 15 banks made 75% of the total outstanding advances, but only five settlement banks offer a meaningful customer settlement service. <sup>o</sup> About 200 institutions participate in the brokered federal funds market. <sup>p</sup> The number of participants is not the only factor affecting the efficiency with which the market operates. Others include the institutional framework and the degree of competitiveness among the market participants. <sup>q</sup> As in note p, factors other than the number of participants also affect the efficient conduct of operations.

Despite the declining number of participants in this market in the majority of countries, the central banks did not appear to be concerned about its efficient operation. Generally, the number of participants substantially exceeds the central banks' estimates of the number needed to ensure the efficient operation of the market, and, even taking into account the expected reductions over the next decade, the number of participants was expected to remain above that level. Moreover, as some respondents pointed out, the number of participants in a particular country within the euro area is no longer very important, since there is now a single monetary policy and an integrated money market, and the total number of participants in the euro area as a whole is very large.

The central banks' estimates of the minimum number of market participants necessary for the efficient functioning of the market also varied widely, ranging from a low of just three to a high of 30. Those countries with relatively few market participants generally also thought that the minimum necessary number was lower. This pattern suggests either that the market can remain competitive with relatively few participants, or that those countries with relatively concentrated financial sectors have found ways to adjust the markets' operations in order to ensure that they remain efficient. An important consideration in this regard is whether the market is contestable – in other words, whether the existing market participants are constrained from setting prices above the levels that would prevail in perfectly competitive markets by the knowledge that, if they did so, other firms could enter the market quickly and with no sunk costs and would find it profitable to do so. The Bank of Canada, for example, indicated that the market for central bank balances would operate properly even with very few participants so long as it remained contestable.

### **Evidence on central bank monetary policy operations**

The responses to questions on the effects of consolidation on the efficiency of monetary policy operations were broadly similar to those about the market for central bank balances. The number of counterparties for such operations differed substantially across central banks. In several countries there were 15 or fewer counterparties last year, and most others had less than 100. By contrast, Germany had more than 500 counterparties. Not surprisingly, the share of the top five counterparties also varied widely, ranging from less than 20 to 90%. For the European System of Central Banks as a whole, there were more than 800 counterparties, and the share of the top five was just 12%.<sup>155</sup> Nearly half of the respondents reported that consolidation had reduced the number of counterparties for their monetary policy operations and increased the share of the top five counterparties either somewhat or considerably over the past 10 years. However, several of the respondents noted that other factors, including changes in operating methods, probably contributed to these changes. About half of the respondents thought that consolidation would continue to trim their roster of counterparties and boost the share of the largest counterparties in monetary policy operations over the coming 10 years.

The respondents were not generally worried that there would be too few counterparties to ensure the efficient conduct of tenders and open market operations. The largest fraction of respondents reported that a moderate number of counterparties (10-25) would be sufficient, but a couple thought that more were needed and three thought that fewer than 10 would be satisfactory. Again, the minimum number judged necessary fell with the actual number of counterparties, suggesting that fewer counterparties may be necessary than some central banks believe, at least given accommodating adjustments in operating procedures.

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<sup>155</sup> The number of counterparties reported by the ECB is the sum of the numbers of counterparties reported by the national central banks, but the same financial firm may be a counterparty of more than one national central bank, so the number is likely to be an overstatement.

## **Effects of consolidation on the behaviour of financial firms**

Central banks were also asked about the effects of consolidation on the behaviour of firms in the market for central bank deposits and in monetary policy operations. The responses suggested that consolidation had generally had little effect, and was not expected to do so in future. There appears to be little concern about the possibility of firms wielding market power, one of the hypotheses suggested above. Many of the respondents noted that the demand for central bank balances is essentially zero in their economy (eg Canada) or is virtually entirely determined by reserve requirements (eg the European Central Bank). In such cases, consolidation cannot have a significant effect on the level of demand. A couple of respondents noted that larger banks might be more efficient at managing reserves, and so consolidation could reduce holdings of free reserves, but they thought this effect was likely to be small.

Respondents reported that consolidation had not influenced borrowing at their lending facility appreciably in the past and that it was not expected to do so in the future, although a few of them indicated that changes in operating procedures in recent years made it difficult to be sure. Some respondents pointed out that, given their operating methods, borrowing is primarily determined by the quantity of liquidity provided by the central bank relative to the needs of the banking system as a whole, and so consolidation cannot have a substantial effect. It was noted that, in the United States, larger institutions tend to be less willing to borrow. And it was pointed out that, in Australia, larger institutions, while subject to more late-day volatility in payments flows (which might be expected to boost borrowing needs), also have better credit ratings and so are less likely to have to borrow from the central bank.

The central banks also reported that consolidation had not affected the behaviour of counterparties for monetary policy operations – including their willingness to participate in operations and the size of the positions they are willing to take. Only the Swiss National Bank reported an increased willingness to participate in operations over the past 10 years. Similarly, only two of the central banks thought that consolidation would make counterparties more willing to participate in operations over the coming 10 years. Two respondents argued that the behaviour of counterparties was determined by the central bank, and that central banks could encourage participation in central bank operations by making them more attractive sources of liquidity.

## **Adjustments made by central banks in response to consolidation**

Since most of the central banks thought that consolidation had not had very large effects, few had made changes in operating or other procedures as a result, and few expected to do so. While many of the central banks reported having changed monetary policy operating procedures, particularly in the run-up to Stage III of Economic and Monetary Union (EMU) in the euro area, these changes had not usually been made in response to consolidation. The only exception was Switzerland, where consolidation had led to substantial changes in operating procedures in recent years. The Swiss National Bank increased the frequency of tender operations, introduced repo operations – thereby making it easier for smaller institutions to participate – and changed its rules for counterparties to encourage participation in operations by foreign-related institutions.<sup>156</sup> Looking forward, only one central bank (The Reserve Bank of Australia) thought that, if there were significant further consolidation in the financial services sector, changes might become necessary, including an increase in the number of fine-tuning operations, changes in the types of operations employed, or changes in the rules for their borrowing facility.

Some of the central banks thought that changes in procedures might be introduced in the event that further consolidation reduced the number of counterparties available for monetary policy

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<sup>156</sup> The Swiss National Bank also shifted from a reserves target to an interest rate target, but the decision to do so was not the result of consolidation.

operations to an unacceptable degree. About half thought that more careful monitoring of operations would be either possible or likely – presumably to reduce the possibility of non-competitive behaviour by counterparties. A smaller number thought it likely that their central bank would increase the openness of the conduct of operations (some of the respondents noted that their operations were already open) or monitor the activities and financial condition of counterparties more carefully. Only two pointed to possible stricter management of credit risk, such as tighter limits on exposures to counterparties. Nearly half of the respondents thought that none of these possible responses was likely to be adopted. A few of them commented that a problem was unlikely to arise in their jurisdiction. In the case of the euro area, in particular, it was noted that the introduction of the single monetary policy had greatly increased the number of possible counterparties for operations. One respondent indicated that actions would be taken to ensure that operations remained competitive, but did not elaborate.

Another possible response to a substantial reduction in the number of counterparties would be to change the eligibility criteria for counterparties in order to include a broader range of financial firms. Doing so might be useful for two reasons. First, it would directly increase the number of firms that could choose to be counterparties, which might be expected to increase the number doing so. Second, it might make the pool of counterparties less homogeneous. A broader range of counterparties could be helpful in times of stress, since shocks having relatively large adverse effects on some classes of financial firms – potentially making them less willing to participate in operations – might leave other types of firms relatively unaffected.

Despite these possible benefits, the central banks surveyed were generally not inclined to change their eligibility criteria. Only the Swiss National Bank reported having done so, implementing changes allowing participation in operations by foreign institutions. Similarly, only two of the respondents (Spain and Switzerland) thought that it might become important to encourage participation in monetary policy operations by smaller firms in order to offset the effects of consolidation.<sup>157</sup> Indeed, the introduction of repo operations by the Swiss National Bank had reduced the cost of participation for smaller firms. However, opinion was generally mixed on the desirability of participation by such firms. Three of the central banks thought that there should be no preference shown to larger firms in monetary policy operations. Four of them noted that the efficiency gains from operations with larger counterparties made it necessary to focus operations on a relatively small number of larger firms, especially in the case of fine-tuning operations. In particular, the ECB noted that its procedures are designed to ensure the participation of a broad range of counterparties, but that for technical reasons the European System of Central Banks (ESCB) can select a limited number of counterparties for fine-tuning operations. (The ECB also noted that fine-tuning operations have played only a very minor role thus far.) A couple of the respondents pointed to factors other than size that influence their selection of counterparties, including a firm's activity in interbank markets. Some also noted that while operations with very small counterparties were inefficient, medium-sized firms did not pose a problem.

While many of the respondents reported that their central banks had implemented organisational changes over the past 10 years, only two reported that such changes had been undertaken in response to consolidation. In France, the relationship between the central bank's money desk and payment system division was strengthened. In Switzerland, the central bank has organised teams to monitor monetary policy operations with the largest institutions. The other respondents reported that no changes in central bank organisation were even being contemplated as a result of consolidation.

A couple of respondents reported that consolidation had led to changes in risk management practices with regard to monetary policy operations. Going forward, five respondents thought

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<sup>157</sup> However, central banks of several of the smaller countries in the euro area (responses for which were reported by the ECB) thought that doing so might be desirable.

that their central bank might face heightened operational risks. The most common risk noted was increased moral hazard on the part of borrowers. This moral hazard could take two forms. Most directly, consolidation could allow some financial firms to manipulate monetary policy operations in order to obtain lower cost funding from the central bank than would otherwise have been the case. A second possibility is that the larger firms resulting from consolidation could be seen by investors as very likely to obtain substantial central bank credit in the event of financial difficulty. As a result, the risk premium on such firms' obligations would be lower than otherwise, encouraging them to take on increased risk. Of course, even in this case, investors would need to be mindful that central banks, particularly the national central banks in the euro area, cannot be expected to provide emergency liquidity to institutions in all circumstances regardless of the institutions' size. In addition to these concerns about moral hazard, two of the central banks thought that consolidation could, by increasing the size of transactions with the largest firms, increase the credit risks they face, and one of the respondents was concerned that consolidation could lead to less efficient management of systemic risks.

### **3. The impact of financial sector consolidation on the transmission of monetary policy**

Financial sector consolidation may affect the impact of monetary policy by altering the monetary transmission mechanism that links central bank operations in the market for central bank deposits to output and inflation. Consolidation may therefore be relevant to policymakers' choice of the appropriate setting of monetary policy instruments.

Changes in monetary policy instruments are transmitted to the rest of the economy through various channels. This section considers three of these channels – the “monetary” channel, the “bank lending” channel and the “balance sheet” channel (the latter two being variants of what is often termed the “credit” channel). It outlines briefly the key characteristics of each channel in order to identify how consolidation might affect them, and it considers what empirical studies reveal about whether in fact any effects can be identified. The section also draws on the results of a second questionnaire and a series of interviews with central bank staff, which sought to find out to what extent policymakers themselves think that consolidation alters the monetary transmission mechanism.

#### **The monetary channel**

In simple models of the monetary (or interest rate) channel, central bank policy determines the short-term interest rate. Arbitrage across markets ensures that yields on longer-term financial assets are an appropriately weighted average of current and expected future short-term interest rates, after allowing for the assets' perceived riskiness. Competition amongst lenders to firms and households and deposit-takers ensures that interest rates set by banks are determined by the term structure of market interest rates. In practice, arbitrage is imperfect and depends on, amongst other factors, market liquidity, risk aversion, and the degree of monopoly power. In this model, changes in monetary policy affect spending by changing household wealth and the opportunity cost of funds facing firms and households.

#### **The effects of consolidation on the monetary channel: empirical evidence**

This view of the traditional monetary channel suggests that one should consider whether financial sector consolidation has affected the pass-through of changes in policy-determined interest rates to other interest rates at longer maturities, and asset prices generally. It was argued above that in some circumstances consolidation might reduce the level and increase the volatility of interbank liquidity, impeding arbitrage across financial markets and thus slowing pass-through and reducing its extent. On the other hand, to the extent that large firms are able to process information more effectively than small firms, because of the set-up costs and



economies of scale in information processing, consolidation may promote more rapid arbitrage of interest rate changes across markets and assets. In addition, consolidation amongst those lending to firms and households, if it reduced competition, could bring about higher margins between wholesale interest rates and those charged to borrowers. That would cause difficulties for monetary policymakers if it was not expected, particularly if the change was observed imperfectly or with a significant lag. Margins could also become more erratic if the number of lenders (and potential lenders) was sufficiently small that they could alter their pricing in response to perceived changes in the elasticity of demand for loans, the supply of credit by their competitors, and expected changes in monetary policy.

In practice, it is difficult to assess the independent effect of consolidation on pass-through. In many countries, consolidation has been accompanied – and, in some cases, encouraged – by the introduction of new technology, the removal of some barriers to entry (including regulatory ones) and improved access to alternative sources of finance. Hence it has not always led to reductions in liquidity or competition.

Amongst studies of the pass-through of money market rates into retail rates, one considers the possible role of differences in financial structure across countries.<sup>158</sup> It shows that, while in the long run bank lending rates respond virtually one-for-one to changes in money market rates, the pass-through during the following month is generally much less. Moreover, there is considerable cross-country variation, particularly in the short-term responses. But is that variation related to differences in the degree of financial sector consolidation? Neither GDP per capita, as a proxy for the overall degree of development of the financial system, nor the market share of the largest five banks, as a proxy for the degree of competition within the banking system, were found to be significant. But results with a qualitative index of the existence of barriers to entry suggested that lack of contestability of markets, rather than concentration or consolidation in markets per se, is the critical factor in slowing down pass-through.

Research at the Bank of Canada suggests that consolidation has been accompanied by an increased responsiveness of mortgage rates to official interest rate changes, although it is difficult to establish causation (see Box IV.1). In contrast, work on the transmission of official rates into retail mortgage and saving rates in the United Kingdom suggests that there has been no significant change in the speed of pass-through over the past 15 years, a period during which some consolidation has taken place.<sup>159</sup> But other developments may have acted to offset any impact on competitive conditions in retail banking markets. In the United Kingdom, for example, the demutualisation of former building societies, together with the arrival of new entrants, seems to have encouraged greater competition in lending to households. (Also, the Canadian study uses weekly data, so it may have been able to pick up changes that were unobservable in the monthly data available in the United Kingdom.)

Evidence of an impact of consolidation on bank margins is not strong. Studies have found no effect of increasing concentration amongst Swiss or Spanish banks on interest rates.<sup>160</sup> Instead, increased competition has made the banking system more responsive to monetary policy impulses over the past decade, and consolidation has not prevented that development. To the extent that increased scale has enabled banks to diversify income streams and squeeze out costs, consolidation amongst institutions has allowed profit margins to be sustained despite this increased competition. According to one paper, consolidation in the United States increased margins on personal loans, but had no effect on automobile loan margins.<sup>161</sup>

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<sup>158</sup> See Cottarelli and Kourelis (1994).

<sup>159</sup> See Hoffman and Mizen (2000).

<sup>160</sup> See Braun et al (1999) and Fuentes and Sastre (1999).

<sup>161</sup> See Kahn et al (2000).

Even if other things being equal, consolidation does tend to increase margins, a central bank should be able to alter its own target interest rate to offset any impact on aggregate demand and asset prices, once it has observed the change in the relationship between its target rate and rates charged in the market. Thus, although the wider margins would be undesirable because of their effects on the efficiency of intermediation, they might not have an important effect on monetary policy making. However, there might be greater difficulty in setting the appropriate official rate in the transition period during which margins adjusted, depending on how quickly policymakers identified the phenomenon.

#### **The effects of consolidation on the monetary channel: assessment by central banks**

Central banks generally suggested that consolidation alone had not had an important influence on the pass-through of official interest rate changes to administered rates, such as bank loan and deposit rates, over the past 10 years. Only the Swedish and Swiss respondents thought that pass-through had become more rapid as a result of consolidation (Table IV.2). A couple of respondents indicated that the speed of transmission had increased, but suggested that factors other than consolidation were likely to have been responsible.

Box IV.1

**The pass-through of interest rate changes in Canada**

In recent years, the Canadian financial system has been characterised by five or six large banks, one large trust company (which has very recently been taken over by one of the large banks) and a number of smaller players. Mergers in the 1990s increased the market share of the group of large institutions in certain markets. As Table A shows, the market shares of the “Big Six” Canadian banks in the deposit and residential mortgage markets increased by around 10-15 percentage points between 1990 and 1999.

Table A  
Market shares (per cent)

	1990 (Dec)		1999 (Dec)	
	“Big 6”	“Big 6” + CT <sup>1</sup>	“Big 6”	“Big 6” + CT <sup>1</sup>
Total CAD Deposits <sup>2</sup>	56 (52)	62 (58)	70 (66)	75 (71)
Residential mortgage loans	39	46	55	58

<sup>1</sup> CT= Canada Trust. <sup>2</sup> Figures in brackets exclude money market mutual funds, but include life insurance annuities.

The pass-through from market rates to administered rates has typically been rapid and complete in Canada. Econometric investigation of the speed of adjustment of mortgage rates suggests that it may have increased in the second half of the 1990s compared to the first half. For example, since 1995, the pass-through of market rate changes to five-year mortgage rates has been about 60% complete after one week has elapsed, compared with a 45% pass-through for the period 1990-95.

Table B  
Effect on the mortgage rate of changes in government bond yields

Short-run effect <sup>1</sup>	Impact		One week		Three weeks	
	1990-95	1996-2000	1990-95	1996-2000	1990-95	1996-2000
One-year mortgage rates	0.10	0.32	0.46	0.60	0.82	0.86
Five-year mortgage rates	0.16	0.26	0.45	0.59	0.79	0.97

<sup>1</sup> Effect on mortgage rate of a sustained one-percentage-point rise in government yield for the same maturity.

Overall, the evidence is not consistent with the hypotheses that (i) financial sector consolidation will decrease the speed or size of the response of administered rates to market rates, or (ii) a financial system that is dominated by six or seven big institutions will display a slow, partial or unpredictable response of administered rates to market rates. However, one cannot conclude that consolidation in Canada has resulted in the opposite effects. Other factors are also likely to have been at work. In particular, more sophisticated information technology systems may be allowing more rapid and more frequent changes in administered rates. And the arrival of actual and potential entrants (whether domestic or foreign) with highly sophisticated systems (and unconstrained by a need for an expensive branch network) may have encouraged large institutions to move administered rates more rapidly than in the past.

Table IV.2

Q: Over the past 10 years, how has consolidation in the financial services industry affected the SIZE and SPEED of the effect of changes in your central bank's policy interest rate on administered rates, such as rates on bank deposits and bank loans?

Effect	Left it about unchanged	Increased it somewhat	Increased it substantially
SIZE	Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Spain, UK, US.	Sweden, Switzerland	
SPEED	Belgium, Canada, Germany, Italy, Japan, Netherlands, Spain, UK, US.	Sweden, Switzerland	

Similarly, most of the central banks did not expect consolidation to have important effects on pass-through in the future, although they were somewhat less certain. Most of the respondents thought that consolidation would not affect either the speed or the size of the effects of changes in the policy rate on market rates over the coming 10 years. However, as shown in Table IV.3, a few of the European central banks thought that consolidation would affect the pass-through to administered rates, with most of them expecting pass-through to be somewhat faster and larger.

Table IV.3

Q: Over the coming 10 years, how do you anticipate that consolidation in the financial services industry will affect the SIZE and SPEED of the effect of changes in your central bank's policy interest rate on administered rates, such as rates on bank deposits and bank loans?

Effect	Decrease it somewhat	Leave it about unchanged	Increase it somewhat
SIZE	Sweden	Australia, Canada, Germany, Netherlands, Spain, UK, US	France, Italy, Switzerland
SPEED		Australia, Canada, Germany, Netherlands, Spain, Sweden, UK, US	France, Italy, Switzerland

While a number of central banks noted that the transmission mechanism had changed in recent years, such changes were generally viewed as fairly minor and likely to be due to changes in financial markets and institutions that were essentially unrelated to consolidation. Table IV.4 summarises the responses to the task force's questionnaire as a whole. It seems likely that other factors have offset any effects of consolidation alone and, indeed, that consolidation may have occurred, at least in part, in response to these factors. For example, competition has reportedly increased in retail domestic credit and deposit markets in a number of countries, but the further globalisation and integration of wholesale markets, exemplified by EMU, have acted to offset any increases in market power that large institutions might otherwise have enjoyed.

Table IV.4

**Impact of financial sector consolidation on the monetary transmission mechanism (MTM)**

(summary of questionnaire responses)

Q	Effect of consolidation	Australia	Belgium	Canada	France	Germany	Italy	Japan	Netherlands	Spain	Sweden	Switzerland	UK	US
1	Overall impact on policy	N	N	N	N	N	Y?	N	N	N	N	N	N	N
2	Impact on one or more specific channel of policy	N	N	N	N?	?	Y	?	N	N	?	?	N	N
3	Distributional effects	N	N	N	N	N	Y	N	N	?	N	Y	N	N
4	Impact on financial markets	N	N	N	N	N	N	?	N	N	N	N	N	N
5	Impact on information indicators	Y	N	N	N	N	N	N	?	N	N	Y	?	N
6	Changes in monetary policy strategies	N	N	N	N	N	N	N	N	N	N	?	N	N
7 & 8	Future MTM and policy	N	?	N	?	Y	?	?	?	?	N	Y	?	

Y = explicit effect observed/or expected; N = no evidence of impact; ? = uncertain. The ECB was only asked about the prospective effects of consolidation on the MTM (questions 7 & 8). According to the ECB, these effects are uncertain.

### The bank lending channel

Monetary policy may affect the economy via its impact on the scale of bank lending, in addition to its influence over interest rates generally. This channel depends on bonds, bank loans and bank deposits being imperfect substitutes. When interest rates rise, transactions and savings deposits at banks are likely to contract, requiring banks to reduce the size of their balance sheets and hence the stock of lending. This reduction may be larger – particularly in the short run – than the reduction in the demand for loanable funds that would be brought about anyway by the increase in the central bank’s target interest rate. In that event, a gap would arise between the supply of and demand for funds, which banks would be able to fill if they could replace the deposits they had lost with new wholesale funding. Because of information asymmetries, however, banks may be unable to raise wholesale funds at the same rates as they pay on deposits. As a result, banks may have to increase the wedge between capital market interest rates and the rates they charge their borrowers. The thicker wedge implies that a tightening of monetary policy will have a bigger impact on bank-dependent borrowers – including households and smaller businesses – than on those borrowers who are able to tap financial markets directly.

### The effects of consolidation on the bank lending channel: empirical evidence

Consolidation could affect the size of the bank lending channel in two ways. First, larger banks may have better access to sources of funds other than transactions and savings deposits because of improved name recognition, fixed costs, or lower information costs. If so, then the effect of

tighter monetary policy on the supply of bank loans is likely to be reduced by consolidation if consolidation reduces small banks' share of the industry.<sup>162</sup> Unfortunately, the height of the threshold that banks need to cross in order to gain improved access to wholesale markets is not clear. Consolidation amongst banks already able to borrow at good rates in wholesale markets is unlikely to have a significant effect; nor is consolidation amongst small banks if it does not carry the consolidated banks over the relevant threshold. Whatever its current height, the threshold is likely to fall as a result of the increasing size, depth and integration of capital markets. The second possibility is that consolidation, by allowing stronger banks to take over weaker ones, could strengthen the financial condition of the banking sector. In that case, banks would also have improved access to alternative sources of funds, the bank lending channel thereby attenuating and reducing the impact of a given change in the proximate instrument of monetary policy.

While there is no direct evidence regarding the effect of consolidation on access to markets for managed liabilities, there is strong circumstantial evidence that larger banks find it easier than smaller banks to fund loans in periods of tight monetary policy.<sup>163</sup> The impact of a policy tightening on bank lending is smaller for banks with more liquid balance sheets, where liquidity is measured by the fraction of assets accounted for by securities which can be sold to fund loans. This effect of liquidity is important primarily for smaller banks (those in the bottom 95% of the size distribution), suggesting that these institutions are less able than larger banks to find alternative sources of funds.

However, there is considerable controversy about whether the bank lending channel is empirically important at all. A number of studies report results suggesting an important role for the bank lending channel in the United States.<sup>164</sup> However, drawing on evidence from a variety of countries, others cast doubt on the existence of this channel.<sup>165</sup>

In addition, it is difficult to assess the effects of consolidation on the bank lending channel in an individual country because of the relatively modest amount of consolidation experienced in many of them. However, there are substantial differences in financial sector concentration across countries, and some recent cross-country studies may shed light on the effects of consolidation on the bank lending channel. For example, one study tests the hypothesis that the effects of changes in monetary policy should be larger in countries that have smaller and less robust banks, greater dependence on bank finance and smaller firms, because theory suggests that the bank lending channel should be stronger in such economies.<sup>166</sup> It considers data from EMU countries on the size and concentration of the banking system, the health of the banking system, the importance of bank finance and the size of firms. Smaller firms were regarded as more likely to be bank dependent. Using a vector autoregression approach to measure the size of the effects of monetary policy, it finds some evidence in support of this hypothesis. This result suggests that consolidation in a given country could, by increasing the size of banks and perhaps also by improving the health of the banking system, reduce the importance of the bank lending channel.

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<sup>162</sup> Note that the effect of consolidation on the bank lending channel depends on how it influences the responsiveness of bank loan supply to changes in policy. The static effect of consolidation on the availability of bank loans to bank-dependent borrowers is discussed in Chapter V.

<sup>163</sup> See Kashyap and Stein (2000).

<sup>164</sup> See Kashyap et al (1986) and Kashyap and Stein (2000).

<sup>165</sup> See Dale and Haldane (1995), Favero et al (2000), Miron et al (1993) and De Bondt (1998).

<sup>166</sup> See Cecchetti (1999).

By contrast, a second study tests to see if the timing and size of the effects of policy are influenced by variables that would be involved in the credit channel of policy transmission.<sup>167</sup> In particular, it considers banking sector holdings of securities as a measure of banks' ability to continue lending following a policy-induced reduction in deposits. This study, which focuses on large European countries, indicates that the bank lending channel is probably not important in Belgium, the Netherlands and the United Kingdom, but may be important in France, Germany and Italy. The different results across countries could be due to one of four reasons. First, the financial sectors of the United Kingdom and the Netherlands may be "healthier" than those in the other countries.<sup>168</sup> Second, Belgium, the Netherlands and the United Kingdom have a greater portion of foreign-owned banks, which may be better able to find alternative sources of funding to mitigate any potential bank lending channel.<sup>169</sup> Figures show that 30-40% of the banking system is foreign-owned in Belgium, the Netherlands and the United Kingdom, while the comparable figure in the other countries in this sample is less than 10%.<sup>170</sup> Third, a low level of concentration in the banking industry, as in Germany for example, could cause the bank lending channel to be amplified, since smaller banks may be less able to find alternative sources of funds. Finally, a better developed market for managed liabilities in the United Kingdom could account for the lack of evidence of a bank lending channel there. If any of these conjectures are valid, then consolidation could well have the effect of weakening the bank lending channel, thereby reducing the effect of monetary policy on the economy.

#### **The effects of consolidation on the bank lending channel: assessments by central bankers**

Perhaps not surprisingly, given the lack of academic consensus on the issue, the central bankers interviewed generally thought that either the bank lending channel was not important in their country or that its importance was difficult to assess. It was noted that the impact of policy transmitted through the bank lending channel was likely to be highly correlated with the impact via the traditional monetary channel. In the United States, there was evidence in the early 1990s that shocks to bank capital had an effect on bank lending, and that difficulties obtaining bank loans may have reduced activity in some regions and industries. While this experience was consistent with an important bank lending channel for monetary policy, it was still not clear to policymakers whether bank lending had an important independent role in the transmission of policy changes.

The central bankers also generally reported that, assuming a distinct bank lending channel did exist, consolidation had not had a noticeable effect on the size or speed of the transmission of monetary policy via that route. Nor did they view such an effect as likely to be important in the future.

Central bank officials in Germany pointed to the possible importance of another aspect of bank lending to small and medium-sized firms. In Germany, such firms often have a special relationship with their "house bank", which in effect helps to insure them against cash flow problems in the event of a downturn or a tightening of monetary policy. The house bank, far from magnifying the impacts of changes in monetary policy on its borrowers, tends to cushion them. This conclusion implicitly assumes that the house bank has the ability to fund loans in such situations and can afford to do so. In practice universal banks may find that easier than banks with generally less diversified balance sheets (such as commercial banks in the United States). Consolidation could lead to a reduction in house bank relationships, by making the

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<sup>167</sup> See De Bondt (1998).

<sup>168</sup> This was pointed out by Kashyap and Stein (1997).

<sup>169</sup> See Jayaratne and Morgan (1997).

<sup>170</sup> See De Bondt (1998).

close monitoring on which such relationships depend more difficult to carry out, and by reducing the trust of the borrowers that the implicit contract underlying such relationships would be honoured. In that case, banks might allow loan rates to respond more to changes in official interest rates, rather than buffering such changes. If that were to happen, those firms that rely on a continuing relationship with their bank (most typically small and medium-sized firms), and so are limited in the choice of alternative finance sources, would face higher borrowing costs following a tightening of policy than they do under current arrangements. Such changes could imply an increase in the importance of the bank lending channel. However, as the Bundesbank also noted, consolidation has been accompanied and perhaps partly caused by globalisation, securitisation and disintermediation, all of which facilitate smaller firms' access to market-based finance and thereby reduce the strength of the bank lending channel.

### **The balance sheet or “financial accelerator” channel**

A second variant of the credit channel of monetary policy is the balance sheet or financial accelerator channel, which derives from the role of collateral in lending. Lenders may require borrowers to post collateral if they are uncertain that borrowers would otherwise be able or willing to repay loans. A tightening of monetary policy is likely to reduce the value of that collateral, by reducing demand for the borrower's products (in the case of a firm) and increasing the rate at which future service flows generated by the collateral asset are discounted. A reduction in the value of collateral could, in turn, lead to cutbacks in spending, defaults when existing loans come up for renewal, and fire sales of collateral assets.

### **The effect of consolidation on the balance sheet channel: empirical evidence**

The key question in this case is whether consolidation eases or aggravates the information problems between lenders and borrowers that lead lenders to demand collateral as security for loans. If consolidation makes newly merged lending institutions more efficient assessors of credit risk, for example because larger institutions can afford increased investment in information technology, then fewer borrowers might be required to provide collateral, and the balance sheet channel might weaken. If, on the other hand, the larger consolidated institutions are more remote from borrowers (are less like small “relationship banks”) and rely more on statistical rules and uniform lending policies, then it is possible that the balance sheet channel might strengthen. Thus, the effect of consolidation on the balance sheet channel could be either positive or negative. Moreover, either result could be consistent with consolidation having been driven by competitive pressures.

As with the bank lending variant of the credit channel, there is controversy in the academic literature about whether this channel is empirically significant at all. A number of studies cast doubt on the existence of a (household) balance sheet channel, at least in some countries.<sup>171</sup>

But some cross-country studies hint at an important effect in some cases. One finds that differences in the effects of monetary policy on the real economy in a number of European countries may reflect differences in variables intended to proxy for both bank credit and balance sheet channels, in particular, financial structure, levels of household debt and the prevalence of collateralised loans.<sup>172</sup> Another tests whether the net worth of households and businesses appears to influence the transmission of monetary policy, as one might expect if the balance sheet channel were operating.<sup>173</sup> It finds evidence of a household balance sheet channel in Germany, Italy and the Netherlands, but not in Belgium, France or the United Kingdom. It also

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<sup>171</sup> See eg Jappelli and Pagano (1989), Bachetta and Gerlach (1997) and De Bondt (1998).

<sup>172</sup> See Dornbusch et al (1998).

<sup>173</sup> See De Bondt (1998).



reports some, but by no means a perfect, correlation of the strength of the balance sheet channel (by this measure) with financial sector concentration. The strength of the balance sheet channel varies across European countries in a way that is consistent with differences in the efficiency of the market for secured lending to households.<sup>174</sup> To the extent that consolidation promotes access to credit (eg by facilitating mortgage equity withdrawal), it is likely to erode the importance of balance sheet effects. These cross-country studies suggest, then, that consolidation might weaken the strength of the balance sheet channel.

#### **The effects of consolidation on the balance sheet channel: assessment by central bankers**

The central bankers interviewed by the task force were unsure of the importance of the balance sheet channel and, assuming that such a channel was operative, they generally did not appear to believe that consolidation had had a noticeable effect on its magnitude. However, some conceded that such an effect could manifest itself in future.

#### **Implications of any reduced importance of the credit channels**

Since the credit channels are the result of credit market imperfections, if consolidation reduces their importance, welfare should be improved. However, monetary policymakers may face difficulties in adjusting to some of the changes. First, easing credit market imperfections may lead to a temporary increase in borrowing and spending, as some who had previously been constrained by higher borrowing costs or lack of collateral find themselves able to borrow. Second, any reductions in borrowing constraints may boost equilibrium real interest rates, and policymakers will need to take the higher equilibrium rates into account when setting policy. These two effects would probably be similar to those experienced in some countries as a result of financial liberalisation.<sup>175</sup> Finally, the reduction in the size of the credit channel implies that, to attain a particular effect on the real economy, policy instruments will have to be adjusted more than had previously been the case. Of course, in practice, the effects of consolidation on the credit channel are likely to emerge only slowly, allowing the central bank to observe these effects and allow for them in an orderly way. Indeed, none of the central banks interviewed had noticed an effect of consolidation on the monetary transmission mechanism or on the distribution of the effects of monetary policy across classes of borrowers (eg households versus firms, small firms versus larger ones, or producers of tradable goods and services versus producers of non-tradables).

### **4. Some further possible consequences of consolidation for monetary policy**

While there is little evidence that consolidation has generally affected either the implementation of policy or the monetary transmission mechanism, it is nonetheless possible that it could influence the setting in which policy is determined. For example, consolidation may affect the impact of financial shocks and the way that they are transmitted across markets and borders. To the extent that consolidation leads to larger firms that have major positions in many markets and countries, shocks that once might have been isolated in a single market, region or country may have broader effects. For example, an economic downturn in one country could, through its effects on the balance sheets of banks with cross-border operations, cause a tightening of lending standards or terms in other countries. As a result, the appropriate stance of policy in

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<sup>174</sup> See Iacoviello and Minetti (2000).

<sup>175</sup> The effects of financial liberalisation on aggregate demand and real interest rates are discussed in G10 (1995), pp 49-52.

those other countries might change. Similarly, losses sustained in one financial market could lead to movements in prices or liquidity in other financial markets, as firms active in the troubled market trimmed their positions or cut back on trading and market-making activities as a result of their losses. On the other hand, because such firms are more diversified and might also benefit from a cushion of monopoly rents, they may be in a better position to absorb rather than transmit shocks, particularly if they perceive them to be temporary. In either case, the dynamics of foreign exchange rate determination would be likely to change if a greater proportion of cross-border capital flows were internalised by large, global financial firms. Such an outcome seems unlikely, however, given the declining relative importance of bank lending in international capital flows in recent years.

Another way in which consolidation might affect the environment for policy is by decreasing market liquidity and boosting volatility. Most simply, consolidation could reduce liquidity if it allowed market-makers in a financial instrument to use their market power to boost bid-asked spreads at the expense of other market participants. Alternatively, liquidity could decline if the restructuring that followed consolidation led to a reduction in the total amount of capital allocated to trading in, or making markets in, a particular instrument. A related possibility is that, following consolidation, the total amount of resources dedicated to the analysis and forecasting needed to price an instrument appropriately could decrease. In that case, the market price of the instrument could vary more widely around the value justified by fundamentals, directly boosting volatility and increasing trading risk, and perhaps reducing liquidity. Volatility could also increase if consolidation resulted in a few very large firms dominating financial markets, because in that case a change in the investment strategy of a single firm could have a substantial impact on asset prices. Moreover, consolidation could increase herding behaviour since departures from the consensus view might be more noticeable, in which case deviations of market prices from fundamentals could increase in size, boosting volatility.<sup>176</sup> These factors could also cause financial markets to respond less predictably to changes in the stance of monetary policy, perhaps strengthening the case for gradualism and transparency in policy making.

As noted in the previous chapter on systemic risk, consolidation could not only affect the liquidity of markets, but might also cause a deterioration in market performance during times of stress. Such an effect would likely be a greater concern if consolidation led to a small number of large firms dominating many important financial markets, especially if differences in outlook among those firms were, at times, smaller than in the past because their models and trading strategies had converged. In such situations, a shock in a particular market could be transmitted across firms and markets more rapidly and to a greater degree than had previously been the case. Moreover, subsequent decisions by some firms to reduce their risk exposures – because of reductions in their capital, reductions in their appetite for risk or counterparties' concerns about their financial strength – might trim market liquidity and cause further declines in market prices. Indeed, the report by the Committee on the Global Financial System (CGFS) on the financial events in the autumn of 1998 notes that such factors may have exacerbated the response of markets to shocks at that time.<sup>177</sup>

Consolidation could also cause markets to be less resilient following a shock if it reduced the likelihood that financial firms would act to cushion the impact of the shock on borrowers and markets. For example, consolidation could result in all of the largest and most important financial firms in an economy participating in the same broad set of financial markets. Clearly, consolidation need not have this effect, and the extent to which it does so would depend on the forces driving the consolidation. Nonetheless, to the extent that consolidation had such an effect, a major shock in one market could impose substantial losses on virtually all of the large

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<sup>176</sup> See Scharfstein and Stein (1990) for a model of herding behaviour in financial markets.

<sup>177</sup> See CGFS (1999), p 14.

financial firms. As a result, none of the firms might be willing and able to expand their activities to compensate for reductions by the others, thereby amplifying the effect of the shock on markets and the real economy relative to the outcome with a more fragmented and diverse financial sector. Thus, while consolidation might reduce the impact of smaller shocks – since financial firms would be better diversified – it could increase the effects of large shocks because the financial sector would be less well diversified. Consolidation could affect the resilience of financial markets through other channels as well. On the one hand, it could reduce the competitive pressures on financial firms to provide finance and market-making in periods of market turbulence. These pressures might be important, since each firm would probably want to reduce its activities if it could do so without the risk of losing future business as a result. On the other hand, if all firms cut back on their activities, they might all be made worse off. If so, consolidation could actually reduce firms' incentives to pull back, since larger financial firms might be more likely to take account of the effects that their own activities could have on the macroeconomic outcome and so on the value of their positions.

In any case, the potential effects of consolidation on the operation of financial markets do not yet appear to have become significant practical concerns. The central bankers who were interviewed generally thought that consolidation had not affected the volatility or liquidity of financial markets. Only in Japan, where significant consolidation of domestic institutions is expected to take place within the next couple of years, together with increased involvement of large overseas institutions in key asset markets, did the central bank think that such effects might become an issue in the future. Other central banks were more sanguine. In Europe, it was evident that the largest institutions were the providers of market liquidity in national markets, in adverse conditions or otherwise. But the introduction of the euro had significantly increased the size of the market in which they operate. In the United States, it was pointed out that consolidation did not necessarily imply any change in the aggregate capital allocated to trading and market-making. Indeed it was noted that, so long as barriers to entry are not large, the effects of consolidation on market volatility and liquidity should be small, since increased volatility and reduced liquidity relative to their levels in competitive markets would seem to offer profit opportunities to potential entrants.

Another possible adverse effect of consolidation for monetary policy is that changes in financial structure might make it more difficult to interpret movements in indicator variables such as yield spreads or the monetary aggregates. There have been instances in the past when financial-sector liberalisation has had unexpected consequences for widely monitored variables (eg monetary aggregates in the United Kingdom in the 1980s), with the consequence that the monetary policy stance has been difficult to assess. Could consolidation have a similar impact? At least thus far, it does not seem to have done so. As noted, the central bankers interviewed generally did not believe that consolidation had had noticeable effects on the behaviour of financial markets, suggesting that indicators based on prices or interest rates have been essentially unaffected. Similarly, few of those interviewed thought that consolidation had significantly affected the behaviour of monetary aggregates. While a number of central banks noted that financial market developments more generally had made movements in the aggregates more difficult to predict, only a few of them reported that consolidation had had an influence, and its effects were generally thought to have been fairly minor. However, a few of the central banks thought that the effects of consolidation on the behaviour of the aggregates was not yet clear, or thought that such effects could be more significant in the future. If the pace of consolidation were to increase suddenly, that would be more likely to have an effect similar to that of sudden financial liberalisation.

If consolidation led to the development of very large and complex institutions, the failure of which would be particularly difficult to manage, central banks' lender of last resort and monetary policy responsibilities would be more challenging. If such firms became troubled, the central bank, taking account of the potential moral hazard problems, would have to decide upon the appropriate magnitude and duration of any provision of emergency liquidity to the affected firm or firms. It would also have to carefully consider the possible need to ease the stance of

monetary policy both to cushion the real economy from the effects of the resulting stresses in financial markets – which might include an increased aversion to risk taking and reduced market liquidity – as well as to potentially reduce those stresses. Such consideration would require the central bank to judge the likely duration of the financial market difficulties, their potential impact on the economic outlook and the possible downside risks they pose to that outlook. Moreover, if policymakers decided that easier policy were warranted, they would need to be prepared to reverse course once market conditions began to improve. In practice, central banks have, at times, thought it appropriate to ease monetary policy in response to concerns about the possible macroeconomic effects of difficulties at financial institutions or in financial markets. For example, in the early 1990s monetary policy in the United States was for a time easier than it otherwise would have been owing to concerns about the effects on the economy of efforts by many banks to boost their capital in response to regulatory and market pressures. Moreover, consolidation – by increasing the number of large, complex institutions whose failure might have significant macroeconomic effects – might increase the likelihood that monetary policy would have to respond to financial difficulties at a particular firm or firms. In such situations, monetary policymakers would need to take care that their decisions were not unduly influenced by the possible effects of policy changes on the financial condition of the troubled firm or firms, but rather remained focused on the effects of such changes on the economy. In practice, however, the central bankers interviewed did not believe that consolidation had increased the likelihood that policy would be adversely affected by firm-specific concerns. But some pointed out that this possible distortion made past and present efforts to limit contagion through improvements in clearing, payments and settlement systems and tightened capital standards even more important.

Many of the large and complex financial institutions that might pose challenges to central banks would have cross-border operations. Difficulties at such firms would raise the additional question of which central bank should provide emergency liquidity assistance should it prove necessary. This issue was considered in the preparations for the century date change, and there was broad agreement that foreign banking organisations should have the same access as domestic institutions to normal sources of central bank liquidity, so long as they satisfied the criteria for such lending (eg quality of collateral and standards of home country supervision). However, more difficult situations could arise if an institution's collateral proved insufficient or concerns about its condition meant that the borrowing likely was probably not just to meet a temporary liquidity shortfall, but rather suggested a more substantial problem. In that event, the question might no longer be about the appropriate source of liquidity assistance, but rather how to handle an impaired institution. In such cases, it was thought that home and host country central banks and supervisory authorities would need to consult closely and that home country central banks might well be responsible for providing liquidity from the outset or at least very soon after such support became necessary. It was also noted at that time that the ability to use collateral in another country to back borrowing from a central bank could be useful for some institutions. Of course these issues were discussed in the context of the century date change, and further discussion will be needed for the case of lending to large, complex, internationally active banking institutions.

## **5. Some caveats and research challenges**

While there is no compelling evidence that consolidation has generally had effects on the implementation or transmission of monetary policy, it is worth bearing in mind some of the difficulties in assessing its impact.

First, variation in financial sector concentration over time within most countries has been relatively small compared to the variation across countries. Thus, identifying the effects of consolidation on monetary policy based on information from individual countries alone may be hard. On the other hand, cross-country studies are difficult because of the significant differences in legal and regulatory frameworks, institutional and market structures, and attitudes and

expectations across countries. An additional complication is that central banks may respond to consolidation by adjusting their operating procedures, thereby offsetting the effects that consolidation might otherwise have had.

Second, many of the central banks interviewed noted that consolidation had taken place at the same time as a number of other important changes in financial markets, including globalisation, deregulation, and substantial improvements in information and communications technology. As a result, it is difficult to separate the effects of consolidation alone from the effects of other changes, and to disentangle cause and effect.

Third, empirical estimates of the effects of monetary policy on the real economy are fairly imprecise, making it difficult to tell if consolidation has changed the transmission mechanism. And the hypotheses being tested have sometimes not been formulated clearly.

Finally, since most analyses of the effects of monetary policy are based on models that do not include many potentially important features of banks and financial markets, they have little to say about the influence of changes in the industrial structure of the financial sector on the effects of policy.

This review suggests several avenues of research that might allow a more thorough assessment of the impact of financial sector consolidation on monetary policy. Further development of formal models of the bank lending and balance sheet channels of the monetary transmission mechanism, to incorporate a richer characterisation of the financial sector, would help in formulating testable hypotheses. Work in a number of other areas would also be helpful. Studying the impact of a reduction in the number of participants on competition and efficiency in different market and auction settings would help to clarify both how far consolidation can go before difficulties in implementing policy are likely to emerge, and what changes in operating procedures might help to ameliorate those difficulties. A better understanding of the effects of heightened volatility in the policy rate on other market interest rates would be important if it was found that consolidation did in fact tend to raise the volatility of the policy rate. Across countries, the average volatility of a country's overnight rate is not related to the volatility of other short-term market rates in the country. This suggests that central banks may be able to allow some rise in volatility in the policy rate without great concern. However, periods of increased volatility in a country's policy rate are associated with periods of higher volatility in other short-term market rates, suggesting that some vigilance is appropriate.<sup>178</sup>

## **6. Conclusions**

Thus far, financial sector consolidation does not appear to have impeded the implementation of monetary policy, even though it has affected the markets in which central banks act in order to set policy. While most of the central banks surveyed reported that the number of participants in the market for central bank balances and the number of counterparties for monetary policy operations had declined as a result of consolidation, they generally thought that these numbers remained high enough to ensure that markets were competitive. While many central banks had made changes in monetary policy procedures and some had restructured their operations, these changes had not generally been undertaken in response to consolidation. Many of the central banks were confident that the appropriate regulations and operating procedures could ensure adequate competition going forward. Nonetheless, changes in regulations and procedures may be necessary to offset adverse effects of further consolidation, and central banks need to be alert to this possibility. For example, competition may be enhanced by promoting the participation of a wider range of counterparties. Indeed, the Swiss National Bank reported having made some

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<sup>178</sup> See Borio (1997).

changes that had helped to offset undesirable effects of consolidation on participation in monetary policy operations.

There is little evidence of an effect of consolidation on the monetary transmission mechanism in individual countries. Central banks generally report that the pass-through of changes in policy rates to market rates and rates on bank deposits and loans had not changed appreciably as a result of consolidation, and only a few respondents expected effects in the near term. Central bank staff generally indicated that they had not identified significant changes in the monetary transmission mechanism in recent years. It seems possible that consolidation might reduce the importance of the bank lending and balance sheet channels of policy – if indeed they are operative – because larger banks are likely to find it easier to raise funds in capital markets and to assess credit risk amongst potential borrowers (thus reducing the role of collateral). If so, it would be likely that the impact of a given change in the monetary policy instrument on output would be reduced. A reduction in the importance of these channels would also be expected to affect the distributional impact of monetary policy changes (eg by putting less of the burden of adjustment on agents without direct access to capital markets, such as most smaller businesses and the household sector), yet the central banks reported no evidence that the distributional impact had, in fact, changed.

However, many of the central banks noted that it was difficult to disentangle the effects of globalisation, technical innovation and financial sector consolidation, so that some effect of consolidation could not be ruled out. It is quite possible that consolidation has changed the economic environment in which central banks operate, but that they have been able to adjust policy appropriately without having to identify the reasons for the changes. A few central banks argued that the phenomenon was too recent for them to be able to evaluate its effects with any confidence. Some of them also thought that consolidation might be relevant in the future – particularly if its pace picked up relative to that of globalisation. Moreover, studies of cross-country differences in the strength of the monetary transmission mechanism offer some support for the existence of financial structure effects on the potency of monetary policy. In short, it should not be asserted that there is conclusive evidence that financial sector consolidation has had no effect on monetary policy. Rather the case for such an effect is not proven; it may simply be too early to tell. Central banks need to be flexible about how they set the proximate instruments of monetary policy, so that they can respond to any apparent changes in the monetary transmission mechanism. The optimal response will depend upon the reason for the change. Understanding the potential impact of financial sector consolidation – and indeed of other factors such as globalisation – should enable central banks to do better than with trial and error alone. It would be prudent for forward-looking central banks to bear in mind in particular the possibility that consolidation could, in future, tend to reduce the importance of the so-called credit channels of monetary policy transmission – to the extent they are operative – and thereby reduce the impact of changes in monetary policy instruments on the real economy.

## References

- Bachetta, P and S Gerlach (1997): "Consumption and credit constraints: some international evidence", *Journal of Monetary Economics*, 40, pp 207-238.
- Bank for International Settlements (1999): "The monetary and regulatory implications of changes in the banking industry", *BIS Conference Papers*, Vol 7, March.
- Bank of England (1999): "The transmission mechanism of monetary policy", Report prepared by Bank of England staff under the guidance of the Monetary Policy Committee.
- Bernanke, B S and M Gertler (1995): "Inside the black box: the credit channel of monetary policy transmission", *Journal of Economic Perspectives*, Vol 9, Fall, pp 27-48.
- Bernanke, B S and M Gertler (1998): "The financial accelerator in a quantitative business cycle framework", *NBER Working Paper No 6455*.
- Bernanke, B S, M Gertler and S Gilchrist (1998): "The financial accelerator and the flight to quality", *NBER Working Paper No 4789*.
- Borio, C (1997): "The implementation of monetary policy in industrial countries: a survey", *BIS Economic Papers No 47*.
- Braun, C, D Egli, A Fischer, B Rime and C Walker (1999): "The restructuring of the Swiss banking system", in *BIS (1999)*.
- Cecchetti, S G (1999): "Legal structure, financial structure, and the monetary policy transmission mechanism", *NBER Working Paper No 7151*.
- Cottarelli, C and A Kourelis (1994): "Financial structure, bank lending rates, and the transmission mechanism of monetary policy", *IMF Staff Papers*, Vol 41, No 4, pp 58-623.
- Dale, S and A G Haldane (1995): "Interest rates and the channels of monetary transmission: some sectional estimates", *European Economic Review*, December, pp 1611-26.
- De Bondt, G J (1999): "Financial structure and monetary transmission in Europe: a cross-country study", University of Amsterdam.
- Dornbusch, R, C A Favero and F Giavazzi (1998): "The immediate challenges for the European Central Bank", *NBER Working Paper No 6369*.
- European Central Bank (1998): "The single monetary policy in Stage Three".
- Favero, C A, F Giavazzi and L Flabbi (1999): "The transmission mechanism of monetary policy in Europe: evidence from banks' balance sheets", *NBER Working Paper No 7231*.
- Fisher, J (1999): "Credit market imperfections and the heterogeneous responses of firms to monetary shocks", *Journal of Money, Credit and Banking*, 31, pp 187-211.
- Friedman, B M (1999): "The future of monetary policy: the central bank as an army with only a signal corps", *NBER Working Paper 7420*.
- Fuentes, I and T Sastre (1999): "Implications of restructuring in the banking industry: the case of Spain", in *BIS, (1999)*.
- Ganley, J and C Salmon (1997): "The industrial impact of monetary policy shocks: some stylized facts", *Bank of England working paper No 67*.
- Gertler, M and S Gilchrist (1994): "Monetary policy, business cycles and the behaviour of small manufacturing firms", *Quarterly Journal of Economics*, 109(2), May, pp 309-40.
- Group of Ten (1995): "Saving, investment and real interest rates", Rome: Istituto Poligrafico E Zecca Dello Stato, October.

- Hoffman, B and P Mizen (2000): “Evidence of passthrough in UK banks’ and Building Societies’ retail rates”, Bank of England, mimeo.
- Howard, D (1998): “A primer on the implementation of monetary policy in the LVTS environment”, *Bank of Canada Review*, Autumn.
- Iacoviello, M and R Minetti, (2000): “The credit channel of monetary policy and housing markets: international empirical evidence”, Mimeo, LSE.
- Jappelli, T and M Pagano (1989): “Consumption and capital market imperfections”, *American Economic Review*, 79, pp 1088-1105.
- Jayartne, J and D P Morgan, (1997): “Information problems and deposit constraints at banks”, *Research paper 9731*, Federal Reserve Bank of New York.
- Kahn, C, G Pennacchi and B Sopranzetti (2000): “Bank consolidation and consumer loan interest rates”, unpublished mimeo.
- Kashyap, A K (1995): “The impact of monetary policy on bank balance sheets”, *Carnegie-Rochester Conference Series on Public Policy*, Vol 42, 1995, pp 151-195.
- Kashyap, A K and J C Stein (1997): “The role of banks in monetary policy: A survey with implications for the European Monetary Union”, *Economic Perspectives*, Vol 22, No 5 Federal Reserve Bank of Chicago.
- Kashyap, A K and J C Stein (2000): “What do a million observations on banks have to say about the transmission of monetary policy?”, *American Economic Review*, 90.
- Kashyap, A K, J C Stein, and D W Wilcox (1993): “Monetary policy and credit conditions: evidence from the composition of external finance”, *American Economic Review*, 83, pp 78-98.
- Kiyotaki, N and J Moore (1997): “Credit cycles“, *Journal of Political Economy*, 105(2).
- Miron, J, C Romer, and D Weil (Also published in *Monetary Policy*, N. Gregory Mankiw, ed, (Chicago; University of Chicago Press: 1994): “Historical perspectives on the monetary transmission mechanism”, *NBER Working Paper No 4326*.
- Scharfstein, D S, and J C Stein (1990): “Herd Behaviour and Investment”, *American Economic Review*, 80(3), pp 465-480.
- Swiss National Bank (1999): “Monetary policy decisions of the Swiss National Bank for 2000 (as of December 1999)”.



# **Chapter V**

## **The effects of consolidation on efficiency, competition and credit flows**

### **1. Introduction**

The liberalisation of financial markets and the accelerating development of information technology have increased competition both within and across industries. In particular, the lowering of geographical barriers and the increasing integration of financial markets pit against each other banks, insurance and asset management companies that used to operate in segmented markets. In response to this process, financial institutions attempt to improve the efficiency of existing operations and to expand into new markets, trying to build a competitive advantage in a new environment.

Mergers and acquisitions (M&As) allow financial institutions to rapidly increase their size and to improve their knowledge of new products and markets, thereby allowing them to attempt to exploit economies of scale and scope, to preserve falling margins by increasing market share and to attract new customers. M&As on the scale witnessed by the financial sector in the last decade have profound effects on the firms involved, their competitors and their customers, in particular households and small firms, for whom changing providers of financial services is more costly.

M&As can result in larger and more diversified firms; however, this does not necessarily mean that these firms are run more efficiently. In order to assess the impact of consolidation on the performance of financial institutions, the first section of this chapter defines what is meant by efficiency improvement; it then examines the evidence available regarding the effect of consolidation on the efficiency of financial institutions in the G10 countries.

Consolidation might increase the market power of financial institutions, thus leading to prices above (and volumes below) those prevailing in a hypothetical situation of perfect competition. The effect of consolidation on competition depends on several factors, such as the characteristics of the deal (eg in-market or out-of-market), the type of customers (local or international) and the degree of contestability of the markets involved. In the second section, the possible effects of consolidation on competition are analysed. Particular attention is given to ongoing fundamental developments in financial markets that have raised questions about the continued importance of the geographic markets identified under traditional antitrust policies. Existing empirical research is examined in order to assess the impact of M&As on competition. In addition, the main features of actual antitrust policy in the G10 countries are reviewed and a few relevant case studies are presented.

In many countries the process of consolidation of the banking system has involved a large number of small banks, raising fears that the reduction in the number of these institutions may affect the availability of credit to small firms that traditionally rely on bank credit. When consolidation occurs, the larger bank resulting from the merger is able to expand its lending capacity with respect to larger borrowers, and it may restructure its portfolio, discontinuing credit relationships with smaller borrowers.

In the section on the effects of consolidation on the availability of credit flows, the relative importance of small firms for G10 countries is briefly examined. After discussing why consolidation may adversely affect credit flows to small businesses, the existing empirical

evidence is reviewed. The effects of changes in size and organisation that result from consolidation on the propensity of participating banks to make small business loans are analysed, as is the behaviour of other market participants that might provide financing to the borrowers that have been rejected by the banks involved in M&As.

## **2. Consolidation and efficiency**

The financial services sector is transforming itself in response to fundamental changes in regulation and technology. Financial institutions respond by attempting to improve their efficiency and by searching for new customers, increasing the range of products they offer and their geographical reach.

M&As are one way of implementing these strategies; however, the effect of consolidation on the performance of the institutions involved is not always clearly positive. After defining what is generally meant by efficiency improvement, the impact of consolidation on the performance of financial institutions is gauged on the basis of a review of the evidence available for G10 countries regarding the effect of M&As on the efficiency of financial institutions.

### **How do we measure efficiency?**

Efficiency is a broad concept that can be applied to many dimensions of a firm's activities. According to a narrow technical definition, a firm is cost-efficient if it minimises costs for a given quantity of output; it is profit-efficient if it maximises profits for a given combination of inputs and outputs. These definitions take size and technology as given and focus on how production factors are combined; they both measure managerial efficiency (the optimisation of existing resources), as opposed to the more comprehensive concept of technological efficiency.

Technological efficiency considers scale and scope economies: an efficient firm is one that reaches the optimal size for its industry (scale) and that produces the optimal mix of products given the prices of their production factors (scope). The minimum efficient size and optimal product mix vary with technologies, regulations and consumers' tastes. Therefore, there should be wide variations in firm structure across time, industries and countries if firms fully exploit scale and scope economies.

The definitions call for different measurement methodologies. The simplest approach consists of comparing balance sheet ratios that describe costs (eg operating costs over gross income) and profitability (eg return on assets or on equity). However, this methodology does not fully take into account the complexity of the financial industry. More complex analyses measure managerial cost and profit efficiency by comparing firms to the best practice of the industry, as determined by statistical methods, taking into account for each institution its inputs, outputs and the prices it faces. A frontier (a combination of the factors just mentioned) along which all efficient firms would operate is estimated, then the distance of each actual firm from the frontier is taken as a measure of its (in)efficiency.<sup>179</sup>

In order to evaluate economies of scale and scope, the shape of the frontier, given by the existing technologies, is investigated: if the performance of firms on the frontier (ie firms that optimally combine the existing resources) would improve by changing their size or product mix, then there is still room for exploiting economies of scale or scope.<sup>180</sup>

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<sup>179</sup> This method should be considered with a certain degree of caution, given that it is based on the presumption that the residuals of the estimated frontier (usually thought of as what cannot be explained) are highly correlated with the managerial inefficiency of the banks.

<sup>180</sup> For a review of estimation techniques, see Berger and Mester (1997).

The impact of M&As on firm-level efficiency can be gauged by comparing firms along different dimensions. For example, several studies investigate the relationship between size and cost efficiency. The results provide indirect evidence on the effects of mergers: if larger firms are more efficient, then presumably mergers will improve performance. This methodology suffers, however, from a weakness: it assumes that merged institutions are largely comparable to other larger firms; but the fact that some firms are involved in a merger while others are not is an indication that they may be different in several (possibly unobservable) ways. Analyses that focus on the performance of merged institutions compared with the performance of the non-merged ones are more reliable and provide direct evidence on the relationship between M&As and efficiency.

The two approaches are complementary; both provide information on the consequences of the consolidation process on competition and efficiency. Research has usually been conducted by analysing indirect evidence, mainly because of problems of data availability.

Finally, for firms listed on a stock exchange, efficiency gains can be measured on the basis of stock market performance: a firm is thought to be doing well when its shares outperform a given benchmark (the industry average or an index of firms of comparable size). The overall efficiency gains from a merger are evaluated in terms of the sum of the market values of the bidder and the target: if the sum increases, the deal is supposed to create value, and vice versa if it decreases.

Differences in regulations, institutions and market structure across countries mean that conclusions drawn from the analysis of one country should be generalised to others only very carefully. This also means that common patterns that might eventually emerge from an international comparison are particularly informative for a policy debate.

### **Commercial banks**

Before analysing the empirical evidence, a few warnings on the commercial banking industry should be given. First, the industry really consists of two markets, retail and wholesale banking; retail banking is oriented towards households and small firms, while wholesale banking caters to larger firms and other financial institutions. Of course, many banks provide both services, but this only adds to the complexity of the analysis. In general, research has not distinguished explicitly between retail and wholesale banking, although the focus is implicitly on retail banking, where policy issues regarding competition, regulation and consumer protection are more relevant. The remainder of the section is mainly concerned with retail banks.

Second, in countries with a heavily bank-oriented financial system, the banking industry may evolve differently than in countries where there is more scope for securities markets, both in terms of products offered and risk management. This should be kept in mind when comparing cost and revenues structures and economies of scale and scope. In countries with well-developed financial markets, banks provide more services than just loans and deposits and are more able to offload risks, thus maintaining more liquid balance sheets; they may behave differently from banks that rely more on the traditional intermediation business.

Finally, because of differences in regulation, in some countries commercial and investment banks are (or have been in the past) strictly separated, while in others they can operate jointly as universal banks and even have cross-shareholdings with industrial companies. These differences make for different market structures and internal organisations, again hampering international comparisons. All these warnings notwithstanding, the banking industries in G10 countries do share some structural features that emerge from a careful analysis.

As most, although not all, M&A activity has taken place so far within country borders, the large majority of research is carried out at the domestic level. Most papers deal with efficiency, scale and scope issues indirectly, by comparing firms of different size; a few papers look directly at the evidence on mergers, analysing ex post improvements in performance. The following

summary of the aggregate data introduces a review of empirical papers that deal with issues of consolidation and technical and managerial efficiency for commercial banks.

### *Aggregate data*

Similarities and differences among North American, European and Japanese banks emerge from the comparison of simple balance sheet ratios. The relationship between the cost structure and size of North American and European commercial banks shows some similarities: the ratio of operating costs to gross income is higher for smaller banks (with total assets below USD 5 billion) and it decreases from over 60 to around 55% for banks with assets between USD 20 and 50 billion (see Table V.1).

Table V.1  
Size and performance of commercial banks

Area	Variables	< USD 5bn		USD 5-20bn		USD 20-50bn		> USD 50bn	
		No	Average	No	Average	No	Average	No	Average
Europe	Non-int. income (% of gross income)	539	19.2	169	24.6	50	20.2	64	30.8
	Operating costs (% of gross income)	543	63.1	183	61.6	55	55.6	63	65.5
	Return on equity	559	7.1	185	7.4	48	7.2	58	8.2
North America	Non-int. income (% of gross income)	266	21.5	97	29.2	29	28.2	19	53.4
	Operating costs (% of gross income)	266	60.9	96	59.8	29	55.4	19	67.8
	Return on equity	266	11.2	97	13.5	29	13.5	19	14.1
Japan	Non-int. income (% of gross income)	15	0.4	63	9.2	29	8.9	26	30.0
	Operating costs (% of gross income)	17	76.9	63	69.5	29	67.9	26	60.4
	Return on equity	17	1.3	63	0.1	29	0.5	26	3.2

Source: Fitch-IBCA data for commercial banks of G10 countries; banks are ranked by assets in USD billions. All variables are averaged over the 1994-97 period; the distribution is truncated at the top and bottom 10%.

The largest banks, with assets greater than USD 50 billion, present the highest costs (more than 65% of gross income). This pattern points to the existence of economies of scale up to a certain size, followed by diseconomies for very large banks. However, profitability rises with total assets: for North American banks the return on equity increases from 11 to 14% from the first to the fourth class; for European banks it increases from 7 to 8%.<sup>181</sup> Higher operating costs are

<sup>181</sup> Return on equity, unlike return on assets, is influenced by the capital structure of the bank; however, given that the capital structure is endogenously determined by the bank's management, it can also be considered as part of the measurement of efficiency.

compensated by a lower ratio of equity to total assets, probably an indirect benefit of increased diversification, and by a higher share of non-interest income (more than 50% of gross income for North American banks, more than 30% for the others). For Japanese banks the picture is more straightforward: the ratio of operating costs to gross income decreases as firms become larger; profitability is low or negative because of the deteriorating economic and financial conditions of the country in the mid-1990s.

As for managerial efficiency, the dispersion of cost and profitability ratios is a good proxy for the distance between the best and the worst performers. In North America, among banks with less than USD 5 billion of assets, the costs of those in the top quartile represent 55% of gross income and the return on equity is above 15% (Table V.2).

Table V.2  
**Dispersion of performance measures of commercial banks**

Area	Variables	< USD 5bn		USD 5-20bn		USD 20-50bn		> USD 50bn	
		Best quarter	Worst quarter	Best quarter	Worst quarter	Best quarter	Worst quarter	Best quarter	Worst quarter
Europe	Non-int. income (% of gross income)	23.7	14.2	32.1	15.1	31.9	13.3	37.3	23.9
	Operating costs (% of gross income)	57.5	68.7	53.4	70.4	34.4	69.3	58.0	73.8
	Return on equity	8.8	5.4	9.7	4.7	9.0	5.6	9.9	4.8
North America	Non-int. income (% of gross income)	26.2	25.3	34.2	24.4	35.7	22.6	74.5	38.1
	Operating costs (% of gross income)	55.1	65.7	55.5	64.5	55.2	64.5	63.6	74.1
	Return on equity	15.2	7.7	17.4	10.1	16.5	11.2	15.5	13.0
Japan	Non-int. income (% of gross income)	13.6	3.5	11.2	7.0	9.8	7.3	41.3	24.9
	Operating costs (% of gross income)	68.2	75.8	66.8	72.2	63.1	71.3	55.8	64.7
	Return on equity	3.2	-9.8	3.6	-4.0	3.7	-0.3	-2.0	-4.3

Source: Fitch-IBCA data for commercial banks of G10 countries; banks are ranked by assets in USD billions. All variables are averaged over the 1994-97 period; the distribution is truncated at the top and bottom 10%.

For banks in the bottom quartiles of the cost and profitability distributions, costs are above 65% of gross income and the return on equity is less than half that of the best performers; the results are qualitatively the same for European and Japanese banks. The heterogeneity of results among banks of roughly the same size is an indication that there is room for large efficiency gains. For the largest banks, with assets above USD 50 billion, there is less heterogeneity, at least in North America (except for the share of non-interest income, which varies widely, perhaps due to the simultaneous presence of traditional intermediaries and more innovative banks). This could be due to the fact that the largest banks largely operate in wholesale markets where there is more

competition and less room for complacent behaviour. For European and Japanese banks, the differences between the top and bottom quartiles are similar to those recorded for the smaller banks; again, heterogeneity indicates room for efficiency improvement.

### *Cost and profit efficiency*

Most studies of cost efficiency find that retail banks operate on average at between 10 and 20% below the efficient cost frontier, ie their costs are higher by 10 to 20% than those of the best institutions.<sup>182</sup> This result holds across countries, suggesting that the gap between the best and the average practice is fairly stable. Efficiency is almost always measured relative to a domestic benchmark, as international comparisons are difficult (because the best banks of each country operate with different technologies that are not directly comparable). A study of 2000 European banks covering the period 1993-97 (ie after the implementation of the European Union's Second Banking Directive of 1988 and the adoption of the Single Market of 1992) shows that, on average, costs could be reduced by 16%;<sup>183</sup> in the period examined, some countries – such as Italy, the Netherlands and the United Kingdom – achieved rapid cost efficiency improvements, while in other countries – such as France and Germany – banks have yet to start slimming down.

Estimates of profit efficiency are more dispersed, averaging around 50% (ie the average bank could be twice as profitable); however, they are also more sensitive to the specification used to measure them and are thus less robust. On average, this dispersion suggests that profits are more driven than costs by firm-specific factors such as management quality or unobservable characteristics of local demand.<sup>184</sup> Therefore, there is a high potential for improving the overall performance of an inefficient target by reducing costs or increasing revenues.

The studies that analyse the direct effect of M&As on banks' efficiency have been performed on the basis both of balance sheet ratios and of multivariate cost and profit functions. The evidence on the effects of the deals on cost efficiency varies by country. For the United States there is little evidence of any improvement in cost efficiency following a merger, although a few studies that use more recent data show that there are some gains.<sup>185</sup> The evidence for European banks is broadly consistent with these results: one study finds that domestic mergers among banks of equal size improve cost efficiency, but this result does not hold for all countries; cross-border acquisitions are associated with a reduction in the costs of the target, while no effect is found for domestic M&As.<sup>186</sup> The difficulties in improving cost efficiency are related to the obstacles encountered, especially in continental Europe, to reducing banks' labour forces. In fact, personnel reductions, one of the main sources of savings, are hardly an option in countries with rigid labour markets.

As for profit efficiency, research performed on US banks finds an improvement, due mainly to an increased diversification of risks.<sup>187</sup> Larger banks have more diversified loan portfolios; this may also be due to the recent lift of the ban on interstate transactions, which allowed banks from different states, each with geographically concentrated portfolios, to merge and thus

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<sup>182</sup> See for example Berger and Humphrey (1997) for the United States and Altunbas, Molyneux and Thornton (1997) and Schure and Wagenvoort (1999) for Europe.

<sup>183</sup> See Schure and Wagenvoort (1999).

<sup>184</sup> See Demsetz and Strahan (1997).

<sup>185</sup> See Berger (1998), Peristiani (1997) and Rhoades (1998).

<sup>186</sup> See Altunbas, Molyneux and Thornton (1997), Focarelli, Panetta and Salleo (1999) and Vander Vennet (1996).

<sup>187</sup> See Akhavein, Berger and Humphrey (1997), Berger, Hancock and Humphrey (1993), Berger, Humphrey and Pulley (1996), Berger and Mester (1997) and Clark and Siems (1997).

diversify their holdings.<sup>188</sup> The reduction in risk allows them to lend more per unit of equity, thus earning higher returns. In Europe, more efficient banks tend to acquire institutions in worse shape. Mergers have a positive impact on profitability, mainly driven by improvements in operational efficiency; however, deals that consist of the purchase of the majority of the voting shares of the target do not appear to result in significant improvements.<sup>189</sup> One study finds that Italian banks merge in order to change their business focus towards providing financial services and thus increase their non-interest income, rather than to obtain efficiency gains;<sup>190</sup> the increase of profitability that is observed after M&As is related also to a more efficient use of capital.<sup>191</sup>

The direct evidence on how M&As affect banks' performance is mixed. In general, better banks acquire banks in worse shape; there is then some improvement, especially on the revenue side and for the deals of the last decade.<sup>192</sup> However, the gains are probably not as large as those advertised by practitioners; more time is needed to fully assess the effects of the more recent transactions, including those involving very large institutions.

### *Scale and scope economies*

Perhaps the most commonly quoted source of potential gains from M&As is the exploitation of scale economies. Banks that significantly increase their size by merging with others may have the opportunity to access cost saving technologies or to spread fixed costs over a larger base, thus reducing average costs and improving profitability. Notice however that many of the same gains could be achieved by outsourcing typical back office functions.

Most research on the existence of scale economies in retail commercial banking finds a relatively flat U-shaped average cost curve,<sup>193</sup> with a minimum somewhere around USD 10 billion of assets, depending on the sample, country and time period analysed.<sup>194</sup> This suggests that efficiency gains from the exploitation of scale economies disappear once a certain size is reached and that there might be diseconomies of scale above a particular threshold, presumably due to the complexity of managing large institutions.

This result is fairly robust and holds again across countries, but it relies mainly on data from the 1980s and early 1990s; it might have to be revised due to recent technological changes that imply large fixed costs and thus have the potential for scale economies even for larger banks.

Probably the second most quoted reason for M&As is the exploitation of synergies, or economies of scope: by merging with institutions specialised in different market segments, it is claimed that banks can improve their production process and cross-sell their products to a larger customer base. Measuring the existence and extent of economies of scope is especially difficult,

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<sup>188</sup> Berger and DeYoung (2000) find that some banking organisations are efficiently managed on a cross-regional basis.

<sup>189</sup> See Vennet (1996).

<sup>190</sup> See Focarelli, Panetta and Salleo (1999).

<sup>191</sup> Haynes and Thompson (1999) find significant cost cutting and profitability gains from mergers.

<sup>192</sup> See eg Berger and Humphrey (1992), DeYoung (1997), Linder and Crane (1993), Peristiani (1997), Rhoades (1993 and 1998) and Srinivasan (1992).

<sup>193</sup> For the United States, see eg Berger, Hanweck and Humphrey (1987), Berger and Mester (1997), Hughes and Mester (1998), Hunter, Timme and Yang (1990) and Noulas, Ray and Miller (1990); for Europe see Altunbas and Molyneux (1996), Salleo (1999) and Schure and Wagenvoort (1999). For a fairly comprehensive review on scale and scope economies, see Berger, Demsetz and Strahan (1999).

<sup>194</sup> For Europe, scale economies are somewhat higher for savings banks, but for all categories of banks they are much lower than the cost reduction that can be obtained by improving the quality of management. See Schure and Wagenvoort (1999).

given that, in theory, the benchmark should consist of single-product firms. The lack of such firms casts doubts on the reliability of results in this particular field.

The analysis of universal banking, conducted on European data, searches for complementarities between loans and investment-related services; there is no strong evidence either in favour or against the joint provision of different services, but this might be due to measurement problems involving economies of scope.<sup>195</sup> In fact, the true test might be about to come, when a fully unified European market will see specialised and universal banks compete against each other.

Scale and scope economies are usually mentioned as the main drivers of M&As, but the available evidence, although indirect, seems to confirm that there are tangible benefits only for smaller banks. However, changes in technology and market structure might soon render these results obsolete.

### ***Shareholder value***

The last indicator of efficiency gains is the stock market performance of merging banks. The main finding of the event studies looking at share prices around the time that a deal is announced is that, on average, total shareholder value (ie the combined value of the bidder and the target) is not affected by the announcement of the deal, since, on average, the bidder suffers a loss that offsets the gains of the target. Therefore, M&As imply a transfer of wealth from the shareholders of the bidder to those of the target.<sup>196</sup>

For US banks, one study finds the combined gains to be higher when there is significant overlap between institutions, consistent with a market power hypothesis, according to which higher market share leads to higher profits. Another paper finds, consistent with a diversification hypothesis according to which geographical diversification leads to a lower variability of income, that it is out-of-market transactions that create value for shareholders.<sup>197</sup> In both cases, the market value of the two banks combined should be higher than the sum of their values as separate entities.

Higher market concentration created by consolidation is likely to lead to an increase in prices for retail financial services, leading in turn to an increase in profits. However, it is also true that firms operating in more concentrated markets are generally found to be less efficient: this might offset the gains from an increase in market power and thus leave unchanged the market value of the bank.

A merger could also result in a bank with a different risk profile. Changes can come from many sources: larger banks could develop more sophisticated financial strategies or have more diversified assets and liabilities. Most gains would come from geographical diversification or from combining banks with other financial institutions such as securities and insurance companies; all this would influence the market value of merging banks. In general, M&As do not seem to generate significant shareholder value; at the moment it is hard to identify patterns that result in successful deals.

### ***Conclusions***

In conclusion, M&As do not significantly improve cost and profit efficiency and, on average, do not generate significant shareholder value. There is evidence in favour of exploiting scale

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<sup>195</sup> See Allen and Rai (1996) and Lang and Welzel (1998).

<sup>196</sup> See Hannan and Wolken (1989) and Houston and Ryngaert (1994 and 1997); Cornett and Tehranian (1992) found positive overall returns from banking M&As. Cybo-Ottone and Murgia (2000) is the only event study of the European market. For a survey of event studies, see Pilloff and Santomero (1998).

<sup>197</sup> See Houston and Ryngaert (1994) for the market power hypothesis and Zhang (1995) for the diversification hypothesis.



economies in retail banking up to a certain size (well below that of the most recent very large deals). Economies of scope are harder to pin down; there is no clear-cut evidence of their existence.

### **Investment banks**

M&As involving investment banks, as well as joint ventures and strategic alliances, are increasingly common, especially between continental European commercial banks and British and American investment banks. Firms are using M&As to establish a global presence. Cross-industry M&As involving investment banks and securities dealers have been plentiful, because within the financial services industry the latter is perceived to be a growth business.

There is little analytical evidence to draw on in analysing the impact on efficiency resulting from the consolidation process as it relates to investment banks. There are some results from the securities portion of the industry, but there is little evidence looking at this industry segment as a whole. Some evidence is also available from case studies that have been carried out on high M&As.<sup>198</sup>

As a cautionary note, these results are based on US financial data from the 1980s. This is due to the lack of research on investment banks in other countries and to the fact that, where universal banking is allowed, investment banks are often divisions of commercial banks with no readily accessible separate balance sheets.

### ***Cost and profit efficiency***

Unfortunately, there are no studies that look rigorously at the question of the cost and profit performance of investment banks before and after mergers. A survey of case studies of recent consolidation transactions involving investment banks suggests that globalisation is the main force underlying consolidation. Customer demand is driving the process as businesses are looking for comprehensive services and solutions from their financial institutions as they expand across borders. In this environment, efforts to sustain profitability are leading to the globalisation of the market segment. Quotes from merging entities suggest that mergers create business synergies in areas of product offerings, product development, distribution and service. Earnings growth is often cited as an important reason for mergers, as is the need for global industry knowledge and global distribution, which demands global products, services and intelligence.

In case studies, the sentiment is often expressed that in this industry “size matters”, as it is believed to be closely related to prestige. Large organisations with a recognisable brand name appear to be trusted and to enjoy levels of demand for their services that generate profits even in the presence of inefficient cost structures. In addition, some commentators have pointed to the increasing size of deals in recent years and suggested that investment banks need to be large in order to win business and participate in various large loan syndications and equity and debt underwriting.

### ***Scale and scope economies***

Analytical research is available only for the securities industry. The results indicate that economies of scale do exist among smaller securities firms, but are exhausted when the firm reaches between USD 14 and 36 million in total revenue and at about USD 40 million in assets and USD 4 million in equity.<sup>199</sup> Larger firms demonstrate scale diseconomies. It appears,

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<sup>198</sup> See Pearson (1998).

<sup>199</sup> See Goldberg, Hanweck, Keenan and Young (1991).

therefore, that only very small firms can expand their product mix and level of output, in the aggregate, and lower costs.

Similarly, on the question of economies of scope, research suggests that smaller speciality firms exhibit economies of scope while large multi-product firms exhibit diseconomies of scope. The overall conclusion, however, is that economies of scope do not appear to be important in the securities industry. Neither diversified nor speciality firms of minimum optimal scale operate at a cost disadvantage.

The results outlined above might be outdated in the foreseeable future, given the tremendous amount of change that has occurred in this sector in recent years. As a consequence, the efficient scale values found in past research, particularly for securities firms, are likely to change. However, the pattern of economies of scale to a relatively small size threshold appears to hold, as in the case of commercial banks.

### **Asset management companies**

The wave of consolidation in the asset management industry has been widely driven by round-the-clock trading, the internet, globalisation and other technology-driven advances.<sup>200</sup> Consolidation is also resulting from consumers' desire for the convenience of one-stop shopping. Japan and Europe are expected to be growth areas in the future because they have lagged behind the US institutional asset management industry.

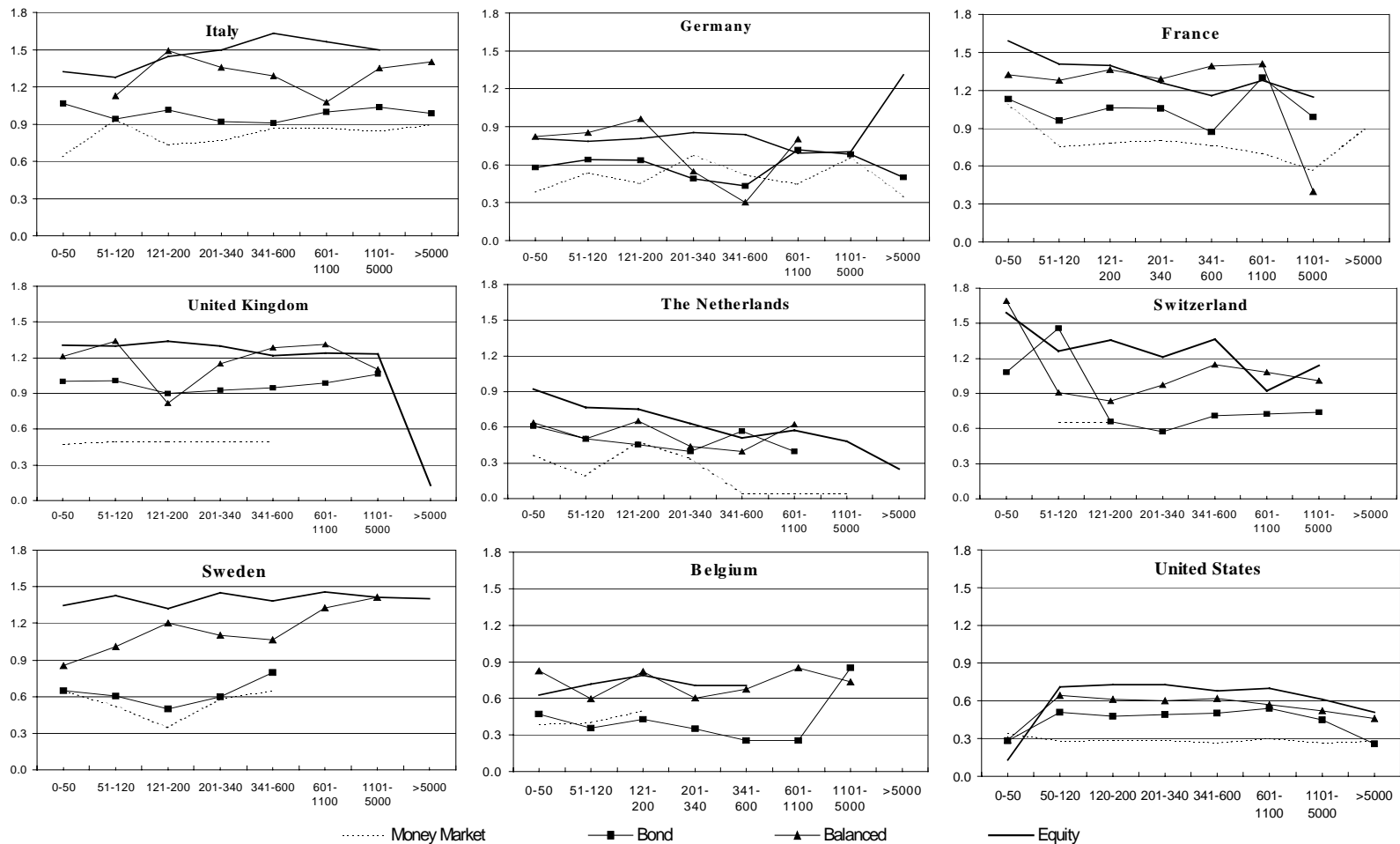
Surveys indicate that many mutual fund investors do not know mutual funds charges, which are the price paid for asset management services. Investors' ignorance of fees is most likely attributed to double digit returns seen during good economic times. However, the issue of mutual funds' income and expenses will probably become more important during unfavourable conditions in capital markets. As a consequence, the mutual fund industry is likely to undergo some restructuring in the future as individual fund companies start to compete not only in performance but also in cutting fund charges.

At first glance, there is no strong correlation between fees charged by mutual funds and their size, measured by assets under management (see Chart V.1). In the United States, fees are generally low and slightly declining with the increase in the size of the funds, suggesting mild economies of scale passed on to customers (this, of course, assumes that the industry is highly competitive, ie that mutual funds do not exert much market power). In Europe patterns are not as smooth: equity funds are generally more expensive than money market, bond and balanced funds, as in the United States. Although in many countries the largest funds charge less than the smallest ones, the trend in the relationship between assets under management and fees is not as clear as in the United States; in fact, it is often funds of intermediate size that seem to offer the best conditions to customers.

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<sup>200</sup> See Barbash (1998).

Chart V.1  
**Management fees and net assets of mutual funds\***  
 (percentage points and millions of USD, at December 1999)



\* Source: Lipper. Management fees are simple averages of maximum charges. No account is taken of charges scaled to fund size.

### *Economies of scale and scope*

The expansion of shareholder services in the 1980s and 1990s, along with growth in new industries and foreign markets, placed upward pressure on the funds' expense ratios, because of the increased complexity in investing and managing risk. However, in spite of these developments, operating expenses have decreased, with larger reductions generated by funds with more assets under management (and thus with a higher probability of offering new services at an additional cost).

When the scale of activity of a mutual fund expands, a less than proportional increase in costs may be recorded both in the area of portfolio management (information technology and security turnover) and in that of shareholder servicing (record keeping and distribution). However, this can happen only if asset growth is not accompanied by a huge increase either in the variety of securities in the portfolio or in the number of accounts.<sup>201</sup>

For a sample of US mutual funds, economies of scale at the management group level are significant, especially for smaller groups. However, if a fund's size is measured by the number of accounts, then scale economies are far smaller holding assets per account constant.<sup>202</sup> In general, there are scale economies in administering mutual funds in all size categories and the average cost curve of a typical mutual fund is downward sloping over the entire range of fund assets.<sup>203</sup> For the United States, the relationship between fund assets and operating expenses, related to the management and administration of funds, declines steadily as assets grow and reaches a low of 70 basis points for the group of funds with over USD 5 billion in assets.<sup>204</sup> In general, large equity funds display significantly lower operating expense ratios than small funds; the reductions in fund expenses from efficiency and productivity gains are passed on by service providers as they expand the scale of their operations. These results are partially consistent with those found for a sample of French open-end mutual funds, for which significant scale economies are detected only for small funds, while larger institutions tend to exhibit diseconomies of scale.<sup>205</sup>

There is also some limited econometric evidence on the presence of economies of scope in mutual funds. These results are qualitatively the same as those presented above for scale economies, with one difference noted in the study of French open-end mutual funds. In that case, economies of scope were found to be significant for both small and large firms.<sup>206</sup>

The evidence in favour of the existence of scope economies squares with the latest developments in the industry. Asset management services are often distributed jointly with other types of financial products, in order to reap the benefits from cross-selling: in Europe mutual funds are sold by bank branches, while in the United States fund distribution is concentrated in broker-dealers and discount brokers.<sup>207</sup> Also, life insurance companies tend to have a competitive advantage as well as other more specialised firms that have established cost-effective channels of distribution by using electronic means. In order to gain access to distribution, fund management expertise and a greater international presence, a number of cross-border M&As involving asset management firms have occurred in recent years (eg Mercury

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<sup>201</sup> See Baumol (1995).

<sup>202</sup> See Baumol, Goldfeld, Gordon and Koehn (1990).

<sup>203</sup> See Latzko (1999).

<sup>204</sup> See Rea et al (1999).

<sup>205</sup> See Bonanni, Dermine and Röller (1998) and Dermine and Röller (1992).

<sup>206</sup> See Bonanni, Dermine and Röller (1998).

<sup>207</sup> See Walter (1999).

Asset Management of the United Kingdom was purchased by Merrill Lynch in 1997). As an alternative to M&As, many mutual fund firms have opted for strategic alliances with banks, securities broker-dealers and insurance companies.

To summarise, there is little analytical work available that directly addresses the issue of efficiency gains from consolidation in investment banking and asset management companies. Some results from the securities portion of the investment banking industry suggest the presence of economies of scale, but only for smaller securities firms, while there is limited evidence for the existence of scope economies. With regard to asset management firms, the scarce evidence available suggests that larger mutual funds tend to be more efficient than smaller ones; however, economies of scale and scope are probably significant only up to a certain size threshold.

### **Insurance companies**

The insurance industry remains heavily regulated, both in its life and non-life segments; this could be a restraining factor for the consolidation process, decreasing the possibility of reaping economies of scale and diversification by discouraging consolidation, in particular cross-border deals. Differences in social security systems could also contribute to the international segmentation of the life insurance industry, if firms differentiate themselves in such key variables as the age of retirement or the model of funding (defined benefits or defined contributions). Furthermore, despite a trend towards deregulation, “cross-border trade in insurance services is limited by differences in culture, consumer protection laws, taxation, and the need to establish a local presence to process claims and handle administration.”<sup>208</sup> However, at least within domestic markets, there is a potential for economies of scale and scope, in particular with other financial products, such as those offered by banks. These benefits may be obtained through joint ventures or through the combination of banks and insurance companies, a growing trend especially in Europe. Finally, the proposition that there could be efficiency gains by letting the best firms take charge of the others is even more true in a sector protected, at least to an extent, from outside competition. The following sections discuss the available evidence on the insurance industry, distinguishing between the two main lines of business – life and casualty/property.

### ***Aggregate data***

The insurance industry seems to exhibit economies of scale, at least judging from a cursory examination of firms’ balance sheet ratios. In the North American life insurance segment, management expenses as a fraction of net premiums written decrease from 16% for the smaller firms to 11% for the larger ones; in Europe the ratio decreases from 9 to 4% (see Table V.3).<sup>209</sup> As for the non-life segment of the industry, the ratio decreases from 18 to 16% in North America and from 17 to 8% in Europe. In terms of profitability, the same pattern emerges: larger firms are more profitable than smaller ones. In North America, the return on equity increases from 3 to 13% for the life segment and from 7 to 10% for non-life firms; in Europe, it increases from 1 to 12% for life insurance companies and from 7 to 11% for the non-life firms.

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<sup>208</sup> See OECD (1998).

<sup>209</sup> The difference in cost levels between North America and Europe might depend on different definitions of the variables. Because of the low number of Japanese firms in the available sample, they are not included in the analysis.

Table V.3  
Size and performance of insurance companies

Area	Variables	Life insurance companies by asset size					
		< USD 500m		USD 500-2000m		> USD 2000m	
		No	Average	No	Average	No	Average
Europe	Management expenses (% of net premiums written)	76	8.6	86	5.0	142	4.4
	Return on equity	99	1.3	76	10.6	134	11.8
North America	Management expenses (% of net premiums written)	72	16.2	102	14.0	134	10.9
	Return on equity	71	3.4	104	10.6	135	13.0
Area	Variables	Non-life insurance companies by asset size					
		< USD 100m		USD 100-500m		> USD 500m	
		No	Average	No	Average	No	Average
Europe	Management expenses (% of net premiums written)	117	16.6	156	10.8	144	7.8
	Return on equity	263	7.2	183	9.3	145	11.2
North America	Management expenses (% of net premiums written)	254	17.9	364	15.9	216	15.5
	Return on equity	269	7.2	373	9.2	217	9.5

Source: Fitch-IBCA data for insurance companies; firms are ranked by assets in millions of US dollars. All variables are averaged over the 1994-97 period; the distribution is truncated at the top and bottom 10%.

If the dispersion of cost and profit measures is used as a proxy of efficiency, then North American insurance companies appear to differ substantially in their performance: for each class size and each segment of the industry, the costs of those in the worst quartile are more than double those in the best quartile and profitability is half as high (see Table V.4). The European industry reflects more or less the same pattern, suggesting that insurance companies in general could benefit from a consolidation process that would allow them to exploit scale economies and transfers of high-quality managerial skills. Of course, if the consolidation process goes too far, offsetting costs due to market power may arise (see below).

Table V.4

**Dispersion of performance measures of insurance companies**

Area	Variables	Life insurance companies by asset size					
		< USD 500m		USD 500-2000m		> USD 2000m	
		1st quarter	4th quarter	1st quarter	4th quarter	1st quarter	4th quarter
Europe	Management expenses (% of net premiums written)	3.4	12.9	2.5	6.7	3.0	5.6
	Return on equity	6.7	0.0	13.9	6.2	16.2	6.7
North America	Management expenses (% of net premiums written)	10.8	20.6	8.9	17.8	6.5	15.2
	Return on equity	10.6	0.0	14.7	6.6	17.3	9.1
Area	Variables	Non-life insurance companies by asset size					
		< USD 100m		USD 100-500m		> USD 500m	
		1st quarter	4th quarter	1st quarter	4th quarter	1st quarter	4th quarter
Europe	Management expenses (% of net premiums written)	10.0	23.2	4.4	16.1	1.8	12.7
	Return on equity	13.3	0.0	13.2	5.2	14.8	8.2
North America	Management expenses (% of net premiums written)	13.3	22.2	12.7	18.2	12.5	18.5
	Return on equity	10.1	4.4	12.9	5.5	12.5	6.1

Source: Fitch-IBCA data for insurance companies; firms are ranked by assets in millions of US dollars. All variables are averaged over the 1994-97 period; the distribution is truncated at the top and bottom 10%.

***Cost and profit efficiency***

A study performed on the insurance industry in the OECD countries finds that the increase in productivity observed for insurance companies in all countries is due to technical progress.<sup>210</sup> However, efficiency scores vary widely by country, the US firms being, on average, the most efficient. Efficiency seems positively correlated with the reinsurance rate and negatively correlated with the share of life insurance; this can be explained by the national characteristics of the life insurance market, which deters foreign entry and thus decreases competition, allowing domestic firms to grow complacent.

US non-life insurance companies operate at an efficiency level that varies from 80% of the best practice assessed for the medium-sized companies to 90% for the large ones, suggesting that competition keeps them from becoming too inefficient and that improvements from M&As are likely only for the firms in worst conditions.<sup>211</sup> The average inefficiency level in the life

<sup>210</sup> See Donni and Fecher (1997).

<sup>211</sup> See Cummins and Weiss (1993) and Gardner and Grace (1993).

segment of the insurance industry is higher, between 35 and 50%.<sup>212</sup> Given that M&As improve the efficiency of targets,<sup>213</sup> the foreseeable consolidation process will be beneficial to the industry by, for example, rationalising the agency distribution system.

The evidence for other countries points towards a larger gap between the best practice firms and the rest of the industry: the average efficiency level is around 50% for France and Belgium,<sup>214</sup> around 50% and growing in Germany<sup>215</sup> and a little higher in the British life insurance industry.<sup>216</sup> Given that efficiency seems to be higher in countries where the regulatory burden is lower, deregulation could help close the efficiency gap by introducing more competition.

The insurance industry is still very fragmented because of regulation and the specificity of some of its products (for example, claims settlements). The dispersion of efficiency levels that results from these barriers to entry could probably be reduced if the better managed firms took over the weaker ones,<sup>217</sup> but the lack of evidence for the past and the rapid changes foreseeable in the future make it hard to assess the potential efficiency gains from M&As.

### *Economies of scale and scope*

Scale economies in the US insurance industry have been studied extensively. For property/casualty insurance companies, there is evidence of scale economies for the small and intermediate size firms; this suggests that consolidation among them may reduce average costs.<sup>218</sup> On the other hand, larger firms seem to exhibit diseconomies of scale, while there is no evidence of scope economies at any size level.<sup>219</sup> As for the life insurance industry, scale economies are found up to USD 15 billion of assets, but it is unclear whether the result holds for larger firms.<sup>220</sup>

The evidence for European markets is more mixed, but in general it is in favour of the existence of scale and scope economies.<sup>221</sup> However, most studies refer to data of the early 1990s; the sweeping changes in regulation and technology that took place in recent years might have deeply affected the cost and revenue structure of the industry. Past results, therefore, should be considered with caution. For Japanese insurance companies there seems to be a consensus on the existence of scale economies, at least for the life industry.<sup>222</sup>

As in other financial industries, scope economies are more elusive; the coexistence of specialised life and non-life insurance companies within insurance conglomerates probably

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<sup>212</sup> See Yuengert (1993).

<sup>213</sup> See Cummins, Tennyson and Weiss (1999).

<sup>214</sup> See Delhousse, Fecher, Perelman and Pestieau (1995).

<sup>215</sup> See Mahlberg and Url (2000).

<sup>216</sup> See Rees and Kessner (1999).

<sup>217</sup> As long as concentration is not so high that firms become complacent or enjoy substantial market power.

<sup>218</sup> See Cummins and Weiss (1993).

<sup>219</sup> See Hanweck and Hogan (1996).

<sup>220</sup> See Yuengert (1993) and Cummins and Zi (1998); Grace and Timme (1992) find evidence of scale economies throughout their sample, but they do not control for differences in the output of small and large companies.

<sup>221</sup> See Focarelli (1992) and Prosperetti (1991) for Italy; Focarelli (1992) also finds evidence of scope economies for the life and non-life segments. Fecher, Perelman and Pestieau (1991) find significant scale economies for the French industry, both life and non-life; Mahlberg and Url (2000) find significant scale economies for the German market; and Kaye (1991) finds them for the British life insurance companies.

<sup>222</sup> See Fukuyama (1997).



means that there is no single winning strategy (diversifying versus specialising). Diversification may be more suited to some firms and countries, while specialisation may be better for others.<sup>223</sup>

Just as for banks, the smaller insurance companies could probably reduce their costs by taking advantage of the potential economies of scale, however the benefits are likely to disappear after a threshold that is well below the size of the largest firms. The existence of economies of scope with other financial institutions is debated.

### **Cross-industry and cross-border consolidation**

Research on the efficiency effects of M&As across financial industries and across national boundaries is scarce, largely because there have been relatively few such acquisitions to date. The primary difference between within- and across-industry M&As is the greater possibility of scope economies in mergers across industry lines – for example, through sharing physical inputs, information systems, or databases, or through consumption complementarities. There is also greater room for scope diseconomies – for example, from senior management straying far from its area of core competence.

There is very little research on the revenue scope efficiency effects of universal type consolidation. Some inference may be taken from the research on firms producing a single category of financial services. Such research shows that the evidence is ambiguous.<sup>224</sup>

There are factors that may make the efficiency consequences of international consolidation different to those for domestic M&As. First, there may be some barriers that inhibit foreign financial institutions from operating efficiently and competing against domestic institutions. These barriers may include differences in language, culture and regulatory or supervisory structures, and explicit or implicit rules against foreign competitors. In some cases, the organisational diseconomies of operating or monitoring from a distance may be exacerbated by having to manage institutions many time zones away.

Second, the market conditions and policies of the home nation may affect cross-border efficiency. In particular, the home market conditions (eg the degree of competition, the market for corporate control, or securities market development) and home market policies (eg banking powers, prudential regulation and supervision, and safety net guarantees) may affect the efficiency of national institutions abroad.

Studies of cross-border efficiency have usually found that domestic banks are significantly more efficient than foreign-owned banks.<sup>225</sup> In particular, one study found that institutions headquartered in the United States tended to be more efficient than other institutions both at home and in other nations.<sup>226</sup>

### **Summary**

There seems to be a general consensus that consolidation in the financial industry is beneficial up to a certain (relatively small) size in order to reap economies of scale. Although the evidence

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<sup>223</sup> See Berger, Cummins and Weiss (1999) and Berger, Cummins, Wiess and Zi (2000).

<sup>224</sup> Berger, Humphrey and Pulley (1996) found little or no revenue scope economies between bank deposits and loans. Berger, Cummins, Weiss and Zi (2000) found revenue scope diseconomies on average from providing life insurance and property-liability insurance together. Berger, Hancock and Humphrey (1993) and Berger, Cummins, Weiss and Zi (2000) found that joint production is more efficient for some types of firms and specialisation is more efficient for others.

<sup>225</sup> See eg DeYoung and Nolle (1996) and Mahajan, Rangan and Zardkoohi (1996).

<sup>226</sup> See Berger, DeYoung, Genay and Udell (2000).

is more mixed, there is also little in the way of gains from economies of scope or of improvements in managerial efficiency due to the transfer of skills from the bidder to the target.

There is no clear evidence that M&As result in cost reduction. The most recent studies suggest that consolidation may enhance revenues, although results vary with the countries and deals analysed; moreover, the gains appear limited in magnitude. Stock markets also seem sceptical of M&As: on average, at the announcement of a transaction, the combined value of the firms involved does not vary much, as it should if significant benefits were expected.

Ex post results of M&As seem to contradict the motivations given by practitioners for consolidation, which are largely related to issues of economies of scale and scope and to improvements in management quality. However to a certain extent this might be a puzzle in appearance only. The following explanations have been put forward: (i) practitioners consider cost reductions or revenue increases per se to be a success, without also taking into account industry trends as a benchmark; (ii) there might be a “denominator effect”: a 20% reduction in operating costs seems larger than an equivalent 0.4% reduction as a fraction of total assets; (iii) the fact that there are no improvements, on average, means that some institutions do better and some do worse; given the inside knowledge of their firm and the arm’s length knowledge of competitors, managers might be justified in believing that their institution might be among the ones that would benefit from a merger or acquisition; and (iv) deals done in the past might have suffered from stricter regulation (eg labour laws) that prevented firms involved in M&As from reaping all of the benefits of the deal.

### **How innovation will affect the financial industry**

The lack of clear-cut results on the efficiency of merged institutions could be traced back to the motivations for M&As. If they are not entirely driven by profit-maximising strategies (see Chapter II), M&As might well turn out to produce mixed results, in accordance with the fact that they were not all meant to increase profits in the first place. Other factors that potentially affect all participants might blur the picture, if their effect is large enough to overshadow the direct effect of M&As.

The opportunities presented by advances in payments technology, the development of internet banking and financial-engineering products should benefit all institutions (to the extent that they can be outsourced), but they are generally more easily exploited by large institutions that are able to invest up-front, postponing returns for longer. These firms also have more complex asset and liability structures that can benefit from sophisticated risk management strategies.

The development of outsourcing might have significant external effects on the financial industry. If the functions involved are those that exhibit clear economies of scale (eg processing credit card transactions), there might be a small number of firms performing them and offering lower rates to all financial institutions; this might, in turn, lower the threshold above which the smaller firms become viable, by decreasing their costs. The need for a larger size may be counterbalanced for some products by network economies, such as joining a nationwide ATM system, that can be obtained even by small banks.

Sales of mutual funds will be influenced even more heavily by branding, advertising and distribution channels. These developments will probably lead to internal, external and inter-sectoral competition in the asset management industry, promoting market efficiency and lower fees for consumers. The simultaneous presence of many, diverse institutions should benefit consumers and improve the dynamic efficiency of the financial industry by fostering competition and innovation.

A general warning with regard to these conclusions should be made, due to the importance of innovation itself in shaping firms and markets. On the one hand, innovation may reduce the cost of accessing the new technology, and therefore decrease the need for larger size in order to make its adoption profitable, so that even small intermediaries could handle tasks that today are out of their reach. On the other hand, there might be cases in which new systems are profitable

only if applied on a large scale, for example in the field of risk management. In the latter case, the differences between large and small institutions might increase; policymakers and regulators should carefully differentiate their action on the basis of products and markets rather than by categories of institutions.

### **3. Consolidation and competition**

Consolidation affects competition because it increases market concentration, with the final effect dependent both on the likelihood of market entry and on firm behaviour. Market entry may be limited, for example, by regulation, and oligopolistic behaviour may intensify when concentration becomes higher, possibly leading to non-competitive levels of prices (or interest rates) and volumes. In this section these theoretical issues are discussed. Then, existing empirical research is examined in order to assess the practical relevance of the various theoretical propositions. Since empirical analysis is inevitably based on the past and the financial landscape is changing quickly, the relevance of foreseeable future trends is assessed. Finally, actual antitrust policy is reviewed and some relevant case studies are presented.

#### **Theory**

The theoretical analysis starts with two subsections that review the ways in which consolidation may affect competition. First, the potential of market entry is discussed in order to assess the effect of consolidation on concentration. Second, firm behaviour is discussed because it may determine how concentration affects competition. These subsections are followed by a short discussion of the trade-off between competition, efficiency and financial stability. The final subsection discusses the issue of market definition, which is relevant for antitrust purposes.

#### ***Market entry***

Assuming a well-defined market, the standard literature on industrial organisation implies that the ease of market entry determines the link between competition and market concentration. In a contestable market, due to the threat of profitable entry, active firms are not able to exploit market power.<sup>227</sup> However, contestable markets are an extreme theoretical benchmark: in fact, the conditions that are required for a market to be fully contestable do not hold in the real world. In such a market environment, concentration would increase as a result of consolidation, but there would be no effect on competition.

In the case of the financial industry, contestability fails to hold as a result of three conceptually different types of entry barriers: (i) those that are directly caused by regulation, (ii) those inherent in firms' cost structures, and (iii) those that result from (relatively) inelastic customer demand. Regulatory barriers include specific subsidies or public guarantees. For example, commercial bank deposits are generally insured by the government and may lower banks' capital costs. This gives commercial banks a relative advantage in products markets where non-commercial banks such as investment banks and insurance companies also compete. Another example would be national or state differences in legal frameworks and in their applications, such as differences in the jurisdictional status of contracts in different countries; this is particularly relevant for the insurance industry. Finally, imposition of host country regulations on foreign competitors can create barriers to entry. For example, foreign institutions may be required to establish a physical presence in a particular country before authorisation for servicing customers is given.

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<sup>227</sup> Baumol et al (1982) introduced the concept of market contestability as an extreme example of the concept of potential competition introduced by Bain (1956).

Entry barriers due to differences in firms' costs arise where entry requires significant sunk costs that have to be earned back. This can reduce competitive pressures, at least in the short run. Economies of scale or scope or the necessity to set up a network of branches may create barriers to entry for firms that do not have the necessary size to be economically viable. In addition, unequal access to production technology, production factors, or infrastructure can confer market power on favoured firms. Such situations may be difficult to detect because they may involve non-financial industries. For example, a financial institution might be affiliated vertically with a telecom enterprise, until lately usually a monopoly, that in turn restricts its services to this institution.

The third cause of the lack of contestability is a relatively inelastic customer demand, a cause that may be most significant for retail markets. For example, when customers find it convenient to buy all their financial services at a single financial service provider, they may become locked in and as a result less inclined to switch to other providers in response to favourable price offers by competitors. Cross-sector consolidation may foster the bundling of products, thus increasing switching costs and the rigidity of demand for financial products. In the case of banking, for example, the lack of a legal requirement that account numbers as well as the associated transaction data in an electronic bank account be transferable to another bank may increase barriers to entry by making it more cumbersome for customers to switch banks. Another source of rigidity of demand is the complexity of products, which may increase the difficulty of comparing the services of different providers.

### ***Market behaviour***

The effect of concentration on competition depends, among other variables, on whether firms compete on quantities or prices. In the first case, it is straightforward to show that the market outcome is closer to the monopoly result the smaller the number of firms. In the second case, the effect depends on the heterogeneity of products; the more heterogeneous the products are, the greater is the market power of firms. Firms tend to adopt niche strategies, in order to differentiate products beyond their essential characteristics. This may ultimately lead to mass customisation, whereby technology improvements allow firms to tailor their standardised products to the specific needs of individual customers.

There might be instances in which the financial industry presents the characteristics of a natural monopoly, with the regulatory consequences emphasised by the traditional industrial organisation literature. For example, with respect to payment services of banks, there may be network effects, possibly implying natural monopoly or oligopoly (see the following chapter), with the potential to set prices at non-competitive levels.<sup>228</sup> Concentration of payment services in a non-contestable market environment increases the probability of market power abuse.

Linked oligopoly theory hypothesises that firms that compete simultaneously in many markets may recognise their interdependence and determine that aggressive behaviour in one market may lead to retaliation in the others; as a consequence firms may reduce competition in the affected markets. Multi-market contacts may lead to higher prices and lower quantities than the competitive outcome.<sup>229</sup> By increasing contact points among firms, cross-border and cross-sector consolidation in the financial services sector may reduce competition.

The theories on relationship lending emphasise the crucial role of financial institutions in financing customers that do not have direct access to capital markets. Such theories focus on the screening and monitoring function of financial institutions and hypothesise adverse effects of competition on users of financial services. These arise, among other reasons, because of the

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<sup>228</sup> See McAndrews (1995).

<sup>229</sup> Linked oligopoly theory was introduced by Edwards (1955) and was developed theoretically by Bernheim and Whinston (1990) among others.

inability of financial firms to subsidise new firms at the expense of established borrowers.<sup>230</sup> It may be the case that bank loans to small firms are better available in more concentrated markets than in competitive markets. However, as will be discussed extensively in the section on Consolidation and the availability of credit flows, consolidation may be detrimental to small business lending.

### ***Does consolidation create a trade-off between efficiency and financial stability?***

In general, in a competitive environment only the most efficient and innovative firms survive, thus ensuring that the industry remains healthy and that firms pass on the benefits of competition and innovation to their customers. However, for the financial sector there might be instances in which competition may have a negative impact on stability, as the least efficient firms may have an incentive to increase their risk in order to reach the industry profitability level (the so-called incentive to “gamble for resurrection”). If these firms are large, financial stability may be threatened (see Chapter III).

The role of consolidation in altering the balance between competition and stability is ambiguous; M&As among large banks create institutions whose failure is potentially more threatening to the stability of the industry. However, if the new entities are managed more efficiently or if they benefit from economies of scale or scope, there should be both benefits for the consumers (to the extent that the improvements are passed on) and no particular negative effect on financial stability.

Prudential supervision and regulation, in particular liquidation procedures and coordination among supervisors of different industries and from different countries, should ensure that the stability of the financial industry is not threatened by the external effects of competition.

### ***Market definition***

The preceding discussion assumed that the relevant market was already defined, but empirical work must start with a workable market definition. This subsection investigates the theory behind the definition of markets for purposes of antitrust regulation.

One may define a relevant product market as a market that comprises all products and services that are viewed by consumers as similar or equivalent because of their properties, price and purpose. The relevant geographic market is the territory including the firms that impose competitive constraints on each other. For example, one definition of a market used in antitrust analyses is “a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximising [monopoly] firm, not subject to price regulation ... likely would impose at least a ‘small but significant and non-transitory’ increase in price.”<sup>231</sup> A second, closely related definition that emphasises market structure more than conduct, is: “The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and demand of products and services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those areas.”<sup>232</sup> In some countries, the relevant geographic markets are identified by the antitrust authorities with administrative areas (eg regions or provinces; see Annex V.1).

In defining product markets, the substitutability of different products may vary across buyers of that product. For example, commercial bank transactions accounts and investment bank money

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<sup>230</sup> For an overview, see Boot (2000).

<sup>231</sup> See US Department of Justice and Federal Trade Commission (1992), p 7.

<sup>232</sup> “European Commission Notice on the definition of the relevant market for the purpose of Community Competition Law”, Official Journal of the European Communities, Series C, no 372, 9 September 1997.

management accounts have many similar features that may make them part of the same market for some consumers. On the other hand, bank accounts may be insured by government, while investment bank accounts typically are not insured. This may place these products in separate markets in the view of more risk-averse customers. Product market definitions also depend on the extent to which different goods are complements that are purchased together. In addition, convenience considerations may lead consumers to bundle their purchases of different goods or services. The extent of such clustering, and the resulting scope of the relevant product market, is an empirical question.

The geographic market indicates the extent to which consumers will travel to complete a transaction. This depends on the size of travel costs and other transaction costs relative to the utility gained from purchasing the product. As a generalisation, low-value goods that are purchased frequently tend to have smaller geographic markets than expensive goods that are purchased only rarely. Thus, wholesale markets will generally cover larger geographic areas than retail markets, and non-fiduciary financial services (such as mortgages) generally will have larger geographic markets than fiduciary services (such as deposits).

### **Empirical evidence**

This section analyses the existing studies that have examined the extent to which the consolidation of financial markets has affected competition. The first empirical issue addressed is the empirical definition of the relevant markets. Subsequently, the main findings of the empirical studies on the effect of consolidation on competition are discussed. It is important to be aware that this literature uses data that do not represent the most recent technological developments.

#### ***Market definition***

A recent examination of the suppliers of financial services shows that individual US firms are supplying more and more products over broader geographic areas.<sup>233</sup> The fact that firms have increased both their product selection and their geographic reach does not necessarily imply, however, that markets have expanded. Firms often operate in many different markets. Also, some traditional financial business processes are now split into functions that can be offered in separate markets. An example is lending, where origination, securitisation and interest rate or foreign exchange swaps split the lending process into separate components that may be conducted by different firms. In addition, on the demand side, some claim that consumers of financial products want bundled products to a lesser extent than they once did.

In research and policy analysis, markets are defined in terms of products and geographical areas. In the first respect, surveys of household and small-business bank customers show evidence of clustering around the principal transactions account, but credit cards, mortgage and other loans, and other financial services are often purchased elsewhere.<sup>234</sup>

Insurance product markets tend to be defined more narrowly, as developing expertise in any product line implies substantial costs, even for producers that are already active in other business segments.<sup>235</sup> In the non-life sector, customers generally feel that insurance products for different types of risks (health, property and casualty, travel etc) are not substitutable. Moreover, legal rules are often structured by type of risk, licensing for new types of risk is

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<sup>233</sup> See Berger, DeYoung, Genay and Udell (1999).

<sup>234</sup> According to Kwast, Starr-McCluer and Wolken (1997), households tend to cluster the following products with their checking account: savings accounts, MMDAs, lines of credit and certificates of deposits. For small businesses, the clustered products are savings accounts, lines of credit, mortgages and cash management services.

<sup>235</sup> See Chidambaran, Pugel and Saunders (1997).

generally a slow process, and certain combinations of risk may be legally prohibited.<sup>236</sup> Therefore, the products of non-insurance firms are usually not included in the market definition of non-life insurance products.<sup>237</sup>

As an example of a stance taken by an antitrust authority, the European Commission in several cases has had to decide whether credit insurance in the areas of domestic use and export of capital goods can be considered a substitute for banking services such as factoring and letters of credit. While acknowledging that certain banking products are increasingly entering the market as competitors of credit insurance products, the Commission has concluded, on the basis of product characteristics and prices, that credit insurance and factoring are still different product markets.<sup>238</sup>

With respect to life insurance, it has to be noted that products generally carry a large savings component. Therefore, the relevant market may also include non-insurance companies (eg pension funds) that offer long-term savings products.<sup>239</sup> As insurance products compete little or not at all with each other, the empirical literature tends to treat each of them as a separate market, even if they are offered jointly by the same companies.<sup>240</sup>

Turning to the geographic market definition, markets for some bank products appear to remain local, while others are national or international in scope. Among the latter are the markets for large commercial loans and credit card loans, secondary loan markets and other wholesale markets, while the local markets include household and small-business transactions accounts, small business lending and some types of consumer lending.

In empirical research, local markets are usually approximated by areas such as provinces, rural counties, cantons or metropolitan areas.<sup>241</sup> For the United States, this assumption is supported by survey evidence indicating that both consumers and small businesses overwhelmingly procure banking services from suppliers located within a few miles of the customer. It is still rare to bank with institutions that can be reached only via the telephone or internet. In fact, some recent articles in the popular press suggest that firms that have attempted to stress internet-based banking are retrenching.<sup>242</sup> Thus, on the demand side, markets for some bank products appear to be local.<sup>243</sup>

Retail bank product markets are also local in Europe.<sup>244</sup> Despite the development of electronic banking and other advances, “there are still high ‘transport costs’ in retail banking and this

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<sup>236</sup> One of the major barriers to entry for firms that want to expand their insurance activities is the often limited availability of knowledge on loss statistics. This should be properly taken into account when defining relevant markets for competition purposes.

<sup>237</sup> The factors that induce the fragmentation of the non-life insurance market are only partially mitigated by the similarities between the technologies used by banks and insurance companies (information processing, risk management, etc) that imply the possibility of including a broader range of institutions in the market definition.

<sup>238</sup> Case Comp/M. 1082 - Allianz/AGF, OJ C 246/4; 6.8. 1998; case Comp/M. 1101 - Hermes/Sampo, OJ C 212/6, 8.7. 1998; case Comp/M. 1661 - Crédit Lyonnais/Allianz-Euler/JV, OJ C 285/6, 7.10. 1999.

<sup>239</sup> See Table 4 in OECD (1998).

<sup>240</sup> For example, Cummins, Tennyson and Weiss (1999) split the industry into five product markets.

<sup>241</sup> See Egli and Rime (2000) for Switzerland; MacKay (1998) for Canada; Rhoades (1996) for the United States; Sapienza (1998) for Italy; and the Wallas Committee (1997) for Australia.

<sup>242</sup> See Costanzo (2000), Day (2000), Julavits (2000a and 2000b), Snel (2000) and Toonkel (2000).

<sup>243</sup> See Kwast, McCluer and Wolken (1997).

<sup>244</sup> See Dermine (1999).

means that entry into foreign markets must be based largely on the opening (or acquisition) of a branch network.”<sup>245</sup>

Also, on the supply side there is evidence that some banking markets are local. The number of bank branches in most countries continues to increase despite a consolidation process that has reduced the number of independent banking organisations and legal changes that have largely removed legal constraints on bank geographic expansion. This indicates that firms continue to feel the need for a local presence.<sup>246</sup> Continental Europe has a greater density of branches than English speaking countries, an indication of local markets and that technology has not yet led to a reduction in the number of branches.<sup>247</sup> While cross-border banking is growing, it is still at a low level.<sup>248</sup>

For wholesale banking products, the introduction of the euro has increased the geographic scope of the European market since it has eliminated foreign exchange risk. Bond markets have tended to be national in scope, but have expanded with the adoption of the euro; cross-border competition should also increase for services like correspondent banking. The geographic scope of the activities is national or international also in the case of financial markets, and in particular money market trading, foreign exchange trading, derivative trading and asset management.<sup>249</sup> On the contrary, for other services in the corporate banking sector – especially those provided in connection with exports – the Commission has found that the activity is predominantly national in scope, since it usually requires a close relationship between a bank and its customers in order to meet the particular needs of the clients.<sup>250</sup> Investment banking services, which usually require a knowledge of national corporate law and the company structure as well as of accounting principles and the local market habits, are also considered to be national in scope.<sup>251</sup> In general, while acknowledging that many M&As are cross-border, the Commission has distinguished between the activity, which may be international in scope, and the service provided, which is mainly national in scope and may require that the principal advisor be physically established in the country where the target company is situated.

Geographic markets for most insurance and securities activities appear to be national in scope (or statewide for the United States). For example, for products like automobile insurance, consumers generally search only within the state or nation and the degree of regulation varies substantially across states and countries.<sup>252</sup> Nevertheless, some argue that barriers to entering geographic markets are low relative to the barriers to entering different product lines.<sup>253</sup>

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<sup>245</sup> See Gual (1999) and Vives (1999).

<sup>246</sup> Local geographic markets for banking are not universally accepted. Hannan and Strahan (2000) find that geographic markets for certain banking products under a certain size limit may be broader than the typically local market. They find that, in most cases, markets that correspond to US states explain price variations better than local markets.

<sup>247</sup> See Barth, Nolle and Rice (1997) and European Central Bank (1999).

<sup>248</sup> See White (1998).

<sup>249</sup> See European Commission, case M. 597 - Swiss Bank Corporation/S.G. Warburg, OJ C 180, 14.7. 1995, and case no IV/M 1043 - B.A.T./Zurich.

<sup>250</sup> Case No IV/M. 596 - Mitsubishi Bank/Bank of Tokyo.

<sup>251</sup> See case Comp/M. 319 - BHF/CCF/Charterhouse, paras 6 and 9.

<sup>252</sup> See Bajtelsmit and Bouzouita (1997).

<sup>253</sup> See Chidambaran, Pugel and Saunders (1997).



## *How consolidation affects prices*

### *Banking*

In general, competition in the banking industry has increased in the last few years due to deregulation and technological innovation.<sup>254</sup> Consolidation might affect prices, especially in local markets that witness significant increases in concentration, but these might be unusual cases given the decisions of antitrust authorities that have blocked altogether mergers that would have sharply reduced competition (eg Canada) or demanded compensatory measures such as the sale of branches in markets where the increase in market share resulting from the deal would have been threatening to consumers (see Annex V.1). In fact, the pre-emptive action of antitrust authorities limits the possibility that merging intermediaries could take advantage of their increased market share, thus reducing *ex ante* the incentives to merge in order to exert market power.

In the United States, for example, four bank mergers have been denied on competitive grounds in the last decade, and branch divestitures have been negotiated in more than 50 cases. In Italy, the Bank of Italy (the antitrust authority for the banking sector) demanded in 10 cases the sale or closing of branches as a condition to allow mergers. In the case of the Bank Austria-Creditanstalt merger, undertakings were required by the European Commission before authorising the deal. The Swiss Federal Competition Commission authorised the UBS merger conditional on some limitations, among them the divestiture of 25 branches (see Annex V.2). In Canada in 1998, proposed mergers involving four banks accounting for 70% of bank assets were rejected; one concern cited in the rejection was that the mergers would have led to a substantial lessening of competition that would have caused higher prices and lower levels of service. In January 2000, the acquisition of Canada Trust by TD Bank was approved, but the divestiture of 13 branches and the Canada Trust MasterCard portfolio were conditions of the approval. In addition, in each country an unknown number of merger proposals have been aborted due to competitive concerns raised by antitrust authorities.

The effects of consolidation on competition can be evaluated indirectly in cross-sectional studies comparing markets with different degrees of concentration at a point in time. Alternatively, they can be examined directly, by studying markets that have experienced consolidation. Studies using the former, indirect approach with European data generally find that higher concentration leads to less favourable conditions for bank customers.<sup>255</sup> The US evidence is consistent with that for Europe, indicating the existence of market power in connection with prices for small business loans and retail deposits.<sup>256</sup> Studies using data from the 1990s indicate that the connection between concentration and retail deposit rates has dissipated somewhat relative to the previous decade.<sup>257</sup> Examination of fees instead of interest rates shows that the degree of market power for retail deposits and payment services is relatively low.<sup>258</sup> Nonetheless, there is some empirical evidence which finds that competition

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<sup>254</sup> For example, Angelini and Cetorelli (1999) show that the Italian banking system has become highly competitive in the 1990s. For similar studies see also De Bandt and Davis (1999) and Shaffer (1994).

<sup>255</sup> De Bonis and Ferrando (1997) find a positive relationship between concentration and interest rates on loans in Italy. A similar result is obtained by Egli and Rime (2000) for Switzerland. Swank (1995) finds inverse relationships between concentration and price-competitiveness in Dutch markets for savings deposits and mortgages.

<sup>256</sup> See Berger and Hannan (1989) and Hannan (1991).

<sup>257</sup> See Hannan (1997) and Radecki (1998).

<sup>258</sup> See Hannan (1998).

has not been offset by consolidation even though an increase in concentration has been observed.<sup>259</sup>

Indirect evidence on cross-sector competition can be drawn from the change in banks' behaviour when their borrowers become listed on a stock exchange. A study of IPOs in Italy finds that after being listed, firms pay lower interest rates, receive more credit and increase the number of banks that lend to them.<sup>260</sup> This means that the availability of diverse sources of financing (in this case because of listing, but this might be also true in the case of competition from other players, including non-banks) causes banks to react, to the benefit of their customers.

Direct studies confirm that M&As may influence market prices. In the United States, a reduction in the interest rate on deposits is detected in markets that have been affected by consolidation.<sup>261</sup> A study of Italian M&As finds that loan rates increase when the market share of the acquired bank is large.<sup>262</sup> Estimates of the impact of mergers on prices for the Swiss retail banking market indicate that concentration may have a negative effect on prices.<sup>263</sup>

In conclusion, the empirical evidence suggests that there are entry barriers for banking markets and that market structure affects prices. While legal barriers to entry have been reduced over the last few decades, economic barriers such as economies of scale (although minimum efficient size is relatively small: see the section on consolidation and efficiency), switching costs and informational asymmetries remain important. Tests of the multi-market contact hypothesis do not find significant evidence of collusion among firms that compete against each other in different geographic markets;<sup>264</sup> competition issues seem limited to in-market behaviour.

### *Investment banks*

The investment banking industry is highly internationalised: among the largest firms in each geographic area are institutions from the United States, the United Kingdom, Japan, France, Germany, the Netherlands etc. This indicates that the market is international in scope. However, the same firms dominate product markets in most geographical areas: in equity underwriting, the top five firms consistently have a market share above 50%, be it initial public offerings (IPOs) or secondary offerings (see the tables in Chapter I). Moreover, the top ten firms, although with different rankings, come up in almost all "league tables", confirming the general impression that the industry is in fact highly concentrated, even at a supranational level. The same can be said of M&As advisory services, both for the United States and the European markets (see the tables in Chapter I). The US syndicated loan market and the debt underwriting market are less concentrated (see the tables in Chapter I), mainly because of competition from commercial banks.

There has been almost no analysis on competition for the investment banking sector. In Italy a thorough examination was performed by the antitrust authorities; it concluded that even though the market for investment banking was dominated by a small number of firms, there was no evidence of abuses.<sup>265</sup>

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<sup>259</sup> In Fuentes and Sastre (1998) for Spain, using the dispersion of interest rates as a proxy for competition, it is found that consolidation has not negatively affected the heightening competition which has developed in Spanish bank markets during the nineties.

<sup>260</sup> See Pagano, Panetta and Zingales (1998).

<sup>261</sup> See Prager and Hannan (1998) and Simons and Stavins (1998).

<sup>262</sup> See Sapienza (1998).

<sup>263</sup> See Egli and Rime (2000).

<sup>264</sup> See De Bonis and Ferrando (2000) for Italy and Pilloff (1999) for the United States.

<sup>265</sup> See Banca d'Italia and Autorità Garante della Concorrenza e del Mercato (1997).

A study of the US market for IPOs found that underwriting commissions cluster at 7% for issues below USD 100 million, while they are lower by half in other countries.<sup>266</sup> A possible explanation is that investment banks recognise that if they undercut each other they would collectively end up with lower profits; this behaviour is only possible if they have some form of market power, due, for example, to barriers to entry.<sup>267</sup>

One analysis of the US market for corporate securities underwriting finds that entry of commercial banks has significantly reduced underwriter commissions in the corporate debt market.<sup>268</sup> The reduction is strongest in those market segments in which banks' market share was larger. This suggests that entry of banks into the corporate securities market has significantly enhanced competition relative to the previous situation, in which only investment banks were active.

There is little or no research on the effects of M&As on prices and availability of investment banking services. However, the indirect evidence mentioned above suggests that in-market consolidation among important players might result in a significant increase of market power, thus harming customers. In fact, the sector is highly concentrated, and research for the United States – the largest world market – suggests that in some segments firms may already be exerting significant market power. Moreover, barriers to entry are likely to survive the technological developments foreseeable in the near future, as they are mainly due to the importance of reputation and to the placing power of underwriters.<sup>269</sup> However, at the moment, the consolidation process involving investment banks is mainly cross-sector, aiming at creating financial conglomerates with commercial banks, asset management and insurance companies, so that it may not represent a clear threat of anticompetitive behaviour.

#### *Insurance companies*

Two studies of insurance markets in the United States find higher prices in more concentrated markets. A study of a cross section of state markets for automobile insurance finds higher premiums in states with more concentrated industries.<sup>270</sup> An examination of a cross section of 18 types of insurance finds higher premiums in those insurance lines with higher four-firm concentration ratios.<sup>271</sup>

The last few years have witnessed considerable consolidation in the insurance industry, particularly in the United States and Europe, including large mergers between banks and insurance companies. Nonetheless, according to an OECD report,<sup>272</sup> the insurance market is competitive, although the extent of competition seems to vary significantly from product to product and from country to country.

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<sup>266</sup> See Chen and Ritter (2000).

<sup>267</sup> This case is similar to that of market-makers in stock markets. In 1998, NASDAQ market-makers agreed to pay a large fine in a settlement that followed the suspicion that they were colluding in fixing the bid-ask spreads. Although the issue did not involve consolidation, it is still suggestive of behaviours that might intensify as M&As reduce the number of players in reputation-sensitive industries.

<sup>268</sup> See Gande, Puri and Saunders (1999). The study finds that the reduction in underwriting spreads has not been compensated by higher yield spreads; on the contrary, yield spreads have also declined.

<sup>269</sup> There is some evidence that a security's features and the underwriter's reputation influence the level of underwriting commissions. See Carow (1999).

<sup>270</sup> See Bajtelsmit and Bouzouita (1998).

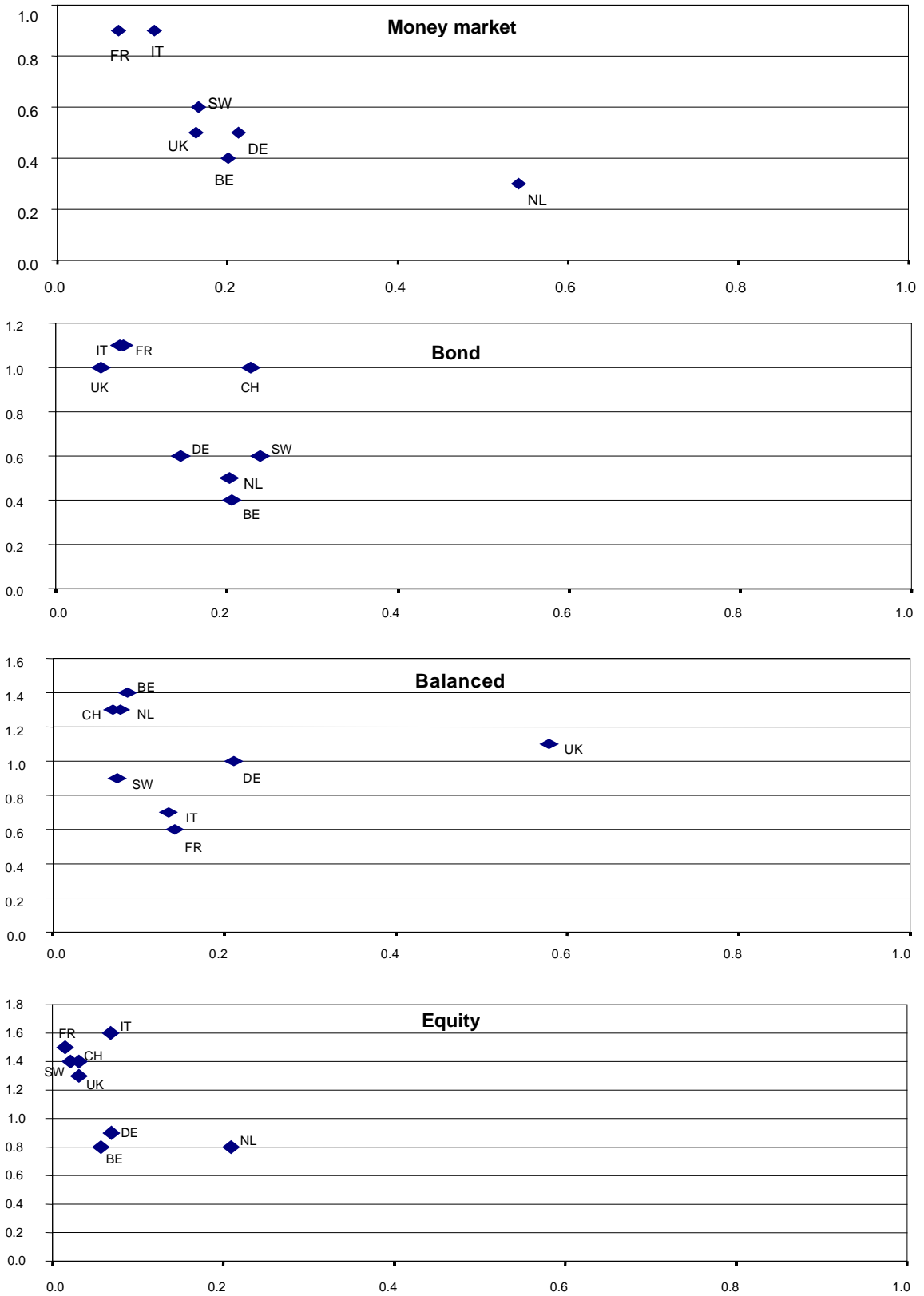
<sup>271</sup> See Chidambaran, Pugel and Saunders (1997).

<sup>272</sup> See OECD (1998).

### *Mutual funds*

At first glance, there seems to be a negative relationship between market concentration and fees in the European mutual funds industry, in particular for money market, bond and equity products (see Chart V.2). This suggests either that market power is not a relevant issue in this industry, or that the possible existence of market power is more than offset by efficiency gains or scale economies that are passed on to consumers. However, given that most countries have similar levels of concentration but different average fees, the explanation for the cost and revenues structure might be country-specific for each segment of the mutual funds industry.

Chart V.2  
**Management fees and concentration in mutual funds industry**  
 (percentage points and Herfindahl-Hirschman index)



Source: Lipper. Management fees (vertical axis) are simple averages of maximum charges. The Herfindahl-Hirschman index (horizontal axis; monopolistic market=1) refers to market shares of the ultimate parent companies of fund management groups.

## **Conclusion**

Overall, the evidence favours the hypothesis that more concentrated markets are less competitive and that large in-market mergers may significantly increase market power, thus harming customers, especially in retail banking markets and markets for some investment banking services. However, technological changes and product innovations may alter the results based largely on data from a few countries and referring to the early 1990s or earlier.

## **The future impact of technology**

The diffusion of the internet and of electronic commerce could have major implications for the geographic market definition and therefore for the relationship between M&As and competition. Although electronic finance is not yet widespread, forecasts suggest a rapid growth in the near future; the penetration of online banking in Europe is projected to grow from 8% in 2000 to 22% in 2003; in the United States it should grow from 15 to 33%.<sup>273</sup> If financial services can be purchased or supplied effectively by electronic means, geographic limits to market expansion may disappear, increasing the competition from firms located in other areas. Developments in electronic technology could also reduce entry barriers by reducing search costs for consumers, for example by facilitating the development of third-party information brokers. Language barriers may become more significant than entry barriers due to geographic distance. On the other hand, technology could increase barriers to entry due to the large fixed costs of adopting many new computer technologies.

The short- and medium-term impact of e-finance, however, should not be exaggerated for several reasons. First, it is still relatively costly for consumers: the need for a personal computer or mobile telephone to access the internet, and the ability to use these tools still constitute a barrier to its diffusion. Second, electronic banking does not reduce information costs for products where the bank has to rely on information about local markets. Furthermore, new entrants may be forced to back up their internet entry with massive advertising outlays before they can effectively compete. Finally, for some products, customers may demand more than online contracts, however customised. Examples are high-value, infrequently bought items such as life insurance and mortgages, for which one might research terms and conditions online but may wish some personal advice before buying them.<sup>274</sup> These reasons may induce customers to keep using local suppliers, even if some services can be purchased electronically from a distant firm.

The picture might change considerably if intermediaries that operate exclusively on the internet emerge. Such firms may be able to offer more attractive conditions than those offered by traditional firms, since they do not need to support a branch network. At the moment, however, the legal framework for such firms is missing, in particular with regard to consumer protection and money laundering. Moreover, in many countries, a customer still has to show up personally in order to open a bank account. In addition, in their lending activity banks may want to continue to rely heavily on local information in the future, as offering some products (eg mortgages) on the internet is considered highly risky.

However, there are also reasons for which the development of e-finance may reduce, rather than increase, competition. The typical financial institution increasingly operates in multiple markets, partly in an attempt to sell bundles of products to customers. Due to technological progress,

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<sup>273</sup> A forecast of the penetration of online financial services in Europe in 2003 shows that around 20% of mutual funds and credit cards will be acquired online, while less than 10% of mortgages and life and pension products will be, even though internet users will represent more than a third of the total population. See JP Morgan (2000), p 29 and 37.

<sup>274</sup> JP Morgan (2000), p 6 and 25.

these bundles may become increasingly customised for a large number of customers. As a result, switching costs would increase and customers may become locked in to their existing suppliers, thereby reducing potential market entry. Finally, due to technological advances, new ways of distributing financial services may be created which might only be exploited by vertical consolidation of financial institutions with non-financial partners such as telecom and media enterprises. From this perspective, competition in non-financial markets may also become relevant.

### **Antitrust policy**

In this subsection, the antitrust rules that are applied in cases of financial sector consolidation, as well as experiences with their implementation, are described for a sample of G10 countries. The regulatory record on antitrust regulation of financial markets is not complete. In many countries, antitrust concerns have not played a prominent role in regulating mergers to date.

All of the countries covered by this study examine both the structural effects of proposed mergers and the behavioural aspects that may mitigate the anticompetitive effects of structural changes. Large countries with many local banking markets tend to have specific structural rules that serve as screens to determine whether a proposed merger might be anticompetitive in a particular market. If the structural effects of a merger exceed that screen, the merger is examined more closely and behavioural aspects are taken into account.

Smaller countries and countries in which there is not a long history of mergers among financial institutions, such as Japan and most European countries, do not have structural screens for processing mergers. Because of a lower volume of mergers, each proposed merger in these countries can be examined more intensively. An annex to this chapter contains the details of the rules and implementation of antitrust policies in individual countries.

Consolidation in the European Union is an example of the problems that might arise for antitrust authorities if financial institutions continue merging across borders and sectors. Of the decisions taken concerning the banking sector, the only case which gave rise to potential difficulties was the merger between Bank Austria and Creditanstalt.<sup>275</sup> The merged entity would have become not only the leading supplier of banking services in Austria, but also the only bank with significant market shares in all relevant product segments. However, Bank Austria gave undertakings to the European Commission that eliminated the competitive concerns relating to the proposed merger.

Other banking cases reviewed by the European Union did not present competitive concerns for one or more of the following reasons. First, for wholesale banking or financial services related to capital markets, there are large numbers of international suppliers – that is, the market in general is not highly concentrated and market shares are rather fragmented. Consequently, customers have had sufficient choice and, barring unlawful collusion, there are no concerns as to restrictions of competition. This conclusion was drawn for example in the merger between Schweizerische Bankgesellschaft and Schweizerischer Bankverein to create UBS, at the time the largest banking institution in Europe. Second, several banking consolidations assessed by the Commission have involved companies which had no activities or only limited activities in the European Economic Area (eg Kyowa/Saitama or BankAmerica/Nationsbank). Finally, in a number of cases (such as the Deutsche Bank/Bankers Trust merger) the operations in question were largely complementary in nature, since there were no substantial overlaps in the activities of the companies.

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<sup>275</sup> All other banking M&As of which authorities were notified were cleared within the statutory four-week period.

#### **4. Consolidation and the availability of credit flows**

Consolidation in the banking industry has raised concerns of a reduction in the availability of credit to small and medium-sized enterprises due to the decrease in the number of small banks that specialise in this type of lending.

There are two sets of arguments as to why this may occur. According to the first, larger and more complex credit institutions have a lower propensity to lend to small firms. Hence, if the industry moves towards a structure with a small number of large banks, credit flows to small borrowers may be reduced. The second argument emphasises the dynamics of consolidation, which may cause a permanent disruption of credit relationships. To the extent that credit relationships between banks and small firms are characterised by soft information, which is less transferable than hard information such as balance sheet and income statements, small firms could face difficulties in finding credit from other sources.

When assessing the effects of M&As on credit flows to small firms, it is necessary to analyse also the behaviour of other market participants, since borrowers that are dismissed by the merging banks may be served by other banks or financial institutions. The effect of the spread of new technologies should also be taken into account because it may have an impact on the lending practices of banks, large or small, and provide new ways of dealing with the information asymmetries that are a fundamental aspect of lending relationships with small firms.

In this section, the relative weight of small firms for G10 countries is briefly examined. After discussing reasons why consolidation may adversely affect credit flows to small firms, the existing analytical evidence is summarised.

##### **The importance of small business credit**

Small and medium-sized enterprises (SMEs) make a substantial contribution to national output and job creation. In 1996, on average, they accounted for 66% of total employment in Europe (Table V.5), ranging from 57% in the United Kingdom to 80% in Italy. SMEs are also very important in the United States and Canada, although slightly less than in Europe, as they still represent more than 50% of the labour force. In Japan, SMEs appear to have the highest relative weight in all sectors of the economy compared to the United States and the 15 nations of the European Union, but the data are distorted by the fact that the national statistics are based on establishments rather than enterprises or enterprise groups.



Table V.5  
Share of employment accounted for by SMEs

		Industry and energy	Construction	Trade, hotels, restaurants	All sectors
Belgium	1995	55.9	93.7	90.4	72.6
Canada	1994	44.3	89.3	75.6	52.1
France	1995	51.2	84.9	81.3	65.9
Germany	1995	37.6	87.1	73.3	57.7
Italy	1994	74.1	95.2	94.8	79.9
Japan	1993	66.9	95.4	83.9	76.5
Netherlands	1994	49.9	85.2	77.9	66.4
Sweden	1995	46.8	70.9	79.5	60.9
Switzerland	1995	62.2	90.4	76.7	68.8
United Kingdom	1995	47.9	88.2	58.1	56.8
United States	1993	37.5	88.9	58.5	52.9
<i>EU 15</i>	<i>1995</i>	<i>52.6</i>	<i>87.7</i>	<i>78.9</i>	<i>65.7</i>

Source: Eurostat; Enterprises in Europe. For an enterprise to be classified as an SME it must have no more than 249 employees, its annual balance-sheet total must not exceed ECU 27 million, no more than 25 percent of the capital of the enterprise must be controlled by one or more other enterprises, and its annual turnover must not exceed ECU 40 million. Only enterprises with at least one employee are included.

Economic performance may benefit from the presence of SMEs because they tend to be more flexible than larger firms, thus reducing the costs of organisational changes and innovation. Moreover, SMEs are characterised by high rates of entry and exit: failing enterprises are more quickly replaced in sectors where small businesses are widely represented. Thus, a sound small business sector, especially during downturns, may contribute substantially to the process of job creation.

SMEs tend to rely more on debt financing relative to large firms (see Chart V.3) with the exception of the United States, where firms face fewer difficulties in accessing equity markets and where the venture capital industry is more developed.<sup>276</sup> Another explanation could be that the aggregate data reflect the sectoral composition of SMEs in each country, as different industries have different financial needs in terms of the mix between equity and different kinds of debt financing.

Breaking down financial debt by source shows that SMEs are mainly financed by banks (Table V.6) and hold a share of bank credit that is significantly higher than that of large enterprises. The only countries that are exceptions to this rule are Japan, where large firms have strong ties with credit institutions, and Belgium. Small firms are very highly dependent on banks in Germany and Italy.

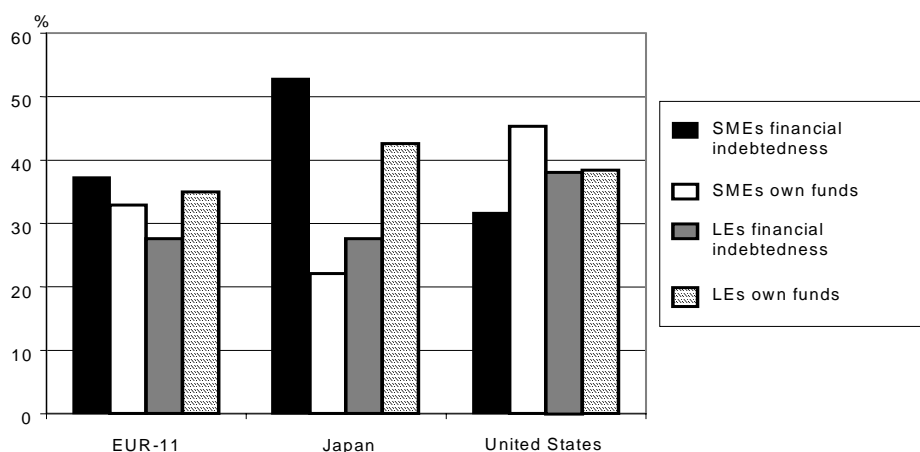
In conclusion, bank credit flows to SMEs appear to be very important in all G10 countries, particularly in Europe. Currently, SMEs are highly dependent on banks but the total availability of funds for them depends not just on consolidation but on all future developments of the

<sup>276</sup> For example, in the European Union or Japan, the concept of stock markets specialising in SMEs is a rather new phenomenon, whereas the American Nasdaq was created in the early 1970s.

financial sector. The costs of accessing capital markets and the availability of other sources of financing might change in the future, but demand for traditional forms of bank financing is likely to remain substantial.

Chart V.3

**Financial indebtedness and own funds ratio for small and large firms**



Definitions: Financial indebtedness = ratio of short-term loans and amounts owed to credit institutions to total liabilities. Own funds = ratio of own funds less unpaid share capital to balance sheet total. LEs = large enterprises.

Source: DGII, BACH.

Table V.6

**Share of bank debt to total debt for small and large firms**

Country	Bank debt/total debt	
	Small	Large
Belgium (1998)	42.2	50.1
Canada (1996)	53.1	n.a.
France (1998)	44.3	21.2
Germany (1998)	64.1	29.9
Italy (1998)	64.6	27.3
Netherlands (1998)	54.9 <sup>a</sup>	35.9
Japan (1995)	28.2	33.2
United States (1995)	40.9	7.9 <sup>b</sup>

Note: Small firms have sales less than EUR 7 million; large firms have sales greater than EUR 40 million.

<sup>a</sup> Also includes medium-sized firms. <sup>b</sup> The figure refers to medium-sized firms, as no information is available for large firms.

Source: BACH; for Canada: "What's New in Debt Financing for Small and Medium-sized Enterprises", The Conference Board of Canada, 1997.

## **Why consolidation may (not) reduce credit flows to small firms**

### ***The impact of consolidation on small business lending***

Consolidation increases the size and complexity of the credit institutions involved. There are several arguments as to why this may reduce the provision of credit to small firms.

Smaller banks are constrained in lending to large firms, while large banks have access to a wider pool of borrowers and to a different mix of assets and financial products.<sup>277</sup> Once the size constraint is eased, banks might shift their portfolios of loans in favour of larger borrowers or even shift their assets composition away from traditional lending activities.

A second reason could be that in providing credit to small borrowers, characterised by large information asymmetries, small banks enjoy a cost advantage over other banks both in loan origination and monitoring. Therefore, once small banks are replaced by larger ones, a decrease in small business credit may be observed because loans that were profitable are no longer so.

Small firms are considered significantly more opaque than larger ones; since they do not have traded securities on public markets and the requirements on their financial statements are looser, their quality may be more difficult to assess. Banks develop relationships that allow them to overcome asymmetric information problems because detailed knowledge of the firms is gained over time through contact with them.

Small banks may have a comparative advantage in issuing relationship-based loans and in monitoring small firms' activities. Due to their knowledge of the community in which the firm operates, they may have access to soft information on the entrepreneur and on local market conditions. As banks consolidate, their organisational structure tends to become more complex, and the lending decisions may be made at corporate headquarters located at a distance from the firms' activities. It may not be efficient to combine the provision of retail services to small customers with the provision of wholesale capital market services to large customers.<sup>278</sup>

Moreover, M&As usually involve deep restructuring and changes of branch managers. The reassessment of the loan portfolio by new managers who might not possess this soft information may imply the interruption of some of the existing relationships. Borrowers demanding relationship-based credit will find it difficult to convey their quality to other banks, due to adverse selection problems, and may end up being rationed.

On the other hand, there are reasons why these concerns may be unjustified and small firms might not face problems due to the creation of larger and more complex banking institutions and may even benefit from them. Larger banks or bank holding companies may act as efficient internal capital markets and allocate financial resources to their best use (although internal administrative allocation has problems of its own). In addition, having access to greater diversification opportunities, they can fund a larger number of small and riskier firms. Moreover, during periods of financial stress, large and diversified financial institutions may be stronger and more able to keep providing services to their customers than small, non-diversified local banks. Therefore, the ultimate effect of M&As on small business lending has to be evaluated on empirical grounds.

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<sup>277</sup> In most countries there are regulatory limits on loan concentration; even in the absence of such limits a bank would not issue loans that account for a high proportion of its capital.

<sup>278</sup> See Berger and Udell (1996b).

### ***The impact of changes in the degree of competition***

Consolidation may also influence the provision of credit to small firms if it changes the degree of competition in the banking sector. Two opposite mechanisms are likely to be relevant.

Abstracting from informational asymmetries, a less competitive banking system should increase the cost and decrease the supply of credit for all categories of borrowers, thus resulting in less favourable conditions. As small firms make extensive use of bank credit, a decrease in competition may generate significant problems.

An alternative view, which takes into account information asymmetries, suggests that a more competitive banking system may be detrimental to borrowers, such as new and small firms, for whom “soft information”, as discussed above, is likely to be of significance.<sup>279</sup> The reason is that a highly competitive environment may discourage intermediaries from investing in long-term relationships, which requires a degree of market power. If the bank expects to be able to extract rents in the future, it will offer lower rates to a borrower facing temporary credit problems. Hence, a reduction in market power of banks in these circumstances may lead to a reduced availability of credit to small firms or new borrowers.

### ***How competitors react to mergers and acquisitions***

The total change in the supply of small-business credit resulting from M&As also depends on the reactions of other lenders and on broader developments in the financial sector. Even if a bank reduces its supply of relationship-based loans because it faces diseconomies associated with supplying transaction-based services, other banks that are not burdened by these diseconomies may expand their own supply.

The development of new banks, which are a source of borrowing for small firms, should also be considered. Since de novo banks are small, they issue business loans to small firms. In addition, these new banks may have been created by loan officers who have left consolidating institutions, taking some of their relationship-based loan portfolios with them, or who believe that they possess above average screening capabilities based on knowledge of the local market.

Of course, it may be the case that even if borrowers dropped by consolidating banks are picked up by other lenders, the conditions they will face may be worse (ie higher rates or more collateral). Moreover, the possibility of finding another lender is likely to be influenced by the structure of the banking industry: if the industry is highly concentrated it may be difficult for a small business to find alternatives. If, instead, there are many banks even after the consolidation, it may be relatively easier to shift.

The overall impact on small firms of changes in the supply of bank credit resulting from M&As will also depend on the availability to these firms of non-bank sources of funding. These include equity finance, trade credit and funding by non-bank financial institutions. The access to these alternative sources of finance may vary with the earnings profile of the firm and the category of business in which it operates. Small firms in high-growth, high-risk sectors are more likely to obtain external private equity (ie “angels” and venture capitalists), while firms with steadier income flows and tangible assets more easily obtain external debt finance from banks and other financial institutions because they have collateral.

In countries with particularly concentrated banking sectors (eg Australia, Canada and the Netherlands) consolidation may raise particular concerns for marginal small business borrowers

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<sup>279</sup> See Sharpe (1990) and Petersen and Rajan (1995). According to this view, the relationship between competition in banking and the availability of credit to new firms is likely to be affected by the informational structure of the market: the ability of banks to obtain information about their clients’ creditworthiness, the extent to which that information is appropriable, the presence of credit rating agencies, and the degree of heterogeneity of borrowers and their ability to signal their creditworthiness.

that may be too risky for some, but not all, financial services providers. For many small businesses seeking financing, there is value in having more rather than less choice. Having a wide range of alternatives for bank financing, credit advice and a variety of other services offered by the banks is particularly important to marginal borrowers because it increases the probability that they will be seen as an attractive business opportunity by at least one service provider. For these borrowers, the question of the availability of financing options is not only a matter of obtaining competitive rates but a question of enhancing the chances of getting a loan at all. In these countries, leaving decisions on credit allocation in the hands of even fewer, larger institutions raises serious concerns that go beyond the issue of competition to the availability of credit at any price.

In Canada, for example, in 1998 four banks accounting for 70% of bank assets announced their intention to merge into two firms. One of the concerns cited in the rejection of the proposals was that the range of remaining alternatives for bank financing and banking services (especially for marginal small firms) would be reduced. The government felt that the question of the availability of financing options is not just a question of competitive rates but a question of enhancing the chances of getting a loan at all.<sup>280</sup> Unlike in the United States, the emergence of local small business lenders to fill the gap left by a merger among traditional small business finance providers may not be likely.<sup>281</sup>

### ***The impact of technology***

A consideration of increasing importance for banks' propensity to lend to small firms is the impact of technological change. Large banks are increasingly able to use credit scoring to make small-business loans and to process applications using automated and centralised systems. Scale economies allow these banks to generate large volumes of small-business loans at low cost, and improved technology and marketing, which change the delivery of financial services to small customers, make this possible even in areas where they do not have branch offices.<sup>282</sup> Credit scoring may also encourage more small-business lending because it gives banks a tool for pricing risk more accurately and makes the securitisation of these loans more feasible than in the past.<sup>283</sup>

A key issue, however, is that information technology is expected to reduce the cost of processing hard information. Therefore, it will benefit mainly "transaction-type" loans, which, like credit card loans, do not need much information-intensive credit evaluation beyond what is done in a credit scoring model based on quantitative data. It will not necessarily reduce the cost, and indeed may increase the relative cost, of processing the sort of information typical of relationship lending.<sup>284</sup>

An important implication of this is that small customers with strong financial statements and valuable collateral should not experience a reduction in credit availability. On the other hand, small borrowers who do not qualify for a sufficiently high credit score will continue to depend heavily on small banks, which offer traditional relationship-based loans. Hence, they may face an increased cost of funds or a reduced availability if credit scoring practices become dominant in the industry.

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<sup>280</sup> Statement by the Honorable Paul Martin, Minister of Finance, Ottawa, Canada, 14 December 1998.

<sup>281</sup> See McFetridge (1998).

<sup>282</sup> See Mester (1999); see also Berger, Saunders, Scalise and Udell (1998).

<sup>283</sup> The securitisation of small-business loans has usually been limited, not least because of their heterogeneous nature. Credit scoring will tend to increase the standardisation of loans.

<sup>284</sup> See Petersen (1999).

## **The empirical evidence**

Empirical research on consolidation and small-business lending has followed two approaches. The first one infers indirectly the effects of M&As in the financial industry by analysing the relationship between firm size and bank size, using both market-level and bank-level data. The second one examines directly the changes that occur in small-business lending by the institutions involved in M&As. The majority of the existing literature is based on US data; some evidence exists for Italy.

### ***Indirect evidence: bank size and small-business lending***

Evidence shows that larger banks have a lower share of small-business loans to total loans. This is usually interpreted as evidence that consolidation may harm small-business lending.<sup>285</sup>

The effects of bank size on small-business lending have also been studied employing market-level data. The relative weight of small banks in local credit markets has not been found to influence the probability of a small firm having a line of credit from a bank. Some short-run disruption may occur, but firms in areas with fewer small banks do not appear to be more credit constrained.<sup>286</sup>

The hypothesis that increased organisational complexity may negatively affect the propensity to lend to small firms has found some support in the empirical literature. Results from investigating loan contract data suggest that larger banks tend to issue many fewer loans to these borrowers, although they charge lower rates and require less collateral. A similar result holds for banks with greater organisational complexity, as measured by proxies of the holding company structure.<sup>287</sup>

### ***Direct evidence on M&As and small-business lending***

Consolidating banks often reduce their total small-business lending. Several explanations have been suggested for this result. A first explanation is that the bidder tends to drive the share of small-business lending in the portfolio of the merged bank towards the share that the bidder held prior to the merger.<sup>288</sup> Since the bidders are usually larger than the targets and hence have a smaller share of small-business loans, on average, M&As tend to reduce the availability of credit to small firms.

A study on the effects of bank M&As in Italy finds that banks involved reduce their share of credit to small firms.<sup>289</sup> The reduction does not seem to be associated with organisational problems, because it follows M&As that generate differing levels of complexity for the integration of the banks involved. It does not appear to be related to loss of information either, because M&As are not followed by a reduction in the number of employees. In fact, the reduction of the share of credit to small firms seems part of a broader strategy of asset allocation that changes the composition of the loan portfolio towards larger, less risky borrowers and reduces credit to low-quality firms. This is consistent with the results of another study which finds that small borrowers who maintain their relationship with the consolidated bank are those least harmed by increases in interest rates.<sup>290</sup> At the local (provincial) level the temporary

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<sup>285</sup> See Berger, Kashyap and Scalise (1995).

<sup>286</sup> See Jayaratne and Wolken (1999).

<sup>287</sup> Berger and Udell (1996a) test whether large and complex banks supply less credit to small business borrowers relative to smaller, less complex banks.

<sup>288</sup> See Berger, Saunders, Scalise and Udell (1998), Peek and Rosengren (1998) and Walraven (1997).

<sup>289</sup> See Focarelli, Panetta and Salleo (1999).

<sup>290</sup> See Sapienza (1998).

reduction in lending to small firms is comparable in size to the reduction of lending to all firms, thus confirming that consolidation determines a general revision of the loan portfolios; borrowers in good standing (including small ones) do not appear to be negatively affected by consolidation.<sup>291</sup>

Overall, the evidence discussed above suggests that consolidating banks do adjust their small-business lending strategy after consolidation. The direction is generally towards a reduction, but there are cases in which the change is in the opposite direction, as in the case of a small bank buying a larger one. Therefore, from a policy standpoint, the main finding of the papers summarised in the previous sections cannot be used as an accurate predictor of what will occur in the future and in different countries, since the impact of M&As on small-business lending depends crucially on the motivations of the deal and on the type of banks involved. Moreover, what is relevant is the total availability of credit to small borrowers; accordingly, some studies (discussed below) do not focus exclusively on consolidating banks but extend the analysis to the behaviour of other institutions in the same markets.

### ***The reaction of competitors***

Even if consolidation involves the interruption of some relationships, if the borrowers are able to find other lenders at the same cost there would be no effect on total lending. Other banks or other providers of financial services may pick up small-business loans dropped by merging banks, if these loans are profitable.

Some evidence on a positive reaction by the competitors of consolidating banks that reduce small-business loans has been found in US data.<sup>292</sup> One study examined the effect of M&As on the small-business lending of other banks in the same local markets and found that they tend to offset the reduction in the supply of credit to small firms by the consolidating banks. Another study employing market-level data finds that in markets where consolidation reduces small-business lending other institutions tend to increase it.<sup>293</sup>

Finally, de novo banks tend to lend more to small firms than other banks of similar size,<sup>294</sup> so entry may be another source of substitutes. However, de novo banks are generally small; therefore, their effect is likely to be felt in the long term. Consolidation may be itself a determinant of entry in local markets as the structure of the banking sector changes; lending to small firms may shift across different categories of banks.<sup>295</sup> One problem with the existing studies is that only the quantity of credit issued is examined but no information is available on rates and other contract terms.

### ***Impact on birth rates of firms***

As discussed previously, consolidation changes the competitiveness of the banking sector, thus indirectly influencing credit allocation. Several studies have investigated the relationship between the degree of competition and the availability of credit to small firms.<sup>296</sup>

In more concentrated banking markets commercial loan interest rates tend to be higher, especially for small firms that face higher switching costs.<sup>297</sup> Other research has found, instead,

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<sup>291</sup> See Bonaccorsi di Patti and Gobbi (2000).

<sup>292</sup> See Berger, Saunders, Scalise and Udell (1998).

<sup>293</sup> See Avery and Samolyk (1999).

<sup>294</sup> See DeYoung (1998) and Goldberg and White (1998).

<sup>295</sup> See Berger, Bonime, Goldberg and White (1999).

<sup>296</sup> See Petersen and Rajan (1994).

evidence of the positive effect of market power described by the theory on relationship lending: young firms in concentrated markets receive more credit than do similar firms in competitive markets, but such difference tends to disappear as firms become older.<sup>298</sup>

Concentration has been found to have a strong negative effect on the aggregate rate of birth of firms. Another study has found that in local banking markets the relationship between concentration and the rate of birth of firms differs across industries. Specifically, concentration appears to be relatively beneficial (or less unfavourable) for firms in highly opaque industries, as these industries have relatively higher rates of firm birth.<sup>299</sup>

## **Conclusions**

Empirical evidence suggests that consolidation may have diverse effects on small-business lending. Although there are reasons for concern that the reduction in the number of smaller institutions may harm small-business lending, there is no evidence on the quality of borrowers that are discontinued credit. What appears to be most relevant is how permanent changes in market structure affect the competitiveness and efficiency of the industry, and how these factors will affect allocative choices of banks across different segments of borrowers. In addition, there is little evidence yet on how technology and the blurring of boundaries across financial products change relative costs and revenues from servicing different types of borrowers.

## **5. Policy issues**

### **Competition policy**

Policymakers and regulators should take into account how competition is affected by the ongoing consolidation process and changes in technology, in particular with regard to the evaluation of the benefits to the consumer and the burden laid on the industry.

There is little evidence on the benefits of consolidation (if any, they seem to be smaller for larger firms) and there are concerns about possible abuses of market power, especially by investment banks and by providers of local bank products such as small-business lending and financial services for households. Therefore, when proposing transactions, supervisors of financial institutions should carefully examine claims of efficiency improvements (mainly cost reductions to be passed on to consumers) that firms believe they will generate. This is especially important in cases in which a merger could raise significant issues of market power, such as for markets with significant economic or regulatory barriers to entry, or that are highly concentrated.

The impact of consolidation on competition can be assessed only by using an empirically supported definition of the relevant product and geographical markets. For example, electronic commerce and electronic banking may increase competition by enlarging the markets geographically; on the other hand, they could facilitate consumer lock-in by increasing switching costs, thus changing the definition of the relevant bundle of products to be analysed. Since financial markets are constantly changing, their definition has to be scrutinised regularly, taking into account the differential impact on different classes of consumers, such as households, small and large firms etc.

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<sup>297</sup> See eg Hannan (1991).

<sup>298</sup> See Petersen and Rajan (1994 and 1995).

<sup>299</sup> See Bonaccorsi di Patti and Dell'Araccia (2000).



In particular, the impact of technological changes could be more powerful for households than for small firms, since standardised techniques such as credit scoring models are more suited to the former. The analysis of the relevant markets for antitrust purposes should focus less on institutional categories, such as administrative boundaries (provinces, counties etc) or classes of firms (banks, insurance companies etc); it should take more into account changes in the geographic and the product dimension as well as changes in demand. In any case, the goal of antitrust authorities should be to maintain competitively structured markets.

In order to increase competition in an environment subject to mergers that significantly reduce the number of providers of financial services, obstacles to the mobility of customers should be removed. This could be done for example by setting and enforcing transparency rules regarding products and prices, or by simplifying the process of changing providers, eg by allowing customers to keep their account numbers and by enforcing the transfer of historical transaction information between intermediaries. Better flows of information between customers and financial institutions could also decrease the asymmetric information problems between small firms and banks; this in turn would limit the probability of credit rationing and relax one of the constraints set by regulators on M&As.

### **Alternative sources of finance**

The problems faced by small firms in funding their projects might be alleviated if alternative sources of finance, both in terms of providers and products, are developed. This is particularly relevant for countries where firms rely more heavily on bank finance; the diversification of firms' financial structure could be encouraged, for example, by moving towards fiscal neutrality between debt and equity, by increasing the protection of minority shareholders, by fostering the development of equity markets or by decreasing the costs of being listed.

Alternative sources of finance, which include venture capital, private equity markets, specialised financial institutions and stock markets for small firms, may become more available as information generating and storing costs decrease and expertise in this field becomes more widespread, especially in Europe and Japan. Policies that encourage transparency and promote awareness of financial markets (such as, for example, incentives for individual pension plans and the diffusion of ratings) would be helpful in this respect.

Cross-industry competition may be beneficial to consumers both indirectly, by improving their outside options, and directly, by competing with existing products and by offering new products that increase consumers' choice. Eliminating policies that limit cross-industry competition would have a beneficial effect. In countries with particularly concentrated market segments, however, the costs and benefits associated with cross-industry M&As would have to be evaluated with special care.

### **Adequacy of data flows**

Antitrust policy needs data on market shares, prices, and volumes of activity in key financial services business lines in order to be enforced efficiently. The financial services industry already regularly provides some of the relevant data; however it would be advisable to enrich the available information, especially at the firm level. The burden of these added reporting requirements should be minimised; authorities should explore ways to encourage financial institutions to contribute the needed data on an ongoing basis, possibly by publishing in return the aggregate data they collect for policy purposes.

In order to limit unjustified costs to the industry, authorities could focus on collecting data only in areas where the consolidation of the financial sector is likely to have significant effects, such as small-business lending and retail branch banking services. In some countries it might be possible to rely on sample surveys of financial institutions rather than having the entire financial services industry report data.

In general it is important to consider what kind of information should always be readily available so that the impact of M&As can be quickly assessed. In the area of small-business lending, for example, it is essential that governments and regulators be able to assess the impacts of financial sector consolidation on the availability of credit for small firms. At the moment, in many countries there is a lack of specific data on small-business lending and other forms of debt financing such as leasing, as well as little information on the availability of equity financing (eg venture capital).

### **Technology and consolidation**

Technological progress is changing the landscape of the financial industry. It may increase the importance of economies of scale and scope, raising the minimum efficient size for financial institutions. This means that larger institutions could achieve cost reductions and pass them on to consumers, as long as markets remain sufficiently competitive. However, technological progress can also decrease competition by contributing, for example, to locking in consumers through increased switching costs. In this case, larger, more technologically sophisticated institutions could take advantage of their customers. Antitrust authorities should therefore focus on anticompetitive behaviour at least as much as on changes in market structure and on efficiency gains when analysing the potential effects of M&As.

## **Annex V.1**

### **Antitrust rules and their implementation in specific countries**

#### **Australia**

##### ***Rules***

Competition policy in Australia is governed by the Trade Practices Act of 1974. The Act prohibits M&As that have the effect, or likely effect, of substantially lessening competition in a market. The Australian Competition and Consumer Commission (ACCC) is responsible for administering the Act.

##### ***Implementation***

To determine whether a merger breaches the Act, the ACCC must define the relevant market and judge whether the merger would substantially lessen competition.

In defining a market, the ACCC takes into account the availability of substitutes, the geographical area over which an individual firm could exercise market power and the length of time that it may take other suppliers to develop substitutes for the merged firm's products. In its assessment of recent applications for banking mergers, the ACCC has indicated that it considers markets for wholesale banking (such as corporate fund raising and derivatives trading) to be national in scope; however, a more narrow, regional or state-based market has been applied to retail banking.

In assessing whether a proposed merger would substantially lessen competition, the ACCC takes into account such factors as market concentration, import competition, barriers to entry, the presence of vigorous and effective competitors, and the pace of product innovation in the market.

In assessing market concentration, the ACCC considers both the merged firm's market share and the share of the four largest institutions in the market. If the post-merger combined market share of the four largest firms is 75% or more, and the merged firm's share is 15% or more, the ACCC will need to consider other factors before permitting the merger. If the merged firm's market share exceeds 40% (regardless of the market share of the four largest firms) this also prompts further scrutiny by the ACCC.

In addition to the requirements set out in the Act, the Commonwealth Government has indicated that mergers amongst the four largest banks will not be permitted until competition in the financial industry, particularly in small-business lending, has substantially increased.

#### **Belgium**

##### ***Rules***

Since 1991, the protection of economic competition in Belgium has been based mainly on theoretical foundations identical to EU competition law. According to the law of 5 August 1991 on the Protection of Economic Competition, as changed in 1999, three authorities oversee its application: the Commission of Competition (advisory body on general competition policy), the Service of Competition (the public administration charged with inquiries and the follow-up of the law's application) and the Council of Competition (an administrative judicial body that ensures the law's application and sanctions offences). They are the competent authorities for all economic sectors; for the financial sector, there is an ex ante authorisation of the Commission of Banking and Finance (CBF), the supervisory authority for the banking and financing sector. Under articles 30 and 31 of the law of 22 March 1993 on the establishment and supervision of

financial institutions, by and large all M&A operations in the financial sector must ask for this prior authorisation.

### ***Implementation***

In the recent past, Belgium has experienced a number of large M&As in the financial sector. The CBF has only three months to investigate a case and is presumed to approve any operation unless otherwise stated. It is also restricted in its disapproval to the evaluation of the sound and prudent management of the financial institutions concerned. The CBF has never refused its approval. Neither has the Council of Competition found any infringements, though this may be due in part to a difficult working situation, culminating in its temporary resignation from office in 1997, and a changing legal framework.

## **Canada**

### ***Rules***

Generally, mergers are not challenged on the basis of concerns relating to the unilateral exercise of market power where the post-merger market share of the merging parties would be less than 35%. Mergers are not challenged on the basis of concerns relating to the interdependent exercise of market power where the share of the market accounted for by the four largest firms in the market after the merger would be less than 65%, and the merging parties would hold less than 10% of the market.

### ***Implementation***

First, the Competition Bureau, a federal agency within the Department of Industry, defines the relevant product and geographic markets. Second, it examines the parties' market shares and overall industry concentration. Third, the Bureau assesses key evaluative factors listed in Section 93 of the Competition Act, such as foreign competition, availability of acceptable substitutes, barriers to entry, change and innovation, removal of an effective competitor, business failure and exit, and the effectiveness of remaining competitors. All of these are used to determine the likelihood that prices will rise or service decline after the merger. Finally, efficiencies are examined if it is concluded that the merger results in a substantial lessening or prevention of competition. The Competition Act provides that a merger may proceed if (i) these efficiencies represent cost savings that would not be attained if a remedial order against the merger were made, and (ii) the cost savings represent real savings in economic resources. The analytical framework used by the Competition Bureau is described in the Merger Enforcement Guidelines as Applied to a Bank Merger released on 15 July 1998.

## **European Union**

### ***Rules***

The approach of the European Community to merger control is part of a competition policy that has developed separately from equivalent national policies. It has been designed not only to ensure the objective contained in the Treaty of Rome that competition "in the common market is not distorted", but also as an instrument to facilitate integration and the development of the internal market. The Merger Regulation, which came into force in September 1990 and was modified in 1997, extended and clarified the Community's responsibilities concerning merger control.

The Merger Regulation gives the European Commission exclusive responsibility to control mergers with a Community dimension. The procedure is initiated by mandatory notification by the parties concerned. Smaller mergers remain in principle under the control of national authorities. The division of responsibility is made on the basis of the turnover of the enterprises

involved. The starting point for establishing whether a consolidation is considered to have a Community dimension is that:

- the aggregate worldwide turnover of all the undertakings concerned is more than EUR 5 billion; and
- the aggregate Community-wide turnover of each of at least two of the undertakings concerned is more than EUR 250 million, unless each of the undertakings concerned achieves more than two thirds of its aggregated Community-wide turnover within one member state;
- A concentration that does not meet the above-mentioned thresholds has a Community dimension where: (i) the combined aggregate worldwide turnover of all the undertakings concerned is more than ECU 2,500 million; (ii) in each of at least three member states, the combined aggregate turnover of all the undertakings concerned is more than ECU 100 million; (iii) in each of at least three member states included for the purpose of point (ii), the aggregate turnover of each of at least two of the undertakings concerned is more than ECU 25 million; and (iv) the aggregate Community-wide turnover of each of at least two of the undertakings concerned is more than ECU 100 million, unless each of the undertakings concerned achieves more than two thirds of its aggregate Community-wide turnover within one and the same member state.

In the context of exclusive Commission responsibility for dealing with mergers with a Community dimension, the Regulation states that no member state can apply its national legislation on competition to such cases unless it is to protect legitimate interests, which are defined as public security, plurality of the media and prudential rules.

### ***Implementation***

The Commission adopted over 160 decisions on mergers in the financial sector (including banking, insurance and pension funds) between January 1991 and mid-May 2000. Almost all of those examinations have been of cross-border operations, involving companies from at least two different EU member states or companies located in third countries, generating a certain turnover within the European Union. This relatively low number of decisions reflects the fact that, to date, most mergers in the financial sector have been domestic and have lacked a Community dimension, so that the examination has been left to the member state concerned. The trend towards cross-border consolidation is stronger in smaller member states, in particular in the Benelux countries. Of the 90 Commission decisions on banking mergers, for example, 20 cases concerned Belgian and 12 Dutch firms. A similar trend can be observed in the Nordic countries.<sup>300</sup> This may be explained by the fact that credit institutions in smaller markets are more dependent on international expansion to achieve a critical mass. Language and cultural similarities may also be a factor.

## **France**

### ***Rules***

For M&As among banks which do not fall under European Community regulation, and in the present state of French competition legislation (which is not completely clear on this subject), takeovers in the banking sector seem to be out of the jurisdiction of competition authorities, although some aspects of financial competition are within their jurisdiction.

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<sup>300</sup> These include, for example, Royale Belge/Anhyp, Kredietbank/Cera/Fidelitas/ABB, Paribas Belgique/Paribas Nederland, Merita/Nordbanken, Merita Nordbanken/Unidanmark and Föreningssparbanken/FI-Holding/FIH.

On the financial legislation side, there is no explicit disposition in the Banking Act that gives financial authorities the responsibility for monitoring concentration. However, a bank willing to take over another bank has to obtain authorisation from the Comité des établissements de crédit et des entreprises d'investissement (CECEI), which checks the compatibility of such an operation with the smooth functioning of the banking system and the safety of the customers. Therefore, when the CECEI approves a deal, it takes into account, in some way, its consequences on competition. However, the CECEI would not base a refusal on competitive considerations alone.

### ***Implementation***

In 1998, when CIC was privatised, five institutions were candidates for the takeover. The authorities examined the market shares that would result in each case. In four cases, the expected market shares of the new entities were quite significant in some market segments, but were deemed acceptable. In 1999, during the BNP-SocGen-Paribas affair, the CECEI looked closely at the effects of the proposed operations on the market shares of the resulting entities.

## **Germany**

### ***Rules***

In Germany, the act prohibiting barriers to competition (Gesetz gegen Wettbewerbsbeschränkungen) provides the legal basis for regulating mergers. The essential criterion for a merger is met if a controlling entrepreneurial, or competitively significant, influence on the target enterprise would be attained through the acquisition of capital. Such influence may even be exercised through a minority stake if this is accompanied by special rights to information, co-determination or control on the part of the acquiring party.

The Federal Cartel Office (Bundeskartellamt) is primarily responsible for monitoring corporate mergers. It intervenes in mergers if the enterprises involved have reached certain turnover thresholds and merger control does not fall within the jurisdiction of the European Commission. Thus, mergers are generally subject to domestic supervision only if all the enterprises involved have achieved a total prior-year turnover of at least DEM 1 billion and if at least one of them has recorded a turnover in Germany of more than DEM 50 million for the preceding year. In the case of credit institutions, the total amount of receipts less the taxes that are paid directly from this source is used instead of turnover. The domicile of the enterprise is immaterial.

### ***Implementation***

The enterprises involved must report an intended merger to the Bundeskartellamt prior to the actual merger (preventive merger control). On receipt of notification, a preliminary procedure begins in which the Office decides within one month whether the merger is unobjectionable or whether it will proceed to examine the merger (main examinational procedure). During the main examinational procedure, the Office decides within four months whether it will allow the merger to proceed (possibly, subject to certain conditions), or prohibit it.

The Bundeskartellamt will prohibit a merger if it is expected to constitute, or bolster, a position of market dominance on the part of the enterprises involved. In examining market dominance, the relevant market first has to be defined and then market concentrations are determined based on the market structure (actual and potential competition from domestic and foreign rivals).

## **Italy**

### ***Rules***

Italian antitrust regulation was introduced with the law number 287 in 1990. The objective of the law is to guarantee the functioning of the competitive process by prohibiting: (i) agreements that have the goal or effect of impeding, restricting or distorting competition; (ii) the abuse of dominant positions; and (iii) operation of consolidations that create or strengthen a dominant position which eliminates or substantially reduces competition.

The application of the law, which has to be carried out in accordance with the principles of the EEC regulation in the same domain, is the responsibility of the *Autorità Garante della Concorrenza e del Mercato* (AGCM). An exception is the banking sector: the law attributes to the Bank of Italy the application of the antitrust regulation to banks. The Bank of Italy adopts its own decisions after having heard the opinion (which is not binding) of the AGCM; an agreement was signed in 1996 on the means and terms of cooperation between the two authorities. Another exception is the insurance sector. The AGCM adopts its decisions after hearing from ISVAP, the supervisory authority for insurance companies.

### ***Implementation***

When the competent authority finds a potential violation of the antitrust law, a file is opened. From the approval of the law in 1990 to May 2000, the Bank of Italy, in its antitrust function, has opened 33 files: 16 were on consolidations, five on abuse of dominant positions, and 12 (plus one currently under examination) on anticompetitive agreements.

As far as consolidations are concerned, the main element for the assessment of the impact on competition is the definition of the relevant market, both geographically and in terms of products. The Bank of Italy usually defines the province as the relevant market for deposits and the region for loans. In many of the files on consolidation, the Bank of Italy has imposed compensatory structural measures, such as the sale or closure of branches in the local markets affected. Also, behavioural measures have been imposed in certain cases, for example, prohibiting the banks involved, for a given period of time, from opening new branches in the markets believed to be critical from the competitive point of view.

Growing importance is given to the control of anticompetitive agreements and abuses of dominant positions. The files opened until now by the Bank of Italy on agreements have been related to the behaviour of individual banks and business associations. The Bank has investigated agreements that could harm competition by fixing prices or other sales conditions of given products, and agreements on the territorial sharing of markets. The Bank of Italy has opened five files on the behaviour of the Italian Bankers Association with regard to the definition of uniform tariffs, specifically in the payment system area, and the suggestion of uniform mechanisms for the definition of pricing strategies on exchange rate fees. Recently, a fine of ITL 30 billion was imposed on 13 large banks that had agreed to exchange proprietary information and fix prices of given banking services, thus distorting competition.

## **Japan**

### ***Rules***

The Anti-Monopoly Law prohibits any consolidation where “the effect of a merger may be to substantially restrain competition in any particular field of trade”. This is determined by the position of the merging companies in an industry (as measured by their market shares, ranks, the extent to which they compete etc) and by market conditions (as measured by the number of competitors, degree of concentration, entry, competition from imports, and the financial condition of the firms).

### ***Implementation***

The Japanese Fair Trade Commission is in charge of Japanese competition policy. The Commission implements the Anti-Monopoly Law and formulates guidelines for its implementation in order to make the law more transparent. The Commission also reviews government regulations and exemptions from the Anti-Monopoly Law. In practice, antitrust law works in tandem with efforts to deregulate the economy in order to increase competition in Japanese markets.

## **Netherlands**

### ***Rules***

The antitrust legislation of the European Community overrides Dutch legislation if a particular intended consolidation has a “Community dimension” (see above). The Dutch legislation only applies to consolidations above a particular size (firms with a global turnover higher than NLG 250 million, of which at least two have a turnover of at least NLG 30 million in the Netherlands).

Consolidation is prohibited between firms (financial and non-financial), without giving prior notification to the Dutch competition authority, the Nederlandse Mededingings Autoriteit (NMA). The NMA subsequently determines whether concentration may pose a threat to competition and if it does, research is undertaken by the NMA, ultimately resulting in rejection, acceptance or the start of licence procedure (see below).

After notification is received, the NMA has a maximum of four weeks to determine whether a licence is required; if nothing happens, the consolidation may proceed. During these four weeks, the NMA investigates whether there is a chance of unacceptable market power as a result of the consolidation. If this is the case, a licence procedure is started, lasting a maximum of 13 weeks. The NMA investigates the nature of the relevant market, the market shares of the firms involved, the possibility of new entry and the degree of dependency of external stakeholders (suppliers, clients). This research determines whether or not a licence is issued and whether conditions will be attached. In exceptional cases the Ministry of Economic Affairs may override a rejection by the NMA, if the “general good” is endangered.

To deal with particular, financial sector specific situations, two exceptions to the procedure above are allowed. First, an exception has been created with respect to this notification procedure in case a consolidation would prevent bankruptcy of a financial institution, and thereby avoid severe consequences. In such a case, the relevant financial supervisor(s) and the NMA investigate, confidentially and without loss of time, whether consolidation between the problem institution and another would solve the problems without harming competition. In case the NMA disagrees with the preferred solution of the financial supervisor(s), the Minister of Economic Affairs may be asked to give a decision.

Second, when a consolidation, valid according to the NMA, would threaten the goals of financial regulation, the Minister of Finance, after consulting the relevant financial supervisor(s), may block the concentration.

### ***Implementation***

The rules as listed above have only been effective in the financial sector since 1 January 2000; for the non-financial sector, they have been effective since 1998. Since that time, there have not yet been situations in which the NMA has been actively involved in financial sector consolidation.



## **Spain**

### ***Rules***

Spanish legislation, which is only applicable to consolidations that do not have a Community dimension (see Rules of the European Community in this annex), is laid down in Competition Law 16/1989 of 17 July 1989 (Articles 14 to 18), which contemplates the existence of two specialised administrative bodies: the Competition Service, which is responsible for initiating proceedings and implementing decisions, and the Competition Court, which submits reports and proposals to the Government. Both bodies cooperate with the European Commission in Community proceedings.

### ***Implementation***

Consolidations in excess of given thresholds, based on a definition of concentration similar to that laid down in Community legislation, are required to notify the Service. These thresholds are set according to market share (25% of the national market or of a distinct geographical market within a member state) and sales volume (aggregate amount of ESP 40 billion and ESP 10 billion in each of at least two of the undertakings concerned). The Service shall be notified of consolidations prior to, or not more than one month after, the conclusion of an agreement to combine, though notifications shall not imply the suspension of the operation. Whenever the Service considers that the consolidation may impede competition, the Government shall request a non-binding report of the aforementioned Court and may decide, within three months of the date of receipt of the report, to attach conditions to the consolidation or to impose appropriate measures to restore effective competition, including a reversal of the merger. The decisions of the Government may be brought before the Spanish Courts of Justice.

## **Sweden**

### ***Rules***

According to the Competition Act, the Competition Authority must be notified of any merger if it creates an entity with a turnover greater than SEK 4 billion and the acquired firm has a turnover greater than SEK 100 million. A merger may be challenged if it results in a dominant market position or further strengthens an already dominant market position. Mergers may also be challenged on the basis of concerns regarding the resulting market concentration (collective market dominance). In general, mergers in the financial sector are treated in the same way as those in any other industry.

### ***Implementation***

When it is notified of a merger, the Competition Authority makes a preliminary investigation to determine whether there is cause for concern regarding the resulting market power or market concentration. If this is the case, the Competition Authority initiates a full investigation addressing issues regarding the possible effects on efficiency, competition, prices, quality of services etc. If necessary, the Competition Authority might then challenge the merger in civil court.

## **Switzerland**

### ***Rules***

The Federal Competition Commission must be notified of a merger if the situation reaches the following thresholds during the financial year preceding the merger: (i) the aggregate worldwide turnover of the companies concerned amounted to at least CHF 2 billion or the aggregate turnover of the companies within Switzerland amounted to at least CHF 500 million, and (ii) the

aggregate turnover in Switzerland by each of at least two of the companies concerned amounted to at least CHF 100 million. For banks, turnover is replaced by 10% of total assets, and for insurance companies, the thresholds are calculated with reference to aggregate annual gross premiums. In addition, the Federal Competition Commission must be notified if a participating firm holds a dominant position in a market in Switzerland and if the merger involves either that market, a related market, or an upstream or downstream market.

### ***Implementation***

Merger control is governed by the Federal Law on 'Cartels and other Restrictions of Competition' of 1995. The law is applied by the Federal Competition Commission and its Secretariat. The Secretariat investigates proposed mergers and the Commission determines whether they should be allowed. Banks are basically treated like other industries, with the exception that the Swiss Federal Bank Commission takes the place of the Competition Commission if a merger is seen to protect the interests of creditors. This is expected to be the exception and has not yet occurred since the Act entered into force.

On receipt of the notification, the Secretariat starts a preliminary investigation by examining whether the merger might create or strengthen a dominant position liable to eliminate effective competition. If so, the Commission initiates a regular investigation. The duration of the preliminary investigation is limited to one month, that of the regular investigation to four months.

The main patterns of the examination are (i) the relevant markets, (ii) current competition in these markets, (iii) potential competition, and (iv) countervailing powers of customers.

## **United States**

### ***Rules***

The competitive effects of all mergers and acquisitions are reviewed by either the Department of Justice (DOJ) or the Federal Trade Commission. The DOJ has traditionally had jurisdiction over mergers among financial services providers.

The DOJ applies a structural screen to mergers and closely examines those mergers that violate this screen. The screen is stated in terms of the level of the Herfindahl-Hirschman index (HHI) and the change in this index resulting from the proposed merger.<sup>301</sup> In most industries, mergers are examined closely if they would increase the HHI by more than 100 points to a level above 1000 or by more than 50 points to a level above 1800. In banking, the DOJ applies a more lenient standard, requiring an increase in the HHI of over 200 to a level above 1800 to conduct a more thorough review. This relaxed standard for banking is meant to reflect the competition banks face from non-bank financial institutions that are not included explicitly in the HHI calculation. US antitrust authorities define banking markets as clusters of services offered by banks to all customers (Federal Reserve Board) or to small businesses (DOJ).<sup>302</sup> It is implicit in these definitions that markets for products supplied to large businesses are geographically larger. These wholesale markets may also be narrower in product space since large firms may find it easier to purchase individual products from different suppliers. US antitrust authorities have not actively challenged mergers in the securities or insurance industries, and thus have not taken a formal position on the product or geographic markets in these industries. There is no exemption for mergers among firms under any size threshold.

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<sup>301</sup> The HHI is the sum of the squares of the market shares of all firms in the market, with the market shares measured as percentages.

<sup>302</sup> See Amel (1997).

Mergers among banks are also subject to review by federal bank regulators and by state governments. The three federal bank regulatory agencies tend to use the same structural standards as the DOJ, though they differ in the weight they give to factors that may mitigate the structural effects of mergers. State Attorneys General rarely challenge mergers among financial institutions.

### ***Implementation***

Most large US bank mergers have involved both expansion into new geographic regions and in-market, horizontal effects in some local banking markets. In most cases, the merging parties have been willing to divest branches in those local markets in which structural changes would be so great as to cause concerns to antitrust enforcement agencies. Thus, structural effects of large bank mergers generally have not been so large as to cause competitive effects in local banking markets. In those rare cases in which smaller mergers have substantially increased concentration, there have been adverse effects on prices.<sup>303</sup>

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<sup>303</sup> See Prager and Hannan (1998).

## **Annex V.2**

### **Case studies**

#### **The UBS merger**

The merger was announced on 12 January 1998. On 2 February the Federal Competition Commission decided to open a regular investigation. On 20 April the Commission cleared the merger subject to some conditions.

The Commission investigated the markets for mortgage loans and commercial loans. It reached the conclusion that the merger would not affect competition in the mortgage loan market since the new UBS was expected to face strong competition from either local banks or Credit Suisse. For the commercial loan market, the Commission restricted the investigation to loans of up to CHF 2 million.

Considering the geographic market, the Commission defined the markets for loans to small and medium-sized firms as regional markets, which roughly coincided with Swiss cantons. The Commission focused its investigation on eight regional markets where the new UBS market share would be above 30% and found that the countervailing power of customers was weak in those markets. Furthermore, it was possible that the merger could lead to a collusive dominant position. Thus, the Commission imposed the following remedies to stimulate competition: (i) UBS had to divest, upon approval by the Commission, 25 branches distributed over Switzerland as well as two subsidiary banks; (ii) Corporate credit facilities cumulated in the new bank but not exceeding CHF 4 million had to be maintained until the end of 2004; and (iii) UBS was not allowed to give up membership in several joint ventures with other Swiss banks for several years.

The sale of branches turned out to be difficult. No single buyer could be found. Eventually, Migros Bank and Coop Bank (two banks belonging to the two major food and non-food retailers) each bought 11 branches, and three other branches were sold to three regional banks.

#### **The merger of Banco Bilbao with Telefonica**

In February 2000, the Spanish Banco Bilbao Vizcaya Argentaria (BBV) announced an alliance with Telefonica, the largest Spanish telecom company, in order to develop online banking and e-commerce services for the Spanish-speaking world. This alliance covers a series of joint ventures linked to internet-based financial services. The move is similar to recent “new-technology” alliances between AOL and Time Warner and Vodafone, AirTouch and BSCH.

The Spanish antitrust authority has investigated the case and required that the new group restructure, amongst others, its media holdings.

#### **BSCH/Champalimaud**

On 3 August 1999, the European Commission approved an agreement by which Banco Santander Central Hispano (BSCH)<sup>304</sup> would have acquired control over the Portuguese financial group Champalimaud. The Portuguese authorities had opposed the planned concentration by a decision taken on 18 June 1999, based on the need to protect national interests and strategic sectors of the national economy.

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<sup>304</sup> Banco Santander Central Hispano is the leading Spanish bank. It was created through the merger of Banco Santander and Banco Central Hispano at the beginning of 1999.

The Commission was concerned that the decision of the Portuguese authorities was not justified on prudential grounds and therefore violated EU rules on freedom of establishment and the free movement of capital. It decided therefore to open formal infringement proceedings against Portugal. It also took action against the Portuguese measures by two decisions based on the EC Merger Regulation that grants the Commission exclusive powers to assess consolidations having a Community dimension. With the first decision of 20 July 1999, the Commission requested the suspension of the decision by the Portuguese Minister of Finance to oppose the operation and the measures deriving therefrom, such as the suspension of voting rights of BSCH and Champalimaud in Mundial Confiança, because the Portuguese authorities had failed to notify their decision to the Commission. With the second decision adopted on 20 October, the Commission indicated that the measures of the Portuguese authorities could not be regarded as protecting legitimate interests within the meaning of the Merger Regulation and were thus incompatible with Community law. The Portuguese authorities challenged both Commission decisions before the Court of Justice and did not comply with the Commission's request to suspend their decision to oppose the acquisition.

Subsequently, BSCH and Champalimaud concluded a new agreement which replaced the previous one and according to which BSCH acquired Banco Totta & Açores and Banco de Crédito Prédial Português belonging to the Champalimaud group. This new agreement was reported to the Commission on 29 November 1999, and authorised by the Commission on 11 January 2000, and was not opposed by the Portuguese authorities.

The Champalimaud case is important for Community law and the business community as it reaffirmed the exclusive jurisdiction of the Commission for mergers having a Community dimension. This case also raised the question of the application and interpretation of "prudential rules" in consolidations in the banking sector. Under the Second Council Directive 89/646/EEC of 15 December 1989, on the coordination of laws, regulations and administrative provisions relating to the taking up and pursuit of the business of credit institutions, a potential buyer of a qualifying holding in a credit institution has to inform the competent authorities of the member state. The competent authorities have three months to oppose such a plan if, in view of the need to ensure sound and prudent management of the credit institution, they are not satisfied as to the suitability of the potential acquirer. In the Champalimaud case, the Commission made clear that any intervention by member states concerning mergers that have a Community dimension and therefore fall within Commission jurisdiction, has to be reported to the Commission and has to be based on one of the recognised "legitimate interests" (public security, plurality of the media and prudential rules) mentioned in the Merger Regulation. The Portuguese authorities were considered to fall short on both of these accounts.

### **CGU/Norwich Union**

The merger of the two British-based insurance companies was announced on 21 February 2000 and reported to the European Commission on 15 March 2000. After examination, the Commission cleared the merger on 13 April 2000, concluding that the reported agreement, which had a Community dimension, was compatible with the common market and with the functioning of the European Economic Area agreement.

CGU provided all classes of general insurance and life insurance throughout the world. The main activities of Norwich Union were the provision of general insurance, life insurance and pension and investment products. Both had activities in the United Kingdom, Ireland, continental Europe, North America and Australia. However, the only member states in which either party had a significant market presence and where there was a significant overlap between the parties' activities were the United Kingdom and Ireland, where the new entity would have become the largest insurer in the general insurance sector.

The Commission practice of defining the relevant product market in the insurance sector is to make a distinction between general insurance, life insurance and reinsurance. General and life insurance can be divided into as many product markets as there are different kinds of risks

covered. However, in the assessment of this case as on several other occasions, the Commission did not deem it necessary to define conclusively the relevant product and geographic market. This was possible because the Commission concluded that, even when applying the narrowest market definition, the consolidation would not have created or strengthened a dominant position as a result of which effective competition would have been significantly impeded.

Having examined the various market segments of the United Kingdom and Irish general insurance sector, the Commission concluded that the combined entity would face strong competition across all lines of business from a significant number of well established competitors with comparable financial strength including Allianz, AXA, Royal & Sun and Eagle Star (Allied Zurich). Moreover there would also be a number of strong companies, in particular brokers and financial institutions, active in the distribution channels, creating competitive pressures for insurers.

### **Fortis/G-Bank**

On 24 June 1998, the Commission cleared the acquisition by Fortis group, the Belgian-Dutch insurance and banking group, of the whole of Generale Bank, the largest Belgian bank also active in life and non-life insurance.

The integration of Generale Bank and Fortis would create an international conglomerate active in banking and insurance and operating mainly in Belgium and the Netherlands, with relatively high market shares in Belgium. However, the Commission authorised the deal, taking into consideration that there would remain strong competitors in Belgium both in banking (BBL/ING, Kredietbank, Bacob) and in insurance (Groupe Royale Belge, AXA, Assubel/AGF, SMAP).

In its assessment of the merger, the Commission regarded the relevant geographic market as being national in scope for retail banking and for small and medium-sized corporate clients, and international for large corporate clients and for financial markets. Nevertheless it considered that certain assets of the merging companies, such as the strength of their distribution network, needed to be analysed at a smaller level, that is on a regional or local level. As strong market overlaps existed in Belgium, the Commission examined the network effect of the merger in all the Belgian provinces and regions. Even though the new entity would have the strongest market network in Belgium, the Commission concluded that this would not confer on it a dominant position since consumers would have sufficient competing banking outlets at hand. In its assessment, the Commission also ruled that the existence of electronic cash dispensers, electronic banking and telephone banking minimised the effect of any strong position in this respect.

### **Generali/INA**

On 12 January 2000, the Commission cleared, subject to a number of commitments given by the parties concerned, the proposed acquisition by Generali, a company active in the insurance sector both in Italy and abroad, of INA, one of the largest Italian insurers. According to the commitments, Generali would divest its controlling stakes in three subsidiaries active in the life insurance sector, its shareholding in Fondiaria and INA's controlling interests in BNL Vita and Banco di Napoli. Moreover, Generali would eliminate the interlocking directorships between the Board of Directors and Executive Committee of INA and reduce significantly those between its own Board and Executive Committee.

In investigating this case, the Commission cooperated closely with the Italian Antitrust Authority and with ISVAP, the Italian surveillance authority in the insurance sector. As regards the substantive aspects of the case, the Commission found that the consolidation, as originally proposed, could have led to the creation or strengthening of a dominant position in the Italian life insurance sector. The combined entity's market power would have been fostered by the strength of its distribution network, which is the main driver of competition in the insurance

sector. The new group would have been stronger than its competitors in the most important distribution channels, ie in the agency and banking channels. As regards the latter, the Commission's preliminary investigation indicated that this channel has grown rapidly in the last few years. About 70% of new policies concluded in 1999 were estimated to have been sold through banks. The merged entity would have controlled approximately one quarter of the existing bank outlets in Italy.

### **Bank Austria/Creditanstalt-Bankverein**

On 11 March 1997, the Commission approved the acquisition of Creditanstalt-Bankverein by Bank Austria Aktiengesellschaft, following undertakings given by Bank Austria that eliminated the identified competitive concerns. Bank Austria and Creditanstalt were both universal banks that had their main focus of activity in Austria. Measured by the balance sheet total, the new entity would have been approximately five times larger than the next largest Austrian bank.

In assessing the implications of the proposed consolidation, the Commission found that, after the merger, the new entity would not only have been the leading supplier of banking services in Austria, but also the only bank with significant market shares in all relevant product segments. The Commission also found that, both in consumer and business customer banking services in Austria, the parties (together with GiroCredit, in which Bank Austria had a major holding) would have attained significant market shares. These would have been several times higher than those of the next largest competitor in a number of product segments, including credit business, stocks and shares and deposits. In addition to the high market shares, the Commission considered that Austrian banking markets were characterised by market access barriers that, in retail banking in particular, resulted from the need to be present locally through an extensive network of branches. It held that consumers usually maintained a link with only one bank because they incurred both information and transaction costs when changing banks. The mobility of bank customers was considered to be further reduced by the fact that maintaining several banking links, and dividing deposits between banks, reduces the chances of getting a loan. The Commission also considered that the foreign banks active in Austria had, despite many years' presence in some cases, achieved only very small market shares and were collectively too insignificant to be able to exert a decisive competitive influence in the medium term. Further competitive concerns stemmed from the addition of the holdings of Bank Austria and Creditanstalt in the specialised banks Österreichische Kontrollbank (OeKB) and Österreichische Investitionskredit AG, two institutions active in the public interest (ie export insurance, financing and processing and subsidised lending). The Commission thought therefore that there was a risk of the creation or reinforcement of a dominant position.

In order to meet the competition concerns expressed by the Commission, the parties offered certain commitments. Bank Austria agreed to sell its stake in GiroCredit. In addition, it undertook to reduce the global participation of Bank Austria and Creditanstalt in OeKB to the level of participation that Bank Austria and GiroCredit held together prior to consolidation. Furthermore, Bank Austria agreed not to extend its influence in Investkredit beyond the level of influence that it had, together with GiroCredit, prior to the concentration. These undertakings were considered appropriate to completely resolve the competitive concerns raised by the Commission and led to the approval of the proposed merger in its modified form.

## References

- Akhavein, Jalal D, Allen N Berger and David B Humphrey (1997): "The Effects of Megamergers on Efficiency and Prices: Evidence from a Bank Profit Function", *Review of Industrial Organisation*, 12, 95-139.
- Allen, Linda and Anoop Rai (1996): "Operational Efficiency in Banking: An International Comparison", *Journal of Banking and Finance*, 18 (6), 655-672.
- Altunbas, Yener and Philip Molyneux (1996): "Economies of Scale and Scope in European Banking", *Applied Financial Economics*, 6 (4), 367-375.
- Altunbas, Yener, Philip Molyneux, and John Thornton (1997) "Big-Bank Mergers in Europe: An Analysis of the Cost Implications", *Economica* 64 (264), 317-329.
- Amel, Dean F (1997): "Antitrust Policy in Banking: Current Status and Future Prospects", *Proceeding of a Conference on Bank Structure and Competition*, Federal Reserve Bank of Chicago, May 1997, pp 166-179.
- Amihud, Y and G Miller (editors), (1998): *Bank Mergers and Acquisitions*, Kluwer Academic Publishers, Boston.
- Angelini, Paolo and Nicola Cetorelli (1999): "Banking Competition and Regulatory Reform: The Case of the Italian Banking Industry", Federal Reserve Bank of Chicago, *Working Paper* No 32.
- Avery, R and K Samolyk (1999): "Bank Consolidation and Small Business Lending Patterns", mimeo Federal Reserve Board and FDIC.
- Bain, Joe S, (1956): *Barriers to New Competition*, Harvard University Press, Cambridge.
- Bajtelsmit, Vickie L and Raja Bouzouita (1998): "Market Structure and Performance in Private Passenger Automobile Insurance", *Journal of Risk and Insurance*, 65, 503-514.
- Barbash, B P (1998): "Mutual Fund Consolidation: Challenges for the Future", speech by SEC staff to the Mutual Fund and Investment Management Conference on 23 March.
- Barth, J, D Nolle and T Rice (1997): "Commercial Banking Structure, Regulation and Performance: An International Comparison", Office of the Comptroller of the Currency, *Working Paper* 6.
- Baumol, William J (1995): "Economies of scale in Financial Activities", *The New Palgrave's Dictionary of Money and Finance*, 726-728.
- Baumol, William J, Michael F Koehn, Stephen M Goldfeld and Lilli A Gordon (1990): "The Economics of Mutual Funds Markets: Competition Versus Regulation", *Rochester Studies in Economics and Policy Issues*, Kluwer, Boston.
- Baumol, William J, John C Panzar and Robert D Willig (1982): *Contestable Markets and the Theory of Industry Structure*, New York, Harcourt Brace Jovanovich.
- Berger, Allen N (1998): "The Efficiency Effects of Bank Mergers and Acquisitions: A Preliminary Look at the 1990s Data", in *Bank Mergers and Acquisitions*, Y Amihud and G Miller eds, Kluwer Academic, Boston, 79-111.
- Berger, Allen N, S D Bonime, L G Goldberg and L J White, (1999): "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on De Novo Entry and Small Business Lending in the Banking Industry", *Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System.
- Berger, Allen N, David J Cummins, Mary A Weiss and Hongmin Zi (2000): "Conglomeration versus Strategic Focus: Evidence from the Insurance Industry", Board of Governors of the Federal Reserve System.



- Berger, Allen N, R Demsetz, and P Strahan (1999): "The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future", *Journal of Banking and Finance*, 23, 2-4: 135-194.
- Berger, Allen N and Robert De Young (2000): "The Financial Performance of Cross-Regional Commercial Banks in the US: Some Clues Regarding the Eventual Structure of a Consolidating Industry", Board of Governors of the Federal Reserve System.
- Berger, Allen N, Robert De Young, Genay Hesna and Gregory F Udell (1999): "Globalisation of Financial Institutions: Evidence from Cross-Border Banking Performance", Federal Reserve Bank of Chicago, *Working Paper* 99-25.
- Berger, Allen N, Diana Hancock and David B Humphrey (1993): "Bank Efficiency Derived from the Profit Function", *Journal of Banking and Finance*, 17 (2-3), 317-347.
- Berger, Allen N, and Timothy H Hannan (1989): "The Price-Concentration Relationship in Banking", *Review of Economics and Statistics*, 71, 291-299.
- Berger, Allen N, Gerald A Hanweck and David B Humphrey (1987): "Competitive Viability in Banking: Scale, Scope and Product Mix Economies", *Journal of Monetary Economics*, 20 (3), 501-520.
- Berger, Allen N and David B Humphrey (1992): "Measurement and Efficiency Issues in Commercial Banking", in Output Measurement in the Service Sectors, Zvi Griliches ed, *NBER Studies in Income and Wealth*, Vol 56, University of Chicago press, Chicago and London, 245-279.
- Berger, Allen N and David B Humphrey (1997): "Efficiency of Financial Institutions: International Survey and Directions for Future Research", Board of Governors of the Federal Reserve System, *Finance and Economics Discussion Paper Series*, No 11, February 1997.
- Berger, Allen N, David B Humphrey and Lawrence B Pulley (1996): "Do Consumers Pay for One-Stop Banking? Evidence from an Alternative Revenue Function", *Journal of Banking and Finance*, 20 (9), 160-201.
- Berger, Allen N, A Kashyap and J Scalise (1995): "The transformation of the US banking industry: What a long, strange trip it's been", *Brookings Papers on Economic Activity* (2), 55-218.
- Berger, Allen N and Loretta J Mester (1997): "Inside the Black Box: What Explains the Differences in the Efficiencies of Financial Institutions?", *Journal of Banking and Finance*, 21, p 895-947.
- Berger, Allen N, A Saunders, J Scalise and G Udell (1998): "The effects of bank mergers and acquisitions on small business lending", *Journal of Financial Economics*, 50, 187-229.
- Berger, Allen N and G Udell (1996a): "Relationship Lending and Lines of Credit in Small Firm Finance", *Journal of Business*, 68 (July): 351-82.
- Berger, Allen N and G Udell (1996b): "Universal Banking and the future of small business lending", in A Saunders and I Walter, eds, *Financial System Design: The Case for Universal Banking*, Burr Ridge, IL, Irwin, 559-627.
- Bernheim, B. Douglas and Michael D. Whinston (1990): "Multimarket Contact and Collusive Behaviour", *Rand Journal of Economics*, 21, 1-26.
- Bonaccorsi di Patti, Emilia, and Giovanni P Dell'Ariccia (2000): "Bank Competition and Firm Creation", mimeo Bank of Italy and IMF.
- Bonaccorsi di Patti, Emilia and Giorgio Gobbi (2000): "The Effects of Bank Consolidation on Small Business Lending: Evidence from Market and Firm Data", mimeo Banca d'Italia.
- Bonanni, C, J Dermine, and L H Roller (1998): "Some Evidence on Customer 'Lock-In' in the French Mutual Funds Industry", *Applied Economics Letters*, 5 (5), 275-279.

- Carow, Kenneth A (1999): "Evidence of Early-Mover Advantages in Underwriting Spreads", *Journal of Financial Services Research*, 15 (1), 37-55.
- Chen, Hsuan-Chi and Jay R Ritter (2000): "The Seven per Cent Solution", *Journal of Finance*, 55 (3), 1105-1131.
- Chidambaran, N K, Thomas A Pugel and Anthony Saunders (1997): "An Investigation of the Performance of the US Property-Liability Insurance Industry", *Journal of Risk and Insurance*, 64, 371-381.
- Clark, Jeffrey A. and Thomas F Siems (1997): "Rethinking Bank Efficiency and Regulation: How Off-Balance Sheet Activities Make a Difference", *Financial Industry Studies*, Dec 1997, 1-12.
- Cornett, Marcia Millon and Hassan Tehranian (1992): "Changes in Corporate Performance Associated With Bank Acquisitions", *Journal of Financial Economics*, 31 (2), 211-234.
- Costanzo, Chris (2000): "Internet-Only a Hard Sell, Says Canada's Royal Bank", *American Banker*, 15 March 2000.
- Cummins, J David, Sharon Tennyson and Mary A Weiss (1999): "Consolidation and Efficiency in the US Life Insurance Industry", *Journal of Banking and Finance*, 23, 325-357.
- Cummins, J David and Mary A Weiss (1993): "Measuring Cost Efficiency in the Property-Liability Insurance Industry", *Journal of Banking and Finance*, 17 (2-3), 463-482.
- Cummins, J David and Hongmin Zi (1998): "Comparison of Frontier Efficiency Methods: An Application to the US Life Insurance Industry", *Journal of Productivity Analysis*, 10 (2), 131-152.
- Cybo-Ottone, Alberto and Maurizio Murgia (2000): "Mergers and Shareholder Wealth in European Banking", *Journal of Banking and Finance*, 24 (6), 831-859.
- Day, Kathleen (2000): "Web-Only Banks Start to Get Real", *The Washington Post*, 31 March 2000.
- De Bandt, Olivier, and E Philip Davis (1999): "A Cross-Country Comparison of Market Structures in European Banking", European Central Bank *Working Paper* No 7.
- De Bonis, Riccardo and Annalisa Ferrando (1997): "Da Che Cosa Dipendono i Tassi d'Interesse nelle province", Banca d'Italia, *Temi di Discussione* n. 319.
- De Bonis, Riccardo and Annalisa Ferrando (2000): "The Italian Banking Structure in the 1990s: Testing the Multi-Market Contact Hypothesis", *Economic Notes*, 29 (2), 215-241.
- De Young, Robert (1997): "Bank Mergers, X-Efficiency and the Market for Corporate Control", *Managerial Finance*, 23, 32-47.
- De Young, Robert (1998): "De Novo Banks and Lending to Small Businesses: An Empirical Analysis: Comment", *Journal of Banking and Finance*, 22 (6-8), 868-872.
- De Young, Robert and Daniel E Nolle (1996): "Foreign-Owned Banks in the US: Earning Market Share or Buying It?", *Journal of Money, Credit and Banking*, 28 (4), 622-636.
- Delhousse, B, Fabienne Fecher, Sergio Perelman and Pierre Pestieau (1995): "Measuring Productive Performance in the Non-Life Insurance Industry: The Case of French and Belgian Markets", *Tijdschrift voor Economie en Management*, 40, 47-69.
- Demsetz, Rebecca S and Philip E Strahan (1997): "Diversification, Size, and Risk at Bank Holding Companies", *Journal of Money, Credit and Banking*, 29 (3), 300-313.
- Dermine, Jean (1999): "The Economics of Bank Mergers in the European Union: A Review of the Public Policy Issues", OECD Committee on Financial Markets.

- Donni, Olivier and Fabienne Fecher (1997): “Efficiency and Productivity of the Insurance Industry in the OECD countries”, *Geneva Papers on Risk and Insurance*, 22 (85), 523-535.
- Edwards, Corwin D (1955): “Conglomerate Bigness as a Source of Power”, in National Bureau of Economic Research *Concentration and Price Policy* (Princeton University Press, Princeton).
- Egli, Dominik and Bertrand Rime (2000): “The UBS-SBC Merger and Competition in the Swiss Retail Banking Sector”, Studienzentrum Gerzensee, *Working Paper* 00.02.
- European Central Bank (1999): “The Effects of Technology on the EU Banking Systems”.
- European Commission, Fifth Report “Enterprises in Europe”, Luxembourg.
- Fecher, Fabienne, Sergio Perelman and Pierre Pestieau (1991): “Scale Economies and Performance in the French Insurance Industry”, *Geneva Papers on Risk and Insurance*, 16 (60), 315-326.
- Focarelli, Dario (1992): “Economie di Scala e della Diversificazione Produttiva nel Settore Assicurativo”, *Rivista di Politica Economica*, 82 (4), 23-44.
- Focarelli, D, F Panetta and C Salleo (1999): “Why Do Banks Merge?”, Bank of Italy, *Temi di Discussione* n. 361.
- Fuentes Ignacio and Teresa Sastre (1998): “Implications of Restructuring in the Banking Industry: The Case of Spain”, *BIS Conference Papers*, Vol 7, 98-120.
- Fukuyama, Hirofumi (1997): “Investigating Productive Efficiency and Productivity Changes of Japanese Life Insurance Companies”, *Pacific Basin Finance Journal*, 5 (4), 481-509.
- Gande, Amar, Manju Puri and Anthony Saunders (1999): “Bank Entry, Competition, and the Market for Corporate Securities Underwriting”, *Journal of Financial Economics*, 54(2), 165-95.
- Gardner, Lisa A and Martin F Grace (1993): “X-Efficiency in the US Life Insurance Industry”, *Journal of Banking and Finance*, 17 (2-3), 497-510.
- Goldberg, L G, G A Hanweck, M Keenan, and A. Young, (1991), “Economies of Scale and Scope in the Securities Industry”, in *Journal of Banking and Finance*, 15.
- Goldberg, L, and L White (1998): “De Novo Banks and Lending to Small Businesses: An Empirical Analysis”, *Journal of Banking and Finance*, 22, 851-867.
- Grace, Martin F and Stephen G Timme (1992): “An Examination of Cost Economies in the US Life Insurance Industry”, *Journal of Risk and Insurance*, 59 (1), 72-103.
- Gual, Jordi (1999): “Deregulation, Integration and Market Structure in European Banking”, Unpublished paper, University of Navarra.
- Hannan, Timothy H (1991): “Bank Commercial Loan Markets and the Role of Market Structure: Evidence form Surveys of Commercial Lending”, *Journal of Banking and Finance*, 15, 133-149.
- Hannan, Timothy H (1997): “Market Share Inequality, the Number of Competitors, and the HHI: An Examination of Bank Pricing”, *Review of Industrial Organisation*, 12, 23-35.
- Hannan, Timothy H and Allen N Berger (1991): “The Rigidity of Prices: Evidence form the Banking Industry”, *American Economic Review*, 81, 938-945.
- Hannan, Timothy H and J Nellie Liang (1993): “Inferring Market Power from Time-Series Data: The Case of the Banking Firm”, *International Journal of Industrial Organisation*, 11, 205-218.
- Hannan, Timothy H and Philip E Strahan (2000): “Are Bank Loan Markets Really Local?”, Unpublished paper, Federal Reserve Board and Federal Reserve Bank of New York.

- Hannan, Timothy H and John D Wolken (1989): "Returns to Bidders and Targets in the Acquisition Process: Evidence from the Banking Industry", *Journal of Financial Services Research*, 3 (1), 5-16.
- Hanweck, Gerald A and Arthur M B Hogan (1996): "The Structure of the Property/Casualty Insurance Industry", *Journal of Economics and Business*, 48 (2), 141-155.
- Haynes, Michelle and Steve Thompson (1999): "The Productivity Effects of Bank Mergers: Evidence from the UK Building Societies", *Journal of Banking and Finance*, 23 (5), 825-846.
- Houston, Joel F and Michael D Ryngaert (1994): "The Overall Gains From Large Bank Mergers", *Journal of Banking and Finance*, 18 (6), 1155-1176.
- Houston, Joel F and Michael D Ryngaert (1997): "Equity Issuance and Adverse Selection: A Direct Test Using Conditional Stock Offers", *Journal of Finance*, 52 (1), 197-219.
- Hughes, Joseph P and Loretta J Mester (1998): "Bank Capitalisation and Cost: Evidence of Scale Economies in Risk Management and Signaling", *Review of Economics and Statistics*, 80 (2), 314-325.
- Hunter, William C, Stephen G Timme and Won-Keun Yang (1990): "An Examination of Cost Sub-Additivity and Multiproduct Production in large US Banks", *Journal of Money, Credit and Banking*, 22 (4), 1990, 504-525.
- JP Morgan (2000): *Online Finance Europe*, 2 June 2000.
- Jayarathne, J and J Wolken (1999): "How important are small banks to small business lending? New evidence from a survey of small firms", *Journal of Banking and Finance*, 23, 427-458.
- Julavits, Robert (2000a): "Mortgage.com Quits Marketing to Consumers, Targets Firms", *American Banker*, 2 March 2000.
- Julavits, Robert (2000b): "Studies: People Unwilling to Close Loans On-Line", *American Banker*, 10 March 2000.
- Kaye, Geraldine (1991): "Economies of Scale in U.K: Life Insurance Companies: An Empirical Approach", *Geneva Papers on Risk and Insurance*, 16 (60), 302-314.
- Kwast, Myron L, Martha Starr-McCluer and John D. Wolken (1997): "Market Definition and the Analysis of Antitrust in Banking", *The Antitrust Bulletin*, 42, 973-995.
- Lang, Gunter and Peter Welzel (1998): "Technology and Cost Efficiency in Universal Banking; A 'Thick-Frontier' Analysis of the German Banking Industry", *Journal of Productivity Analysis*, 10 (1), 63-84.
- Latzko, David A (1999): "Economies of Scale in Mutual Fund Administration", *Journal of Financial Research*, 22 (3), 331-339.
- Linder, Jane C and Dwight B Crane (1993): "Bank Mergers: Integration and Profitability", *Journal of Financial Services Research*, 7 (1), 35-55.
- MacKay, H (1998): The Task Force on the Canadian Financial Services Sector.
- Mahajan, Arvind, Nanda Rangan and Ashgar Zardkoohi (1996): "Cost Structures in Multinational and Domestic Banking", *Journal of Banking and Finance*, 20 (2), 238-306.
- McAndrews, James (1995): "Antitrust Issues in Payment Systems: Bottlenecks, Access and Essential Facilities", Federal Reserve Bank of Philadelphia, *Business Review*, September/October.
- McFetridge, Donald (1998), "Competition Policy Issues", *Task Force on the Future of the Canadian Financial Services Sector* (Ottawa, September).
- Mester, L J (1999): "Banking Industry Consolidation: What's a Small Business to Do?", *Business Review*, Federal Reserve Bank of Philadelphia January/February, 3-15.

- Noulas, Athanasios G, Subash C Ray, and Stephen M Miller (1990): “Returns to Scale and Input Substitution for Large US Banks”, *Journal of Money, Credit and Banking*, 22 (1), 94-108.
- OECD (1998): “Competition and Related Regulation Issues in the Insurance Sector”, DAF/CLP (98) (20).
- Pagano M, F Panetta and Zingales, L, (1998): “Why Do Firms Go Public?”, *Journal of Finance*, 53-1, 27-64.
- Pearson, Michael (1998): “Mergers and Acquisitions in Financial Services: A Global Analysis of M&As and Corporate Strategies in the 1990s”, Lafferty Publications Ltd., Dublin.
- Peek, J and E.S. Rosengren (1998): “Bank Consolidation and Small Business Lending: It’s Not Just Bank Size That Matters”, *Journal of Banking and Finance*, 22, 799-819.
- Peristiani, Stavros (1997): “Do Mergers Improve the X-Efficiency and Scale Efficiency of US Banks? Evidence from the 80s”, *Journal of Money, Credit and Banking*, 29 (3), 326-337.
- Petersen, M A (1999): “Banks and the Role of Lending Relationships: Evidence from the US Experience”, mimeo Kellogg School of Management, Northwestern University.
- Petersen, M A and R Rajan (1994): “The Benefits of Lending Relationships: Evidence from Small Business Data”, *Journal of Finance*, 49, 3-37.
- Petersen, M A and R Rajan (1995): “The Effect of Credit Market Competition on Lending Relationships”, *Quarterly Journal of Economics*, 110, 407-443.
- Pilloff, Steven J (1999): “Multimarket Contact in Banking”, *Review of Industrial Organisation*, 14, 163-82.
- Piloff, Steven J and Anthony M. Santomero (1998): “The Value Effect of Bank Mergers and Acquisitions”, in Y Amihud and G Miller, eds: *Bank Mergers and Acquisitions* (Kluwer Academic Publishers, Boston).
- Prager, R A and Hannan, T H (1998), “Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry”, *Journal of Industrial Economics*, 46, 433-52.
- Prosperetti, Luigi (1991): “Economies of Scale in Italian Non-Life Insurance”, *Geneva Papers on Risk and Insurance*, 16 (60), 282-292.
- Radecki, Lawrence J (1998): “The Expanding Geographic Reach of Retail Banking Markets”, *FRBY Economic Policy Review* (June), 15-34.
- Rea, J D, B K Reid and Miller K W (1999), “Operating Expense Ratios, Assets, and Economies of Scale in Equity Mutual Funds”, in *Investment Company Institute*, Vol 5, No 5, December.
- Rees, Ray and Ekkehard Kessner (1999) “Regulation and Efficiency in European Insurance Markets”, *Economic Policy: A European Forum*, 0 (29), 363-392.
- Rhoades, Stephen A (1993): “Efficiency Effects of Horizontal (In-Market) Bank Mergers”, *Journal of Banking and Finance*, 17 (2-3), 411-422.
- Rhoades, Stephen A (1996): “Competition and Bank Mergers: Directions for Analysis from Available Evidence”, *The Antitrust Bulletin*, 41, 689-705.
- Rhoades, Stephen A (1998): “The Efficiency Effects of Bank Mergers: An Overview of Case Studies of Nine Mergers”, *Journal of Banking and Finance*, 22, 273-91.
- Salleo, Carmelo (1999): “Efficiency and Economies of Scale: The Case of Italian Banks”, in *Essays in Banking and Corporate Finance*, PhD Dissertation, Harvard University.
- Sapienza, P (1998), “The effects of bank mergers on loan contracts”, *Northwestern University Working Paper*.

- Shaffer, Sherrill (1994): "Bank Competition in Concentrated Markets", *Federal Reserve Bank of Philadelphia Business Review*, March-April 1994, 3-16.
- Sharpe, Steven A (1990), "Asymmetric Information, Bank Lending and Implicit Contracts: A Stylised Model of Customer Relationships", *Journal of Finance*, 45 (4), 1069-1087.
- Simons, Katerina and Joanna Stavins (1998): "Has Antitrust Policy in Banking Become Obsolete?", *New England Economic Review*, Federal Reserve Bank of Boston, 13-26.
- Snel, Ross (2000): "On-Line Bill Payment Is Falling Short of Promise", *American Banker*, 6 March 2000.
- Srinivasan, Aruna (1992): "Are There Cost Savings from Bank Mergers?", *Economic Review*, 77 (2), Federal Reserve Bank of Atlanta, 17-28.
- Swank, Job (1995): "Oligopoly in Loan and Deposit Markets: An Econometric Application to the Netherlands", *De Economist*, 143 (3), 353-366.
- Toonkel, Jessica (2000): "Compubank, Failing to Excite Public, Eyes On-Line Service for Businesses", *American Banker*, 3 March 2000.
- US Department of Justice and Federal Trade Commission (1992): *Horizontal Merger Guidelines*.
- Vennet, V R (1996): "The Effect of M&As on the Efficiency and Profitability of EC Credit Institutions", *Journal of Banking and Finance*, 20, pp 1531-1558.
- Vives, Xavier (1999): "Banking Supervision in the European Monetary Union", Unpublished paper, Institut d'Analisi Economica.
- Wallas Committee (1997): "Financial System Inquiry: Final Report", (Australian Government Printing Co, Canberra).
- Walraven, N (1997): "Small business lending by banks involved in mergers", *Finance and Economics Discussion Series*, 97-25, Board of Governors of the Federal Reserve System.
- Walter, I (1999): "The Global Asset Management Industry: Competitive Structure and Performance", in *Financial Markets, Institutions and Instruments*, 8(1).
- Whalen, G (1995): "Out-of-state holding company affiliation and small business lending", *Economic and Policy Analysis Working Paper*, 95-4, Office of the Comptroller of the Currency (September).
- Yuengert, Andrew W (1993): "The Measurement of Efficiency in Life Insurance: Estimates of a Mixed Normal-Gamma Error Model", *Journal of Banking and Finance*, 17 (2-3), 483-496.
- Zhang, Hao (1995): "Wealth Effects of US Bank Takeovers", *Applied Financial Economics*, 5 (5), 329336.