

# Banking Mergers and Acquisitions' Performance and Executive Compensation in Europe\*

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## Abstract

In this paper, we investigate whether changes in executive compensation related to the agency problems is a significant explanatory factor of the changes in banking performance before and after a merger or an acquisition. To assess banking performance, first we measure profitability and efficiency (cost and profit) for the acquirers and the targets before and after the operation using financial ratios and Data Envelopment Analysis (DEA). Financial ratios and balance sheet indicators are taken from Bankscope. Second, we relate the changes in pre and post M&A performance with executive compensation and other indicators. The aim is to understand if the level of executive compensation before the deal influences the performance of banks (Masulis, Wang, Xie, 2007). The executive compensation data, collected from banks' annual reports, includes fixed and variable compensation, such as stock option plans, CEO tenure measured in number of years CEO has been in charge and CEO role after the deal.

Jel classification: G21, G30, G34

Keywords: Bank, Corporate Governance, Executive Compensation, Merger, Acquisition

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## ***Introduction***

The European banking sector has experienced a rapid process of mergers and acquisitions (M&A) during the 1990s<sup>1</sup>. The deregulation of banking activities, the progress made towards the completion of an integrated European financial market, financial globalisation, technological and financial innovations, the imperative of value creation and the introduction of the Euro are some of the principal forces that fuelled the process of banking consolidation in Europe.

Since 2003, the increase in value of domestic and cross-border transactions in the financial services industry suggests a regain of momentum of M&A activity<sup>2</sup>. Indeed, faced with increased risks, uncertainty and enhanced competition, banking, insurance and other financial institutions must adopt the most economic strategic means to cut their costs and enhance their revenues. Moreover, the adoption of most measures under the Financial Services Action Plan (FSAP), the European Commission's White Paper on financial services policy (2005-2010) towards complete integration of European financial markets and the tightening of the procedures that Member States' supervisory authorities have to follow when assessing proposed M&As in the banking, insurance and securities sectors<sup>3</sup>, will act as a real impetus to accelerate financial services consolidation in the coming years.

Amongst others, M&A would be one of the responses to grow externally together with alliances and partnerships. Nonetheless, many studies of the M&A wave of the 1990s, found that M&A are far from having proved their economic effectiveness<sup>4</sup>.

To explain the rationale of such a movement, the economic literature mainly focused on examining the performance effects of M&A and then on its effects on competition in the underlying sector. Undoubtedly, economies of scale and scope have offered the main explanation source to performance change following M&A, leading to a number of empirical studies which aimed at examining the relationship between size and costs. However, their findings were far from conclusive owing to the conceptual and technical limitations encountered when testing for the relevant hypotheses. Nonetheless, scale and scope economies are the foundation for newer concepts put forward nowadays to explain concentration in the financial sector in general and in banking in particular. Indeed, if there is

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<sup>1</sup> Ayadi & Pujals (2004, 2005) and Figure 1 and 2 Annex 1.

<sup>2</sup> Approximately €79 billion of deals in financial services involving a target based in Europe announced in 2005. Compared with 2004, this is an increase of 76% by transactions' value. PwC (2006 a, b) and Annex 1 Figure 3.

<sup>3</sup> The issue of low cross-border consolidation in the financial sector was discussed at the informal meeting of Economic and Finance Ministers (ECOFIN) in September 2004. Ministers asked the Commission to study possible obstacles to cross-border mergers and acquisitions in the financial sector, arising both from differing supervisory practices and from other factors. Current EU rules allow supervisory authorities to block proposed M&A if they consider that the 'sound and prudent management' of the target company could be at risk. The proposed Directive provides supervisory authorities with a clear and transparent process for decision-making and notification. In particular, there is now a closed list of criteria on which the acquiring company should be assessed, such as reputation of the proposed acquirer, reputation and experience of any person that may run the resulting institution or firm, financial soundness of the proposed acquirer, compliance with relevant EU Directives, and risk of money laundering and terrorism financing. Also, the Directive reduces the assessment period from three months to 30 days and allows the supervisory authority to 'stop the clock' only once, under clear conditions. It amends the following existing Directives: the Banking Directive (2006/48/EC), the Third Non-life Insurance Directive (92/49/EEC), the Recast Life Assurance Directive (2002/83/EC), the Reinsurance Directive (2005/68/EC), and Directive 2006/48/EC on markets in financial instruments.

<sup>4</sup> Annex 1 Figure 4.

little evidence of scale and scope economies in the banking sector, it is important to question the real justifications of any changes in performance. Accordingly, X-efficiency introduced by Leibenstein in 1966 deserves particular attention. Indeed, X-efficiency is the fraction of the productive efficiency which is not explained by the only resources allocation hypothesis. It involves the managerial capacity to allocate efficiently the resources within the firm to create the highest possible value. This concept seems offering today a greater predictive power on performance change in banks in general and in banking M&A in particular.

Beyond scale, scope economies and X-efficiency, revenues' diversification, risks' reduction and market power. The latter is particularly relevant in highly concentrated banking markets and when a merger or an acquisition is targeting the same activity or region.

To test these theoretical justifications, several academic studies have examined the performance change of banking M&As, using either static or dynamic analyses. The former investigates the relationship between size and efficiency and the latter assesses the changes before and after an M&A<sup>5</sup>. Other studies have also tried to examine the impact of M&A on market power.

The US and European main empirical findings were however disappointing. On average, banking M&A create little or no value. A plausible explanation for the lack of significant improvement in banks' performance is that there may be other motivations such as managerial hubris or empire building by entrenched CEOs<sup>6</sup>.

After reviewing the theoretical background, we analyse the economic (cost and profit efficiency indicators derived using the DEA analysis) and financial (financial ratios) performance of European banking M&As in a first step based on a sample of 71 transactions announced and completed between 1996 and 2000. In a second step, we relate the changes in pre and post M&A economic and financial performance with executive compensation and other indicators (level of concentration in the market place, level of income diversification). The aim is to understand if the level of executive compensation before the deal influences the performance of banks<sup>7</sup>. The executive compensation data, collected from banks' annual reports, includes fixed and variable compensation, such as stock option plans, CEO tenure measured in number of years CEO has been in charge and CEO role after the deal. Our sample for this step of the analysis consists of 80 bank-to-bank M&A from all European countries.

## ***Theoretical background***

According to the academic literature in banking and industrial economics, there is a variety of motivations driving consolidation, ranging from value maximisation (including cost reduction and revenue growth) to other external and managerial goals.

### *Maximising-value explanations of M&A*

The economic literature has justified banking M&A on the ground that it enhances shareholder value. Indeed, the strengthening of the shareholders' role, the increasing importance of institutional investors in banking capital (pension funds, mutual funds and private equity), the pressure from financial markets and new corporate governance rules have encouraged managers to orient their business objectives towards value-maximisation.

The traditional argument that M&A increase shareholder value is based on the assumption that the anticipated value of the entity created by the merger of two groups will exceed, in

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<sup>5</sup> Berger et al (1999).

<sup>6</sup> Pilloff and Santomero (1998) and Gorton and Rosen (1995).

<sup>7</sup> Masulis, Wang, Xie, (2007)

terms of potential wealth creation, the sum of the respective values of the two separate groups. That is:  $1+1 = 3$ . Two main types of synergies are achieved: operating synergies and financial synergies. The former takes the form of either revenue enhancement or cost reduction. The latter refers to the possibility that the cost of capital may be lowered by combining one or more companies.

In theory, M&A operations in the banking sector could create value by obtaining gains either in terms of efficiency or in terms of market power. Other motivations of M&A are also briefly discussed since they may partly offer a plausible explanation for certain types of transactions.

### *M&A and efficiency*

An M&A allows the resulting company to obtain efficiency gains through cost reductions (or cost synergies), revenue increases (or revenue synergies), the exchange of best practices and/or risk diversification.

Cost synergies result from an improved organisation of banking production, a better scale and/or a better combination of production factors. The core objective is to extract benefits from cost complementarities and economies of scale and scope. In practice, cost synergies might be derived from: a) the integration of different skilled teams or information technology infrastructures, b) the combination of different back-office and general services or c) the rationalisation of the domestic and/or international banking networks.

Revenue synergies also derive from a better combination of production factors. Improvements in the organisation of activities, however, offer benefits from product complementarities which help to enhance revenues. In practice, revenue synergies might result from the harmonisation of product ranges, the existing complementarities between activities, cross-selling and the generalisation of a 'multi-distribution channel' approach to the various segments of customers.

It should be noted, however, that revenue synergies are much more difficult to obtain compared to cost synergies, because they depend not only on managers' decisions but also on customer behaviour. In this respect, several studies have estimated that some 5% to 10% of a bank's customers leave the bank after a merger.<sup>8</sup> Accordingly, M&As between banking institutions in Europe have very often targeted higher cost synergies than revenue synergies (see Table 1).

To achieve the goal of efficiency, two types of strategies can be pointed out. Firstly, in theory, a merger or an acquisition involving two companies with homogeneous activity profiles should lead to economies of scale by reducing the unitary production costs, as a result of an increase in activity volume and a decrease in the fixed costs obtained by combining the support functions (marketing, information technology, physical infrastructures, personnel management). The final objective is to obtain a competitive advantage in the activities involved.

The second strategy to achieve greater efficiency is adopted in circumstances where banking institutions are operating in heterogeneous but complementary markets. A merger or an acquisition not only allows the resulting company to widen its customers' portfolio but it also leads to a more diversified range of services and offers scope economies by optimising the synergies between the merged activities. Here, the main objective is to increase revenues, rather than to obtain economies of scale.

In sum, efficiency gains are obtained by input and output adjustments in order to reduce costs, increase revenues and/or reduce risks so as to increase the value added. Restructuring operations can also allow efficiency gains through the reorganisation of teams (managers and employees) and/or the generalisation of 'best practices', known as 'X-efficiency' that is the

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<sup>8</sup> See Burger (2001).

managerial ability to decide on input and output in order to minimise cost (or maximise revenues).<sup>9</sup>

Lately, beyond greater economies of scale and scope, efficiency can also be improved by a greater diversification of risks (functional and/or geographical<sup>10</sup>).

Efficiency may be improved following a merger or an acquisition, if the acquiring institution is more efficient *ex ante* and brings the efficiency of the target up to its own level by spreading its superior managerial expertise, policies and procedures.<sup>11</sup> Simulation evidence suggests that large efficiency gains are possible if the best practices of the acquirers reform the practices of inefficient targets.<sup>12</sup>

The M&A event itself may also improve efficiency by awakening management to the need for improvement or to implement substantial restructuring. Alternatively, efficiency may worsen because of the costs of consummating the M&A (legal & consultancy fees, severance pay) or disruptions for instance from downsizing, difficulties in integrating corporate cultures. Efficiency may also decline because of organisational diseconomies in operating or monitoring a more complex institution.

In practice, efficiency gains do not appear to be the only explanation for the recent M&A wave in banking. Gains obtained through increased market power seem to also offer a strong incentive to merge, but the relationship between market concentration and performance has only been verified partially.<sup>13</sup> Seeking other explanations for the current phenomenon, studies carried out in the United States and in Europe tend to confirm that 'managerial hubris', mimicry effect and defensive reaction are factors which are likely to play an important role:

### *M&A and market power*

Theoretically, market power is defined as the capacity to fix market prices as a result of a dominant position in a certain market. The economic literature concludes that prices are positively correlated to local market shares in general, but this position is not justified in the context of international markets (inter-banking activities, multinational companies).<sup>14</sup> Therefore, increased market power can be gained through a merger or an acquisition of two competing institutions operating in the same local market.

Thus, value creation through market power would seem more likely to explain mergers at the local level and within the same activity (especially in retail banking), which appears to be coherent with the theoretical evidence noted above, in particular in the European Union, where the majority of the operations are within sectors and are national.<sup>15</sup>

In practice, banking institutions can influence supply (as a supplier) or demand prices (as a client). In the first case, the size obtained following a merger or an acquisition might create a

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<sup>9</sup> Originally the concept of X-inefficiency was introduced by Leibenstein (1966) who noted that, for a variety of reasons people and organisations normally work neither as hard nor as effectively as they could. In technical terms, X- efficiency refers to the deviations from the production efficient frontier that depicts the maximum attainable output for a given level of output.

<sup>10</sup> According to Méon and Weill (2001), a comparison of the annual growth rate of real GDP suggests that the economic cycles of many European countries are not perfectly correlated. Consequently, geographical diversification could enable European banks to significantly reduce their risks.

<sup>11</sup> Generally, the acquiring bank in a merger is more cost efficient and more profitable than the institution being acquired. As noted in a recent survey (Berger and al., 1999), this holds for the US (Berger and Humphrey, 1992; Pilloff and Santomero, 1997; Peristiani, 1997; Cummins and al., 1999 and Fried and al., 1999) as well as for Europe (Vander Vennet, 1996 and Focarelli and al., 2002). The expectation is that the more efficient and profitable acquiring bank will restructure the target institution and implement policies and procedures to improve its performance.

<sup>12</sup> Shaffer (1993).

<sup>13</sup> Rhoades (1998).

<sup>14</sup> Hannan (1991) and Berger and Hannan (1989, 1997).

<sup>15</sup> Vander Vennet (1996).

dominant position which enables the bank to manipulate price levels in a certain market either by: a) decreasing prices (by pre-emption and/or predation<sup>16</sup>) to evict some non-competitive existing banking institutions and/or new entrants, or b) increasing prices in the absence of effective competition in the marketplace<sup>17</sup>. In the second case, the size obtained will enable the new group to reduce its refinancing costs thanks to reputation, size or diversification effects.

Nevertheless, several studies<sup>18</sup> have shown that the previous correlation between concentration levels and market power diminished during the 1990s. This could be attributed to the opening up of markets which has encouraged the entry of new competitors and thus increased the degree of contestability of the market.<sup>19</sup> Moreover, the emergence of new distribution channels such as e-banking, while contributing to the disappearance of the geographical boundaries, has made the concept of 'local market' less relevant.

Based on the hypothesis of the increase of market power, it appears that the creation of mega-banks, by altering effective competition, does not allow for any immediate profit for consumers because of dominant position abuses<sup>20</sup> and consumers' surplus capture.

### *Other non-maximising value explanations of M&A*

When control and ownership are separated within the firm,<sup>21</sup> managers can pursue other objectives than maximising shareholder value or increasing profit. Instead of enhancing shareholders' wealth, a manager might prefer to serve his/her own interests. Therefore, it is possible that a merger or an acquisition is mainly dictated by the power, prestige and/or higher compensation that are related to the management of a larger firm. In that case, it is the desire for power<sup>22</sup> that is expressed, and not the direct interest of the shareholders. This situation is more likely to arise where shareholding is dispersed and passive. Also M&A could be pursued by managers to reduce their employment risk (Amihud and Lev, 1981).

M&A operations can also be triggered by mimicry effect following the consolidation process initiated by competitors in the marketplace.<sup>23</sup> Indeed, within a relatively concentrated sector, the actions of the major 'player(s)' might have an immediate impact on the behaviour of others, inducing in turn a homogeneous behaviour. As Keynes said: "Universal wisdom teaches that it is better for one's reputation to fail with the conventions than to succeed against them".

During the last two decades, indeed, the development strategies in the banking industry were very often induced by common strategic standards, which have led to a rather homogeneous behaviour. As shown in the 1980s, the commercial strategies of banking institutions were marked by a race to achieve a larger size. Similarly, in the 1990s, enhancing the profitability

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<sup>16</sup> *Pre-emption* implies that the price fixed by the bank is lower than the average cost while *predation* involves fixing the price at a level lower than the marginal cost.

<sup>17</sup> Market power could be gauged by looking at the transmission of market interest rates to bank retail rates.

<sup>18</sup> Hannan (1997) and Radecki (1998).

<sup>19</sup> A contestable market displays low barriers to entry and exit. In such a situation, potential competitors may engage in hit-and-run behaviour to take advantage of the super normal profit situation of the market. Contestability hinges on the absence of exit costs (called 'sunk costs'), which are the costs that cannot be recovered by transferring assets to other use or by selling them. Entry to the financial services sector requires substantial investment that tends to be sunk to a high degree.

<sup>20</sup> The possibility of a cartel in banking is not purely theoretical and can be prejudicial for effective competition, as shown by the "Cruickshank" report (2000) in the UK and in the Canoy and Onderstal (2003) in the Netherlands.

<sup>21</sup> "Agency relation" of Jensen & Meckling (1976).

<sup>22</sup> "Managerial theory" (Berle & Means, 1932; Williamson, 1964).

<sup>23</sup> "Follow the leader" strategy.

of shareholders' equity became the new development standard. Today, targeted value creation represents the major strategic issue in modern banking management circles.

Moreover, the acceleration of M&A operations could also result from a defensive reaction on the part of a few actors against competitors' initiatives. Indeed, as the wave of mergers spreads, banking institutions that have remained outside the process are likely to become themselves a potential target in a hostile takeover transaction. To protect themselves from possible predators, managers can pursue an active acquisition policy in order to maintain their position.

Numerous M&As carried out recently in fact seem to have been dictated by the desire to modify the existing equilibrium and to be proactive to others' actions. Sometimes disguised as a hypothetical value creation move, a number of these operations are simply the reflection of the single market impetus, where mergers have simply become the objective rather than the result of careful strategic thinking. Most European banking institutions, reacting to the increased contestability of their national banking market, have sought to strengthen their national position, in order to improve their profitability and to protect their position from new competitive entrants.

Therefore, it seems more likely that the explanation of the recent banking consolidation process must be sought in the new rules of corporate governance. Committed to ensuring the growth of their companies while maintaining their competitiveness and forced to provide equity capital to which pressing remuneration requirements are attached, bank managers have pursued external growth through M&As as a strategic means to expand their activities.

## ***5. Banking M&A' performance and executive compensation***

The analysis of banking M&As performance and executive compensation will be undertaken in two steps. First, we assess banking M&A performance using financial ratios and Data Envelopment Analysis (DEA) to assess respectively profitability and cost and profit efficiency. Second, we relate the changes in pre and post M&A performance with executive compensation and other indicators. The aim is to understand if the level of executive compensation before the deal influences the performance of banks.

### *1. Methodology*

#### **First step: Economic and financial performance Analysis**

The profitability and efficiency analysis based on balance sheet indicators and efficiency scores consists in describing costs, revenue, risk and efficiency. All these indicators are analysed at least one year before and three after the merger for the acquirers and the targets and compared to a control group of non merged banks along the period 1996- 2003 (Table A Annex 2). The three years time period was used because it is more likely that gains should appear at least one year after the merger and then all gains should be realized within three years.

For the pre merger period, ratios for both the acquirers and the targets are examined to get an indication as the relative performance of the acquirer and the target. In addition, ratios for the control group were examined to provide a basis for comparing performance of the merged institutions to non merged ones that are similar in term of size, type and location.

For the post merger period, the focus of the analysis is on the combined institutions for mergers and separate institutions for acquisitions relative to the control group. The control group was particularly valuable as it permits an assessment of whether any observed changes

in the combined firm simply reflects changes in the economic environment or instead were due to the merger or acquisition.

Post merger data were compared with the pre merger data to determine what changes occurred in performance following the merger or the acquisition (Table B- Annex 2).

In this paper, we use the non-parametric DEA approach<sup>24</sup> to estimate cost and profit efficiency scores<sup>25</sup>. The frontier is obtained by means of linear combination of efficient firms contained in the sample. Although cost efficiency obtained by means of non-parametric techniques has been a widely used procedure, the estimation of profit efficiency by non-parametric techniques has rarely been done. The cost efficiency (respectively profit efficiency) measures the distance of each bank's cost (and respectively profit) and the "best practice" in the industry when producing the same bundle of outputs. Cost efficiency provides an indication on wastes in the production process and on the optimality of the chosen mix of inputs as a function of their respective prices. Profit efficiency, instead provides an indication on the optimality of the chosen mix of inputs and outputs. The comparison of cost and profit efficiency scores may give an indication on a likely market power effect.

The non-parametric DEA model uses linear programming to find the best practice bank in the sample ( $i=1, \dots, N$ ) that reflects minimum costs in producing the observed output vector  $Q$ , ( $y_i = y_{i1}, \dots, y_{iq}$ )  $\in \mathfrak{R}^{q++}$  that sell at prices ( $r_i = r_{i1}, \dots, r_{iq}$ )  $\in \mathfrak{R}^{q++}$  given the a vector of  $P$  inputs ( $x_i = x_{i1}, \dots, x_{ip}$ )  $\in \mathfrak{R}^{p++}$  for which they pay prices ( $w_i = w_{i1}, \dots, w_{ip}$ )  $\in \mathfrak{R}^{p++}$

The cost efficiency if each bank  $j$  can be by solving the following problem of linear programming:

$$\begin{aligned} & \text{Min} \sum_p w_{pj} x_{pj} \\ & \text{Subject to} \sum_i \lambda_i y_{iq} \geq y_{jq} \quad \forall q \\ & \sum_i \lambda_i x_{ip} \leq x_{jp} \quad \forall p \\ & \sum_i \lambda_i = 1, \lambda_i \geq 0, i = 1, \dots, N \end{aligned}$$

The solution  $x_j^* = x_{j1}^*, \dots, x_{jp}^*$  corresponds to the input demand vector that minimises the costs with the given price of inputs and is obtained from a linear combination of banks that produces at least as much of each of the inputs using the same or less amount of inputs and the cost will be  $C_j^* = \sum w_{pj} x_{pj}^*$  which is by definition less than or equal to the cost of the bank  $j$  ( $C_j = \sum w_{pj} x_{pj}$ )

The cost efficiency<sup>26</sup> for bank  $j$  ( $CE_j$ ) can be calculated as follows:

<sup>24</sup> Berger and Mester (1997); Maudos and Pastor (2003)

<sup>25</sup> The efficiency of a firm consist of two components: *technical efficiency*, which reflects the ability of a firm to obtain maximal output from a given set of inputs, and *allocative efficiency*, which reflects the ability of a firm to use the inputs in optimal proportions, given their respective prices.

<sup>26</sup> Radial cost efficiency, Banker, Charnes, and Cooper (1984).



$$CE_j = \frac{C_j^*}{C_j} = \frac{\sum_p w_{pj} x_{pj}^*}{\sum_p w_{pj} x_{pj}}$$

Where  $CE_j \leq 1$  represents the ratio between the minimum cost  $C_j^*$  associated with the use of the input vector  $x_j^*$  that minimises the costs and the observed costs  $C_j$  for bank.

Respectively, the alternative profit efficiency<sup>27</sup> is empirically calculated with the following linear programming formally expressed:

$$\begin{aligned} & \text{Max} R_j - \sum_p w_{pj} x_{pj} \\ & \text{Subject to} \\ & \sum_i \lambda_i R_i \geq R_j \\ & \sum_i \lambda_i y_{iq} \geq y_{jq} \quad \forall q \\ & \sum_i \lambda_i x_{ip} \leq x_{jp} \quad \forall p \\ & \sum_i \lambda_i = 1; \lambda_i \geq 0; i = 1, \dots, N \end{aligned}$$

The solution of the linear programming corresponds to the revenue  $R_j^*$  and input demand  $x_j^* = x_{j1}^*, \dots, x_{jp}^*$  which maximises profits given the prices of the inputs  $w$ . this solution is obtained from a linear combination of firms that produce at least as much of each of the outputs using a smaller or equal quantity of inputs and obtains at least as much revenues as bank  $j$ .

Alternative profit efficiency is then calculated as follows:

$$APE_j = \frac{P_j}{AP_j^*} = \frac{R_j - \sum_p w_{pj} x_{pj}}{R_j^* - \sum_p w_{pj} x_{pj}^*}$$

Where  $APE_j$  represents the ratio between the observed profits ( $P_j = R_j - \sum_p w_{pj} x_{pj}$ ) and the maximum profits  $AP_j^* = R_j^* - \sum_p w_{pj} x_{pj}^*$  associated with the maximum revenue and the input demand  $x_j^* = x_{j1}^*, \dots, x_{jp}^*$  that maximises profit for bank  $j$ .

In applying DEA, we adopted the intermediation approach proposed by Sealey and Lindley (1977). It assumes that the bank collects deposits to transform them, using labour and capital, into loans as opposed to the production approach which views the bank as using labour and

<sup>27</sup> Berger and Mester (1997), Rogers (1998).

capital to produce deposits and loans. According to the empirical literature<sup>28</sup>, the choice of either approaches may have an impact on the level of efficiency scores but do not imply strong modifications in their rankings.

Two outputs are included, loans and investment assets<sup>29</sup>. The inputs, whose prices are used to estimate cost and alternative profit frontier, include labour, physical capital and borrowed funds.

As data on the number of employees are not available, the price of labour is measured by the ratio of personnel expenses to total assets<sup>30</sup>. The price of physical capital is defined as the ratio of other non interest expenses to fixed assets. The price of borrowed funds is measured by the ratio of paid interests to all funding. Total costs are interest costs and non-interest costs. To measure total profit, we use operating gross income<sup>31</sup> which does not include loan provisioning as provisioning rules differ from one country to another one in Europe.

### Balance-sheet ratios analysis<sup>32</sup>

Four sets of balance-sheet ratios are examined including cost, profitability, risk and activity ratios.

- The cost ratios include *cost to income ratio* which permits to examine total costs (non interest expenses and interest expenses) to total operating revenues. This ratio reflects the ability of the bank to generate revenue from its expenditures. Furthermore, for many banks, revenues reflect income earned from the balance sheet as well from the off balance sheet<sup>33</sup>.

It is also of a special interest to decompose total costs to *non interest costs* (personnel expenses, back office operations and branches, amortization expense of intangible assets) and *interest costs* (cost of financial capital) to total assets. The former should be directly affected by the cost savings that are frequently cited as resulting from horizontal bank mergers. The later may be significantly affected by the way the bank chooses to obtain deposits. For example, a bank may choose to shift from using core deposits (predominately retail deposits) as a source of funds to using purchased money. Obtaining core deposits tends to incur high non interest expenses from the fixed costs of running the branches and the personnel while the opposite is true for obtaining purchased money, especially when interest rates are relatively low. The advantage of using total assets as a denominator in the cost ratios is that assets reflects the earnings base of the bank and they are not highly variable from one year to another, whereas revenues tend to be more variable.

- The profitability ratios include the *return on asset (ROA)* which is the ratio of gross income to average assets and the *return on equity (ROE)* which is the ratio of gross or net

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<sup>28</sup> Wheelock and Wilson (1995), Berger, Leusner and Mingo (1997).

<sup>29</sup> This item includes the « other earning assets » in the FitchRatings terminology, which are the earning assets other than loans.

<sup>30</sup> Dietsch and Weill (2001), Altunbas and al. (2001), Maudos and al. (2002).

<sup>31</sup> Which is profit before provisions and taxes.

<sup>32</sup> Rhoades (1998).

<sup>33</sup> Among the large banks, derivatives are important off balance sheet item that may be larger as measured by notional value than total asset. For many other banks, unused commitments such as credit cards, and home equity lines of credit represent major off balance sheet items that are sometimes larger in value than assets. Standby and commercial letters of credit represent an important although much smaller source of off balance sheet items for mostly larger banks. Off balance sheet activities result in expenses and also revenues.

income to equity. Gross income<sup>34</sup> measure is preferred to net income<sup>35</sup> one to avoid the differences in taxation between the European countries. ROA is a good overall indicator of a banking organization's performance that illustrates the ability of a bank to generate profits from the assets at its disposal. It has the disadvantage however of not accounting for the profits generated from the off balance sheet operations. ROE is an alternative measure of profitability designed to reflect the return to owners' investment. It has also a disadvantage that the denominator may vary across banks. The choices as to the mix between equity and debt capital as well as the total amount of capital held by a firm are basically driven by regulation. However, management has some margin to influence the bank structure.

Finally, it is also worth decomposing the total revenue into its main streams: interest and non-interest revenues to measure the diversification of income. In addition, we will measure the ability of the bank to generate revenue by the asset productivity ratio which is total revenues on total assets.

- The risk indicators are used to determine the change in the risk profile of a bank after a merger or an acquisition. For example *capital ratio* which is defined as equity to total assets indicates the capital strength of the bank and its ability to absorb credit and other losses. Solvency Ratio measured by *Loan- loss provision to net interest revenue* provides an indication of the extent to which the bank has made provisions to cover credit losses. The higher the ratio, the larger is the amount of expected bad loans on the books, and the higher are the risks despite having been provisioned.

### ***Second Step: Regression analysis to explain the change in banking performance with executive compensation***

We consider 80 domestic and cross border deals in Europe in the period 1995-2005. We use OLS regression to estimate the impact of executive compensation on bank performance. The technique has been widely used in the financial and economic literature and has been previously applied to our field of interest (Agrawal and Wackling, 1994; Hartzell, Ofek and Yermack, 2004). As said in the literature review, the empirical evidence on this topic basically concerns the US case. In addition, most studies were not specifically focused on the banking sector. Nonetheless, following the previous evidence we tested separately three dependent variables, ROE, ROA, and cost to income ratio. The former are generally considered good proxies for bank performance. The latter is widely used by academics and practitioners to assess the revenues and cost structure of the bank, adding precious information to our analysis. The performance indicators are taken after the deal, in order to see the impact of compensation on post deal performance. Besides, the incentive effect, that would be reflected in better management policies, may take some time to become valuable.

All variables are computed using balance sheet data collected from corporate websites and Bankscope. The independent variables account for many features of executive compensation and its changes over time. The rate of growth of compensation before and after the deal is considered both in its total value and in its fixed and variable components. Variable compensation takes account of stock options, stock granting plans, shares, bonus, pension, insurance, and other benefits.<sup>36</sup> Total compensation is the sum of fixed and variable compensation. The basic idea is to test whether changes in the level of compensation pre and post transaction affected post deal performance in some way. We expect that a positive rate of

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<sup>34</sup> Which is the income before taxes.

<sup>35</sup> Which is the income after taxes.

<sup>36</sup> Annual reports available on corporate websites differ on the amount and type of information provided. We used the information generally provided for the majority of banks in all European countries.

growth of compensation would be associated with a higher post deal performance. Usually if managers are better paid, they should have a higher motivation, therefore identifying the best target to acquire and maximising the value of the firm. Presumably this effect would be stronger in the case of growth of variable compensation, if the incentive hypothesis holds.

A second group of variables, related to executives managerial power, are tested. If executives have a strong managerial power, they may influence board decisions. The longer an executive has been in charge before the deal, the more powerful he should be. Therefore we consider the number of years the CEO has been in charge measured at the time of the deal. We expect a significant result. The effect on performance may be mixed, however. The longer the CEO has been in charge, the better might be the post deal performance. If executive is motivated to increase firm value, a more powerful manager may force the board towards the most profitable deals. Besides a CEO with a long history gains a better insight in firm's weakness and strength, and may be able to develop some "learning economies" from previous deals. On the contrary, the performance could be negatively affected by higher managerial power. The CEO may pursue his own goal at the presence of a board unable to counterbalance his power. Executive managerial power may be tested in another way. After a deal, the board may change, in terms of size, people, age, thus reflecting new equilibrium. If executives are still in charge, they would probably have a strong managing power since they are able to keep their position. It is interesting to test if CEO persistence lead to better post deal performance. In this case we use a dummy variable to flag if the executives were still in charge after the deal. Still the effect of managerial power on post deal performance cannot be easily predicted. However, we can suppose that if the firm is generally satisfied with the CEO, it would allow him in keeping his position. On the contrary, if dissatisfaction prevails, also in terms of post deal performance, CEO would not be able to stay.

We finally consider a few control variables such as the friendliness of the deal, for the dimension of banks, and for the age of the executives at the time of the deal. We run separate regressions for the entire sample and for domestic and cross border deals.

## *2. Data*

### *M&As sample*

The sample contains 71 completed mergers and acquisitions executed by banks headquartered in the EU15 plus Norway. The announcement dates ranged between 01/01/1996 and 01/01/2001. The deals were obtained essentially from the Thomson Financial Securities, M&A SDC database. The period under scrutiny is of a particular interest because it immediately follows the regulatory changes associated with the completion of the single market programme in the EU, and it also covers the period before and after the introduction of the Euro. As a breakdown is made between the domestic and the cross-border deals, both the single market programme and EMU are expected to be catalysts for cross-border M&A activity in banking.

All the deals included in our study are horizontal takeovers that can either be classified as complete mergers (involving the combination of the consolidating partners) or majority acquisitions exceeding the threshold of 49% of voting rights (in which the acquiring bank buys a controlling equity stake in the target bank, and both banks remain legally separate entities), in order to take into account all the operations having generated a transfer of capital control.

The targets and the acquirers are banking institutions (commercial banks, savings institutions, cooperatives banks and public credit institutions) as defined in the second banking directive. Insurance and 'securities' are excluded.

To explore the sample, statistical analysis on the number of transactions was performed. Table C. Annex 2 gives the number of transactions by year and country of targets; and Table D. Annex 2 displays the number of acquirers and targets per country.

### The control group

The control group is composed of non-merging or non majority acquired European banking institutions that respect the same selection criteria as the M&A sample. Foreign branches and subsidiaries that have their parent institution outside EU 15 plus Norway are excluded. We also excluded the institutions of our sample that were involved in a merger or a majority acquisition. These banks are mainly commercial, cooperative and savings banks. We excluded subsidiaries of foreign banks, specialised financial institutions and central banks.

The number of banks of the control group by country is given in Table E. Annex 2

All the data used in the empirical analysis are derived from *Bankscope*, a FitchRatings/Bureau Van Dijk international database which provides annual income and balance sheet data for banks.

### Data on banks' executive compensation

The executive compensation data, collected from banks' annual reports, includes fixed and variable compensation, such as stock option plans, bonus, pension, insurance and other benefits, CEO tenure measured in number of years CEO has been in charge, and CEO role after the deal. The sample is formed by 80 bank to bank M&A from 1994 to 2006 in Europe. We consider both domestic and cross border deals. Only closed deals have been considered.

## *3. Results of first step analysis*

The efficiency measures are the results of the implementation of a variable returns to scale (VRS) model<sup>37</sup>. Precisely, we perform a dynamic efficiency analysis on a sample of 71 bank-to-bank mergers and acquisitions (including 11 cross-border transactions) completed over the period 1996-2000.

The construction of cost and profit frontiers was based on a large sample of approximately 587 European banks located in the same EU countries.

In addition, the control group was constituted to provide a basis for comparing performance of the merged institutions to non merged ones that are similar in term of size, type and location. This group excludes the pre-specified sample of 71 bank-to-bank mergers and majority acquisitions and more generally all the banks that were involved in a takeover during the same year. The period of observation is 1996-2003. We consider unconsolidated balance sheet data whenever possible.

### Banking M&As and performance – cost and profit efficiency indicators (Annex 3)

Our efficiency results indicate that **for the domestic transactions**, the banks' cost efficiency slightly improves following the merger or acquisition. This improvement is more pronounced

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<sup>37</sup> In our empirical analysis computer routines are carried out using DEAP 2.1 (Coelli, 1996).

for the targets as they were much less efficient than the acquiring banks prior to the transaction. In other words, targets benefit more from the transaction than acquirers<sup>38</sup>.

This result supports two hypotheses: the first is a transfer of best practices of the acquiring bank to the target and the second, which is related to the first, is the existence of an efficient market for corporate control in European banks. This market would detect banks having a potential to improve their costs management. These findings suggest that M&A should be more successful if targets were proved to be badly cost managed.

Generally, acquirers and targets involved in the domestic transactions are more cost efficient than the banks of the control group before and after the M&A. Cost efficiency scores have slightly improved for the control group. However, this improvement is below any positive change experienced by the acquirers and the targets.

As concerns profit efficiency scores<sup>39</sup>, we found a positive variation for the acquiring and target banks<sup>40</sup>. Indeed, prior to the transaction, acquirers displayed higher scores than the targets. After the transaction, scores' improvement was more pronounced for the targets. This finding implies that European banks have exploited the opportunities to improve their profit efficiency either through anti-competitive pricing and/or pricing change and/or scale and scope economies and/or the advantages of a multi-specialized banking model.

**For the cross-border transactions**, our cost efficiency results show a deterioration of the acquirers' scores and a slight improvement for the targets' scores<sup>41</sup>. It is also interesting to mention that the targets involved in cross-border transactions were more efficient in terms of cost than the ones involved in domestic transactions<sup>42</sup>. This is an indication that the potential targets involved in the cross-border transactions are amongst the most cost efficient in the industry. For the acquirers, it is obvious that the potential of improving cost efficiency is limited due to the additional costs resulting from the difficulties to manage large and complex organizations across borders, adding to that the over-evaluation of the premium paid to the shareholders of the target.

With respect profit efficiency, acquirers and targets fail to improve their scores although they displayed higher scores as compared to the banks involved in domestic transactions and those of the control group<sup>43</sup>. The deterioration of profit efficiency scores is more pronounced for the acquirers.

These findings confirm the conclusions of the survey conducted by the European Commission in 2004 and 2005 on a sample of 355 financial institutions under the mandate of the European Council in Scheveningen in September 2004 (See Annex 1 for the summary of the results). These conclusions are that the most relevant impediment identified is the inadequate cross-border cost and revenue synergies. Synergies are insufficient to offset the M&A costs and fail to generate a sufficient return on investment.

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<sup>38</sup> These results are confirmed in Vander Vennet (1996), Altunbas & Ibanez (2004), Ayadi & Pujals (2005).

<sup>39</sup> These results should be interpreted with caution owing to a number of limits of the DEA methodology, particularly the non availability of output prices.

<sup>40</sup> Results confirmed by Vander Vennet (1996), Altunbas & Ibanez (2004) Ayadi & Pujals (2005) for European banks; and Houston and Ryngaert (2001) for US banks; and Focarelli & Panetta (2002) for Italian banks.

<sup>41</sup> These findings are confirmed in Vander Vennet (2002) and Ayadi & Pujals (2005), also in Beitel et al. (2004) for European banks and Houston & Ryngaert (1997) for US banks, who concluded that transactions focusing geographies are more successful than the one diversifying geographies.

<sup>42</sup> See footnote above.

<sup>43</sup> These findings are confirmed by Vander Vennet (1996, 2002), Altunbas & Ibanez (2004) and Ayadi & Pujals (2005).

### Banking M&A and performance – balance-sheet indicators (Annex 3)

For all transactions, our results based on cost to income ratio (CIR) show that the acquirers are more cost efficient than the targets and the banks of the control group. After the transaction, the CIR has improved, implying a cost reduction for the acquirers and the targets. This reduction is more pronounced for the targets since they display an initial higher potential for improvement than the acquirers. It is also interesting to notice that the reduction in terms of interest costs is more important than in terms of non-interest costs.

**The domestic transactions** succeeded to improve the CIR and to reduce total costs. This finding confirms the potential of cost savings of this type of transactions.

Our results based on ROA and ROE showed a slight improvement for the acquirers involved in the domestic transactions, which is more pronounced for the targets, while the control group showed the opposite trend. Moreover, the decrease of interest revenues was substituted by an increase of other non-interest revenues for the acquirers and the targets. The productivity has deteriorated for the acquirers, the targets and the control group. This is an indication that the productivity of assets is a general problem for European banks.

When measuring the solvency ratio, acquirers and targets have experienced a positive change in all types of transactions. This could give an explanation for the national prudential authorities when defending domestic transactions.

**In cross-border transactions**, acquirers are more cost efficient in terms of CIR than the acquirers involved in the domestic transactions. However, this type of transactions has had a negative impact on the acquirers' and targets' CIR. Despite a slight reduction of total costs in the assets, these transactions do not generate sufficient revenues as compared to their expenses.

Our results of the profitability analysis confirm that domestic transactions are more profitable in terms of ROA and ROE than the cross-border ones, despite the high profitability level of the banks involved in the cross-border transactions. Indeed, cross-border transactions have failed to improve the profitability regardless their type.

Finally, our results show the negative impact of cross-border M&As on solvency.

#### *4. Results of second step analysis*

At the moment of writing, due to problems in collecting data, we are able to run our analysis on a reduced sample of 37 deals. We considered domestic and cross border banking deals in Europe. Bidder and target banks belong to former EU15 and the sample covers a 6-year time horizon starting from year 2000. We tested two variables: the post-deal CEO total compensation (Totcomp) and the ratio of variable compensation on total compensation (Var). The former is expected to be positively related to bank performance. A higher post deal total compensation should be granted in case of successful deals. The latter is expected to be significant with a positive sign. If the incentive hypothesis is confirmed, a higher portion of variable compensation should lead to better post deal results.

Two control variables are tested, i.e. the age of the CEO (Age) and the persistence of the CEO after the deal (Persist). Both variables control for managerial power of the CEO. As for the age, it is useful when we can test the ratio between equity based and debt based variable compensation. Usually debt based variable compensation (e.g. pension benefits, insurance) should be more relevant for older CEO, next to retirement. Equity based variable compensation (e.g. stock options, bonus) should be more significant for younger CEO. At this stage data available do not allow such analysis. "Persist" is a dummy variable which

control for the persistence of the CEO. It is equal to 1 if the CEO is still in charge after the deal; 0 otherwise.

The descriptive statistics show no correlation among variables. Post deal ROA for the banks considered has been equal to 0.68 on average. The mean of the CEO total compensation after the deal amount to more than 7 million euro. Variable compensation amounts to 2.4 of the total compensation on average. The average age of the CEO is 55 years.

We tested the following equation:  $ROA = \alpha + \beta \text{ totpost} + \gamma \text{ var} + \delta \text{ age} + \zeta \text{ persist} + \varepsilon$ .

The ratio of variable compensation and total compensation is significant with a positive coefficient. The more the ratio grows the more ROA increases. The possible explanation is that variable compensation works as an incentive for CEO. The higher is the amount of variable compensation on total compensation, the higher it is the incentive for the CEO to look for profitable target and deals. Therefore the better it is the post deal performance. The results is in line with previous studies, confirming the incentive hypothesis. We would further investigate the different type of variable compensation (stock option, bonuses, pension benefits and so on) to see if any of these work as a better incentive in respect to the others. For instance, equity based variable compensation may be more effective in motivating CEOs than debt based variable compensation, in the case of relatively young CEOs far from retirement age.

The level of total compensation after the deal does not influence post transaction performance. Probably, it would be more interesting to test the level of compensation before the deal. Unfortunately, at the moment of writing, we do not have enough data to test this hypothesis.

Finally, Age and Persist are not significant. Managerial power seems not to influence post deal performance. It must be taken into account that we decide to test four variables not to over fit the model since we only have 37 deals, as previously said. As for the robustness checks, we performed around twenty regressions with different independent variables and the results still hold. ROE and CI has been tested either. The ratio of variable compensation and total compensation is still significant with a positive coefficient. Nonetheless, ROA has been preferred since it is less dependent on regulatory requirements on capital structure of banks. The model passed the serial correlation, the functional form and the heteroscedasticity tests. Tables 2, 3 and 4 shows the descriptive statistics, the correlation matrix and the results.

## ***6. Conclusion***

In this paper, we investigate whether changes in executive compensation related to the agency problems is a significant explanatory factor of the changes in banking performance before and after a merger or an acquisition. To assess banking performance, first we measure profitability and efficiency (cost and profit) for the acquirers and the targets before and after the operation using financial ratios and Data Envelopment Analysis (DEA). Second, we relate the changes in pre and post M&A performance with executive compensation and other indicators.

The first part of the analysis shows that synergies are insufficient to offset the M&A costs and fail to generate a sufficient return on investment. However, looking at the balance sheet indicators, they suggest an improvement in cost to income ratio after the deals, implying a cost reduction for both bidder and target. This reduction is more pronounced for the target since it displays a higher potential for improvement in respect to the bidder. The result is particularly significant for domestic deals, confirming a potential cost saving motivation for this type of transactions.

As for the analysis on bank performance related to executive compensation, the paper is still in a preliminary stage. Even if the empirical test has been performed on a reduced sample, and has to be carefully interpreted, the result shows a significant effect of the ratio of CEO variable compensation to total compensation on the post deal performance. Collecting data on the components of variable compensation granted to the CEOs, we are able to test their impact on ROA, on ROE and on cost to income ratio. We expect to get a better insight on



which kind of variable compensation represents the best incentive for CEOs, aligning his interest to the bank's one. This would be particularly helpful in shaping CEOs compensation using a mix of debt based and equity based tools.

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## Tables

Table 1. Synergies announced in recent M&A deals in the EU

Banks	Year	Expected synergies (€ million)	Revenue synergies (%)	Cost synergies (%)
UniCredit-HVB	2005	985*	9	91
SCH-Abbey National	2004	560	20	80
Crédit Agricole-Crédit Lyonnais	2002	760	0	100
Caisses d'Epargne-CDC IXIS	2001	500	85	15
Allianz-Dresdner	2001	1080	88	12
Halifax-Bank of Scotland	2001	1113	51	49
Dexia-Artesia	2001	200	15	85
HVB-Bank Austria	2000	500	0	100
RBoS-Natwest	2000	2335	17	83
BNP-Paribas	1999	850	18	82
BBV-Argentaria	1999	511	0	100
Intesa-COMIT	1999	1000	50	50
Banco Santander-BCH	1999	630	0	100

Sources: Annual reports and financial press.

\* Synergies to be achieved in 2008.

Table 2 - Descriptive statistics

Variable(s)	ROA	TOTPOST	VAR	AGE
Maximum	2.7400	67,611,630	66.8000	64.0000
Minimum	-.49000	13,410.00	0.00	34.00
Mean	.68811	7,137,693	2.4059	55.12
Std. Deviation	.54925	1.60E+07	10.9132	18.3174

Table 3 - Estimated Correlation Matrix of Variables

	ROA	TOTPOST	VAR	AGE	PERSIST
ROA	1.0000	.075433	.54895	-.072252	.13636
TOTPOST		1.0000	-.058732	.17769	.31829
VAR			1.0000	-.13641	.17168
AGE				1.0000	.063763
PERSIST					1.0000

Table 4 - Preliminary results

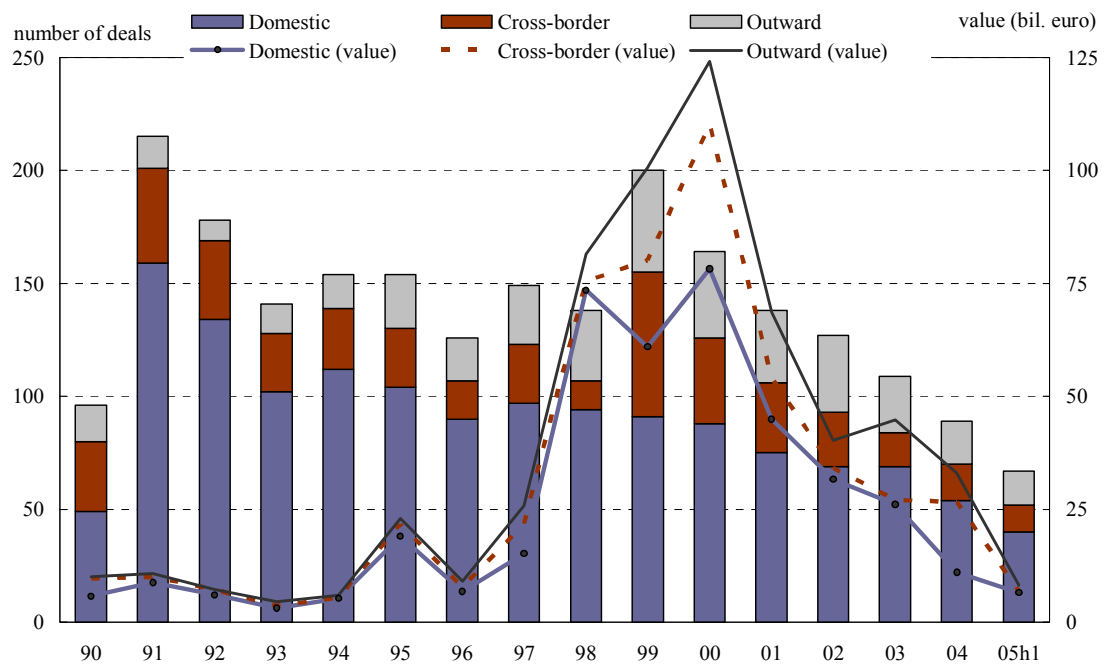
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CONST	.61967	.23139	2.6781[.011]
TOTPOST	.3814E-8	.5047E-8	.75572[.455]
VAR	.027842	.0073335	3.7966[.001]
AGE	-.4943E-3	.0044322	-.11152[.912]
R-Squared	.31324	R-Bar-Squared	.25081
DW-statistic	1.9763		

### Diagnostic Tests

Test Statistics	LM Version	F Version
A:Serial Correlation	CHSQ( 1)= .0015217[.969]*	F( 1, 32)= .0013161[.971]
B:Functional Form	CHSQ( 1)= .72409[.395]*	F( 1, 32)= .63874[.430]
C:Heteroscedasticity	CHSQ( 1)= .11468[.735]*	F( 1, 35)= .10882[.743]

## Annexes

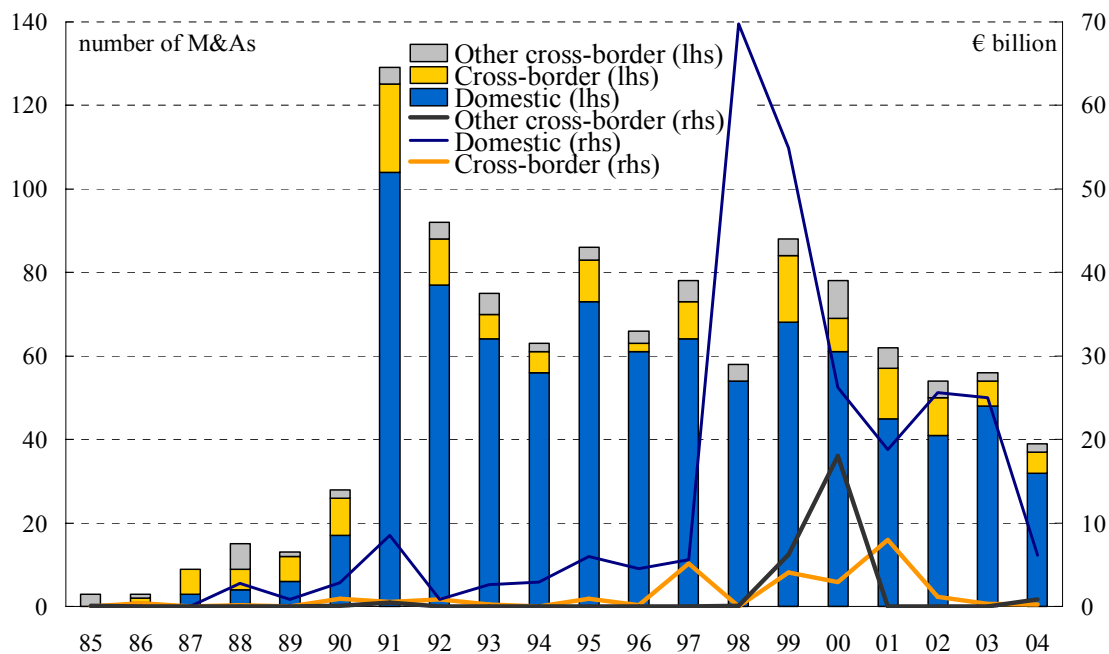
Annex 1: Figure 1: Number and Value of M&A in banking in EU 15



Source: Thomson Financial SDC (2006)

**Note: 2005 figures are annualized.** Cross-border M&A refers to transactions in EU-15 involving a non-domestic acquirer. Outward M&A refers to non-EU acquisitions of EU-15 banks (only up to 2005Q1). The number of deals is shown on the left-hand scale. Value of deals is represented as stacked lines on the right-hand scale, but is missing for a number of deals.

Figure 2: Number and Value of M&A in banking in the Euro Area

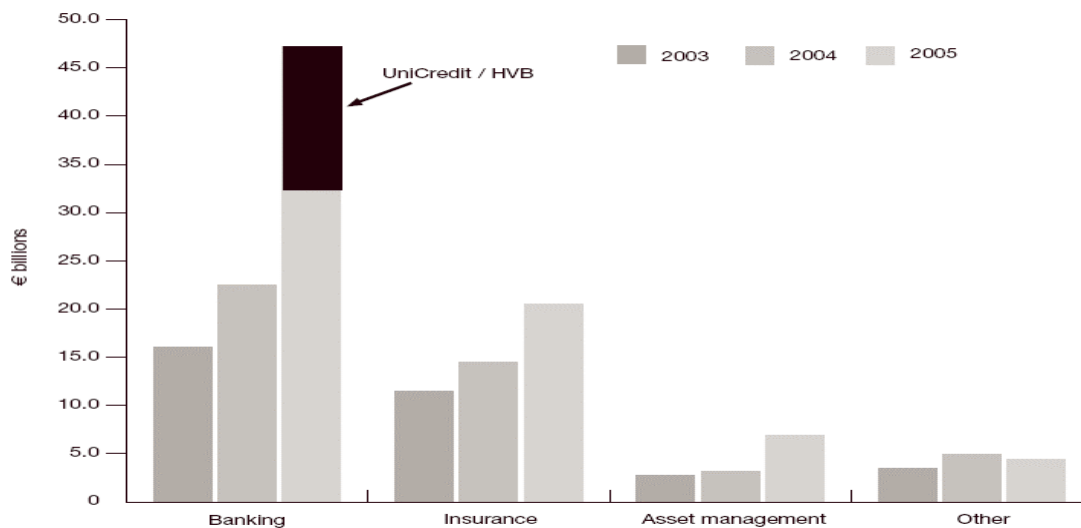


Source: Thomson Financial SDC (2006)

Notes: The chart only shows deals where ownership after the transaction exceeds a 49% threshold. Cross-border refers to inter-euro area M&As. Other cross-border includes acquirers from non-euro area countries. Some deals are without reported value

Figure 3: M&A transactions in the European financial sector for 2005

2005 European FS deals by subsector



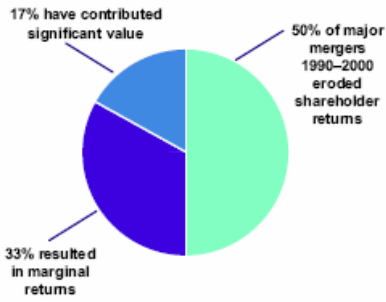
Source: Mergermarket and PwC analysis

Figure extracted from PricewaterhouseCoopers (2006) “Financial Services M&A 2006”: cross border deals represented two-thirds of (depicted) total deals for 2005.

Figure 4: Banking M&A and performance

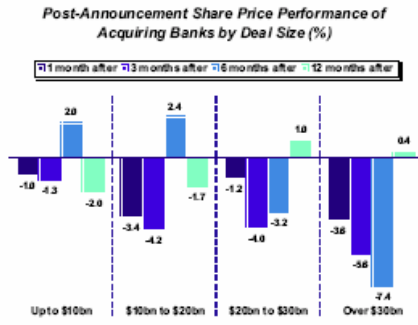
*Historic Value of M&As*

**Most Mergers Fail to Deliver Their Promised Value**



Source: CGE&Y, "Alliances and Mergers Services for the Financial Services Industry," Feb. 2001.

**Large Deals Have Tended to Underperform Smaller Deals**



Source: Merrill Lynch, "AsiaPac Banknotes," 11 June 2003.

## Annex 2:

A) Data relative to transactions at year (X)	1996	1997	1998	1999	2000	2001	2002	2003
1996	X	X+1	X+2	X+3	X+4	X+5	X+6	X+7
1997	X-1	X	X+1	X+2	X+3	X+4	X+5	X+6
1998	X-2	X-1	X	X+1	X+2	X+3	X+4	X+5
1999	X-3	X-2	X-1	X	X+1	X+2	X+3	X+4
2000	X-4	X-3	X-2	X-1	X	X+1	X+2	X+3

B) Data relative to transactions at year (X)	Before (Xb)	After (Xa)	D = Xb-Xa
1996	X	$((X+1)+(X+2)+(X+3)+(X+4)+(X+5)+(X+6)+(X+7))/7$	D1
1997	$((X-1)+(X))/2$	$((X+1)+(X+2)+(X+3)+(X+4)+(X+5)+(X+6))/6$	D2
1998	$((X-2)+(X-1)+(X))/3$	$((X+1)+(X+2)+(X+3)+(X+4)+(X+5))/5$	D3
1999	$((X-3)+(X-2)+(X-1)+(X))/4$	$((X+1)+(X+2)+(X+3)+(X+4))/4$	D4
2000	$((X-4)+(X-3)+(X-2)+(X-1)+(X))/5$	$((X+1)+(X+2)+(X+3))/3$	D5

## M&amp;A sample

Country	1996	1997	1998	1999	2000	Total	%
Portugal	1	2	1	1	1	6	8%
Denmark	0	0	1	1	1	3	4%
Finland	0	1	0	0	0	1	1%
Sweden	2	0	0	0	0	2	3%
Spain	0	6	5	5	1	17	24%
Germany	0	2	2	1	0	5	7%
France	3	4	1	3	1	12	17%
Italy	0	7	10	5	3	25	35%
<b>Total</b>	<b>6</b>	<b>22</b>	<b>20</b>	<b>16</b>	<b>7</b>	<b>71</b>	<b>100%</b>
%	8%	31%	28%	23%	10%	100%	

Country	Acquirers	Targets	Total
Portugal	6	8	14
Denmark	2	3	5
Finland	1	1	2
Sweden	3	2	5
Spain	10	15	25
Germany	5	4	9
Austria	0	1	1
France	10	12	22
Italy	19	25	44
Luxembourg	1	0	1
<b>Total</b>	<b>57</b>	<b>71</b>	<b>128</b>



Table E: Control group by country:

<b>Country</b>	<b>Total</b>
<b>Austria</b>	38
<b>Belgium</b>	22
<b>Denmark</b>	26
<b>Finland</b>	3
<b>France</b>	106
<b>Germany</b>	126
<b>Greece</b>	7
<b>Italy</b>	131
<b>Netherlands</b>	20
<b>Portugal</b>	10
<b>Spain</b>	29
<b>Sweden</b>	9
<b>UK</b>	42
<b>Norway</b>	18
<b>Total</b>	587

Annex 3: Results – Efficiency analysis:

a) Cost and profit efficiency indicators

Cost efficiency indicators								
Transaction type	Acquirers				Control group			Difference (A) - (B)
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	63	67,39%	66,61%	<b>-0,78%</b>	36,69%	39,90%	<b>3,21%</b>	<b>-3,99%</b>
<b>National</b>	54	65,89%	66,15%	<b>0,27%</b>	36,72%	39,89%	<b>3,17%</b>	<b>-2,90%</b>
<b>Cross border</b>	9	78,20%	69,88%	<b>-8,32%</b>	36,60%	39,88%	<b>3,27%</b>	<b>-11,59%</b>

Cost efficiency indicators								
Transaction type	Number	Targets			Control group			Difference (A) - (B)
		Before (1)	After(2)	Difference (A=(2)-(1))	Before (1)	After (2)	difference (B=(2)-(1))	
<b>Total</b>	65	50,94%	55,72%	<b>4,78%</b>	36,65%	39,94%	<b>3,29%</b>	<b>1,49%</b>
<b>National</b>	55	51,02%	57,78%	<b>6,76%</b>	36,67%	39,93%	<b>3,25%</b>	<b>3,51%</b>
<b>Cross border</b>	10	50,49%	54,99%	<b>4,50%</b>	36,54%	40,00%	<b>3,45%</b>	<b>1,05%</b>

Profit efficiency indicators								
Transaction type	Number	Acquirers			Control group			Difference (A) - (B)
		Before (1)	After(2)	Difference (A=(2)-(1))	Before (1)	After(2)	Difference (B=(2)-(1))	
<b>Total</b>	63	33,19%	40,19%	<b>7,00%</b>	10,16%	16,22%	<b>6,06%</b>	<b>0,93%</b>
<b>National</b>	54	28,94%	39,07%	<b>10,13%</b>	10,19%	16,21%	<b>6,03%</b>	<b>4,10%</b>
<b>Cross border</b>	9	55,95%	44,22%	<b>-11,73%</b>	10,12%	16,07%	<b>5,95%</b>	<b>-17,68%</b>

Profit efficiency indicators								
Transaction type	Number	Targets			Control group			Difference (A) - (B)
		Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	65	19,75%	30,72%	<b>10,97%</b>	10,10%	16,27%	<b>6,17%</b>	<b>4,80%</b>
<b>National</b>	55	18,94%	32,47%	<b>13,53%</b>	10,12%	16,27%	<b>6,15%</b>	<b>7,38%</b>
<b>Cross border</b>	10	24,20%	22,76%	<b>-1,44%</b>	10,01%	16,29%	<b>6,28%</b>	<b>-7,72%</b>

Results- Balance-sheet indicators:

Cost Income Ratio (CIR)								
Transactions	Number	Acquirers			Control group			Difference A-B
		Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	63,37%	60,30%	<b>-3,06%</b>	63,96%	66,66%	<b>2,71%</b>	<b>-5,77%</b>
<b>National</b>	60	64,59%	60,30%	<b>-4,29%</b>	63,95%	66,66%	<b>2,72%</b>	<b>-7,01%</b>
<b>Cross border</b>	11	56,72%	60,36%	<b>3,64%</b>	63,99%	66,65%	<b>2,66%</b>	<b>0,98%</b>
Transactions	Number	Targets			Control group			Difference A-B
		Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After(2)	Difference (B=(2)-(1))	
<b>Total</b>	69	73,08%	70,05%	<b>-3,02%</b>	63,95%	66,63%	<b>2,67%</b>	<b>-5,70%</b>
<b>National</b>	59	72,81%	68,30%	<b>-4,51%</b>	63,94%	66,62%	<b>2,68%</b>	<b>-7,19%</b>
<b>Cross border</b>	10	74,63%	80,38%	<b>5,75%</b>	64,05%	66,66%	<b>2,62%</b>	<b>3,13%</b>

Non-interest costs/Total assets	
Acquirers	Control group

	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	Difference A-B
<b>Total</b>	71	2,24%	2,05%	-0,19%	1,59%	1,59%	0,00%	<b>-0,18%</b>
<b>National</b>	60	2,16%	2,06%	-0,10%	1,59%	1,59%	0,00%	<b>-0,10%</b>
<b>Cross border</b>	11	2,63%	2,00%	-0,62%	1,60%	1,59%	-0,01%	<b>-0,61%</b>
<b>Targets</b>				<b>Control group</b>				
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	Difference A-B
<b>Total</b>	71	3,16%	2,71%	-0,45%	1,57%	1,56%	0,00%	<b>-0,45%</b>
<b>National</b>	60	3,24%	2,87%	-0,37%	1,56%	1,56%	0,00%	<b>-0,37%</b>
<b>Cross border</b>	11	2,75%	1,86%	-0,89%	1,60%	1,59%	-0,01%	<b>-0,88%</b>

#### Interest costs/Total assets

	<b>Acquirers</b>				<b>Control group</b>			
Transactions	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	Difference A-B
<b>Total</b>	71	4,30%	3,22%	-1,08%	3,94%	3,48%	-0,46%	<b>-0,62%</b>
<b>National</b>	60	4,25%	3,12%	-1,13%	3,94%	3,48%	-0,46%	<b>-0,67%</b>
<b>Cross border</b>	11	4,55%	3,75%	-0,80%	3,98%	3,53%	-0,45%	<b>-0,35%</b>
<b>Targets</b>				<b>Control group</b>				
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	Difference A-B
<b>Total</b>	68	4,68%	3,20%	-1,48%	3,94%	3,48%	-0,46%	<b>-1,02%</b>
<b>National</b>	59	4,73%	3,24%	-1,49%	3,94%	3,48%	-0,46%	<b>-1,03%</b>
<b>Cross border</b>	9	4,39%	2,97%	-1,42%	3,98%	3,53%	-0,45%	<b>-0,97%</b>

#### ROA

	<b>Acquirers</b>				<b>Control group</b>			
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	Difference A-B
<b>Total</b>	71	0,95%	0,99%	0,05%	0,73%	0,69%	-0,04%	<b>0,09%</b>
<b>National</b>	60	0,95%	1,03%	0,08%	0,73%	0,69%	-0,04%	<b>0,13%</b>
<b>Cross border</b>	11	0,95%	0,79%	-0,16%	0,73%	0,70%	-0,03%	<b>-0,13%</b>
<b>Targets</b>				<b>Control group</b>				
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	Difference A-B
<b>Total</b>	71	0,77%	1,04%	0,27%	0,73%	0,69%	-0,04%	<b>0,31%</b>
<b>National</b>	60	0,58%	0,91%	0,33%	0,73%	0,69%	-0,04%	<b>0,37%</b>
<b>Cross border</b>	11	1,81%	1,73%	-0,08%	0,73%	0,70%	-0,03%	<b>-0,05%</b>

#### ROE

	<b>Acquirers</b>				<b>Control group</b>			
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	difference A-B
<b>Total</b>	71	13,43%	14,14%	0,71%	13,83%	13,34%	-0,27%	<b>0,98%</b>
<b>National</b>	60	12,53%	13,66%	1,12%	13,84%	13,32%	-0,26%	<b>1,38%</b>
<b>Cross border</b>	11	18,33%	16,78%	-1,54%	13,80%	13,47%	-0,33%	<b>-1,22%</b>
<b>Targets</b>				<b>Control group</b>				
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	difference A-B
<b>Total</b>	71	3,79%	10,30%	6,51%	13,83%	13,34%	-0,27%	<b>6,78%</b>
<b>National</b>	60	2,85%	10,97%	8,12%	13,84%	13,32%	-0,26%	<b>8,38%</b>
<b>Cross border</b>	11	8,92%	6,66%	-2,26%	13,80%	13,47%	-0,33%	<b>-1,93%</b>

#### Interest revenue/Total revenue

	Acquirers				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	69,72%	63,79%	-5,93%	83,10%	77,64%	-5,46%	<b>-0,46%</b>
<b>National</b>	60	69,30%	63,92%	-5,38%	83,06%	77,61%	-5,45%	<b>0,07%</b>
<b>Cross border</b>	11	72,00%	63,07%	-8,93%	83,34%	77,79%	-5,55%	<b>-3,38%</b>
	Targets				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	72,25%	65,93%	-6,32%	83,10%	77,64%	-5,46%	<b>-0,85%</b>
<b>National</b>	60	72,38%	66,63%	-5,75%	83,06%	77,61%	-5,45%	<b>-0,30%</b>
<b>Cross border</b>	11	71,54%	62,14%	-9,40%	83,34%	77,79%	-5,55%	<b>-3,85%</b>

Non interest revenue /Total revenue								
	Acquirers				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	29,28%	35,00%	5,72%	16,88%	22,34%	5,46%	<b>0,26%</b>
<b>National</b>	60	29,51%	34,65%	5,13%	16,92%	22,36%	5,44%	<b>-0,31%</b>
<b>Cross border</b>	11	28,00%	36,93%	8,93%	16,66%	22,21%	5,55%	<b>3,38%</b>
	Targets				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	27,75%	34,07%	6,32%	16,88%	22,34%	5,46%	<b>0,86%</b>
<b>National</b>	60	27,62%	33,37%	5,75%	16,92%	22,36%	5,44%	<b>0,31%</b>
<b>Cross border</b>	11	28,46%	37,86%	9,40%	16,66%	22,21%	5,55%	<b>3,85%</b>

Total revenue/Total Assets								
Transactions	Acquirers				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	7,37%	6,12%	-1,25%	6,49%	5,89%	-0,60%	<b>-0,65%</b>
<b>National</b>	60	7,36%	5,95%	-1,41%	6,48%	5,88%	-0,60%	<b>-0,81%</b>
<b>Cross border</b>	11	7,43%	7,04%	-0,39%	6,54%	5,94%	-0,60%	<b>0,21%</b>
Transactions	Targets				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	8,25%	6,85%	-1,40%	6,49%	5,89%	-0,60%	<b>-0,81%</b>
<b>National</b>	60	8,40%	7,15%	-1,25%	6,48%	5,88%	-0,60%	<b>-0,65%</b>
<b>Cross border</b>	11	7,44%	5,18%	-2,26%	6,54%	5,94%	-0,60%	<b>-1,66%</b>

Capital Ratio								
Transactions	Acquirers				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	
<b>Total</b>	71	7,12%	8,46%	1,33%	5,28%	5,18%	-0,11%	<b>1,44%</b>
<b>National</b>	60	7,47%	9,06%	1,58%	5,28%	5,18%	-0,10%	<b>1,69%</b>
<b>Cross border</b>	11	5,22%	5,19%	-0,03%	5,29%	5,18%	-0,11%	<b>0,08%</b>
Transactions	Targets				Control group			difference A-B
	Number	Before (1)	After (2)	Difference (A=(2)-(1))	Before (1)	After (2)	Difference (B=(2)-(1))	

<b>Total</b>	<b>71</b>	9,80%	8,96%	-0,84%	5,28%	5,18%	-0,11%	<b>-0,74%</b>
<b>National</b>	<b>60</b>	9,07%	8,23%	-0,84%	5,28%	5,18%	-0,10%	<b>-0,73%</b>
<b>Cross border</b>	<b>11</b>	13,78%	12,93%	-0,85%	5,29%	5,18%	-0,11%	<b>-0,74%</b>

<b>Solvency Ratio</b>								
<b>Transactions</b>	<b>Acquirers</b>				<b>Control group</b>			<b>difference A-B</b>
	<b>Number</b>	<b>Before (1)</b>	<b>After (2)</b>	<b>Difference (A=(2)-(1))</b>	<b>Before (1)</b>	<b>After (2)</b>	<b>Difference (B=(2)-(1))</b>	
<b>Total</b>	<b>71</b>	17,71%	13,11%	-4,60%	15,03%	16,57%	1,54%	<b>-6,14%</b>
<b>National</b>	<b>60</b>	18,55%	12,73%	-5,82%	15,02%	16,58%	1,56%	<b>-7,38%</b>
<b>Cross border</b>	<b>11</b>	13,13%	15,19%	2,06%	15,06%	16,49%	1,43%	<b>0,62%</b>
	<b>Targets</b>				<b>Control group</b>			<b>difference A-B</b>
	<b>Number</b>	<b>Before (1)</b>	<b>After (2)</b>	<b>Difference (A=(2)-(1))</b>	<b>Before (1)</b>	<b>After (2)</b>	<b>Difference (B=(2)-(1))</b>	
<b>Total</b>	<b>71</b>	22,19%	17,91%	-4,29%	15,03%	16,54%	1,51%	<b>-5,80%</b>
<b>National</b>	<b>50</b>	22,74%	16,89%	-5,85%	15,01%	16,50%	1,49%	<b>-7,34%</b>
<b>Cross border</b>	<b>11</b>	18,63%	24,58%	5,95%	15,13%	16,77%	1,64%	<b>4,31%</b>

