Discussion Paper No. 08-009

Transparency of Regulation and Cross-Border Bank Mergers

Matthias Köhler

ZEW
Zentrum für Europäische Wirtschaftsforschung GmbH
Centre for European Economic Research

Discussion Paper No. 08-009

Transparency of Regulation and Cross-Border Bank Mergers

Matthias Köhler

Nicht-Technische Zusammenfassung

Obwohl die EU durch die Harmonisierung von Bankenregulierungen bereits einige Hindernisse für grenzüberschreitende Bankgeschäfte beseitigt hat, sind grenzüberschreitenden Übernahmen und Fusionen (M&A) im Bankensektor weiterhin seltener als in anderen Sektoren. Die vorliegende Studie untersucht, ob und inwieweit die Prüfung von M&A im Bankensektor durch die Aufsichtsbehörde eine Barriere für die grenzüberschreitende Konsolidierung im EU Bankensektor darstellen könnte.

Dass die Prüfung durch Bankaufsichtsbehörden ein mögliches Hindernis für grenzüberschreitende M&A in der EU darstellt, wurde bereits in Italien deutlich. Dort hat die italienische Notenbank im Jahre 2005 die Übernahme von zwei italienischen Banken durch eine niederländische und eine spanische Bank blockiert. Die EU Kommission hat daraufhin ein Verfahren gegen Italien wegen Verletzung der Kapitalverkehrsfreiheit eingeleitet. Um die Transparenz und die rechtliche Sicherheit des Prüfungsprozesses zu erhöhen, hat die Kommission mittlerweile Änderungen an der EU Bankenrichtlinie vorgeschlagen.

Obwohl es anekdotische Hinweise gibt, dass der Prüfungsprozess durch die Aufsichtsbehörde ein Hindernis für grenzüberschreitende M&A darstellen könnte, gibt es bisher noch keine empirischen Anhaltspunkte hierfür. Diese Studie soll diese Lücke schließen. Dabei greift sie auf einen Datensatz über die Transparenz der Fusionskontrolle im Bankensektor zurück, der von Koehler (2007) aufgebaut wurde. Um herauszufinden, ob die Fusionskontrolle ein Hindernis für die grenzüberschreitende Konsolidierung im EU Bankensektor darstellt, schätzen wir die Wahrscheinlichkeit, dass eine Bank übernommen wird in Abhängigkeit von der Transparenz der Fusionskontrolle im Bankensektor.

Die Resultate der empirischen Analyse deuten darauf hin, dass die Wahrscheinlichkeit, von ausländischen Banken übernommen zu werden von der Transparenz des aufsichtsrechtlichen Prüfungsprozesses abhängt. Die Wahrscheinlichkeit von einer ausländischen Bank übernommen zu werden, ist besonders gering für große Banken. Ein Grund hierfür könnte sein, dass Politiker wollen, dass die größten Banken in ihrem Land in inländischem Eigentum sind. Das bedeutet, dass die Intransparenz der Fusionskontrolle nicht allein in Italien ein Hindernis für grenzüberschreitende Fusionen ist, sondern dass der aufsichtsrechtliche Prüfungsprozess eine systematische Barriere für die Integration des europäischen Bankenmarktes ist. Aus diesem Grunde bewerten wir die Anstrengungen der EU Kommission die Transparenz der Fusionskontrolle im Bankensektor zu erhöhen als einen wichtigen Schritt zum Abbau von Markteintrittsbarrieren und zur Erhöhung des Integrationsgrades der Bankenmärkte in der EU.

Non-Technical Summary

Although the EU has already removed barriers to multinational banking through the harmonization of banking regulations, the number of cross-border mergers and acquisitions (M&A) is still less frequent compared to domestic M&A and to cross-border M&A in other sectors (European Commission, 2005). This paper examines whether and to which extent the merger approval process of national supervisory authorities constitutes a barrier to cross-border consolidation in the EU banking sector.

That M&A control by supervisory authorities has the potential to significantly restrict cross-border consolidation in the EU has been demonstrated in Italy where the Bank of Italy blocked the acquisition of two Italian credit institutions by a Dutch and a Spanish bank in 2005. Subsequently, the EU Commission brought actions against Italy for infringement of the principle of the free movement of capital. To improve the legal certainty, clarity and transparency of the supervisory review process, the EU Commission has meanwhile proposed changes of the relevant article of the banking directive that regulates the transfer of ownership in the banking sector.

Although there is anecdotal evidence that the prudential control may constitute a barrier to cross-border consolidation in the banking sector, empirical evidence is missing until now. This paper aims to fill this gap. It relies on a unique database on the transparency of M&A control in the banking sector that has been set up by Koehler (2007). To find out if merger control may constitute a barrier to banking market integration, we estimate the prospect that a bank is taken over will estimate the prospect that a bank is taken over as a function of its characteristics, country characteristics and the transparency of merger control in the banking sector.

The results suggest that the degree of merger control matters for the likelihood that a bank is taken over. Particularly large banks are less likely to be acquired by foreign credit institutions if merger control lacks transparency. This may be because politicians want the largest credit institutions in their country in domestic hands and, hence, block cross-border bank mergers. That merger control has the potential to significantly restrict cross-border consolidation in the EU has already been demonstrated in Italy. Our regression results now indicate that this might not only have been the case in Italy, but rather that merger control may constitute a systematic barrier to cross-border consolidation in the EU.

For this reason, we regard the recent effort of the EU Commission to raise the transparency of the supervisor review process as an important step to lower market entry barriers and to increase the degree of banking market integration in Europe.

Transparency of Regulation and Cross-Border Bank Mergers

Matthias Koehler[1]

Centre for European Economic Research (ZEW)

February 2008

Abstract: Although there is anecdotal evidence that merger control may constitute a barrier to the integration of European retail banking markets, systematic empirical evidence is missing until now. This paper aims to fill this gap. Based on a unique dataset on the transparency on merger control in the EU banking sector, we estimate the probability that a bank is taken over as a function of its characteristics, country characteristics and the transparency of merger control in the banking sector. The results indicate that a bank is systematically more likely to be taken over by foreign credit institutions if the regulatory process is transparent. Particularly large banks are less likely to be taken over by foreign credit institutions if merger control lacks transparency. This is in line with the hypothesis that governments may block cross-border bank merger because they want the largest institution in the country to be domestically owned. Domestic mergers are not affected. This suggests that merger control may therefore constitute an important barrier to cross-border consolidation and that further integration of EU banking markets requires a higher degree of transparency of the regulatory process.

L 7, 1
P.O. Box 10 34 43
D-68034 Mannheim

Tel.: 0621 / 1235 - 148
Fax: 0621 / 1235 - 223
E-mail: koehler@zew.de

[1] The author would like to thank all employees from the national central banks and supervisory authorities in the 25 EU member countries that participated in the survey and provided information on national banking laws. They made it possible to collect a unique dataset on banking regulation in the EU-25. I am grateful to Reint Gropp und Claudia Buch for valuable comments and discussions. I would also like to thank the participants at the 2nd Conference on Banking Regulation-Integration and Financial Stability for their comments and discussion. Sabrina Keller, Philipp Haenle, Katharina Eck and Iris Gönsch provided excellent research assistance. This research benefited from financial support of the German Research Foundation (DFG). All remaining errors and omissions are the responsibility of the author.

"Société Générale is a great French bank... and the government intends it to remain a great French bank and globalised player."

(Francois Fillon, French Prime Minister,
after the French bank Société Générale
announced trading losses of almost 5 Bill. euros)

1 Introduction

Although the EU has already removed barriers to cross-border banking through the harmonization of banking regulations, the number of cross-border mergers and acquisitions (M&A) is still less frequent compared to domestic and to cross-border M&A in other sectors (European Commission, 2005). This paper examines whether and to which extent the merger approval process of national supervisory authorities constitutes a barrier to cross-border consolidation in the EU banking sector.

That M&A control by supervisory authorities has the potential to significantly restrict cross-border consolidation in the EU. That has been demonstrated in Italy in 2005 as the Bank of Italy blocked the acquisition of two Italian credit institutions by a Dutch and a Spanish bank. Subsequently, the EU Commission brought actions against Italy for infringement of the principle of the free movement of capital. To improve the legal certainty, clarity and transparency of the merger control process, the Commission has meanwhile proposed changes of the relevant article of the banking directive that regulates the transfer of ownership in the banking sector (European Commission, 2006a). Although the examples in Italy have demonstrated that the merger control may constitute a barrier to cross-border consolidation in the banking sector, systematic empirical evidence on the role of merger control as barrier to integration is missing until now. This paper aims to fill this gap. It relies on a unique database on the transparency of merger control in the banking sector that has been set up by Koehler (2007).

In the first section, I will review the literature why banks go abroad, why they take over or merge with foreign credit institutions and identify the main barriers that may prevent banks from expanding abroad. After this brief review, I will estimate the probability that a bank is taken over as a function of its characteristics, country characteristics and the transparency of merger control in the banking sector. In contrast to the existing literature, this paper thereby explicitly distinguishes between domestic and cross-border M&A. I find that the probability of being a target of an acquisition depends not only on bank- and location specific determinants, but also on the transparency of the regulatory process. The results indicate that a bank is systematically more likely to be taken over by foreign credit institutions if the

process of merger approval is transparent. Particularly large banks are less likely to be taken over by foreign credit institutions if merger control lacks transparency. This supports the hypothesis that governments may block cross-border because they want the largest institution in the country to be domestically owned. Domestic M&A are not affected. This suggests that merger control constitutes an important barrier to cross-border consolidation and that further integration of EU banking markets requires a higher degree of transparency of the regulatory process.

2 Literature Review

European banking markets are still not integrated according to cross-border M&A activity (Cabral et al., 2002). The theoretical and empirical literature offers different explanations for this stylized fact.

Berger et al. (2001) argue that efficiency barriers limit the amount of international consolidation of financial institutions within Europe and inhibit the creation of a single market.[2] Differences in the regulation and supervision of banks are one example for these kinds of barriers. Since foreign banks have to comply with both regulations at home and abroad, domestic credit institutions have cost advantages because complying with two different sets of regulations imposes additional costs on foreign banks. Different regulations furthermore reduce the amount of overlapping fixed costs. This decreases the potential for banks to reap benefits from economies of scale and scope.

Efficiency barriers furthermore lower the potential to increase efficiency through better management practices and organization (Berger et al., 2001). X-efficiency gains may arise if the acquiring institution is more efficient ex-ante and brings the efficiency of the target bank up to its own level. The expectation is that the more efficient banks will restructure and transfer their managerial expertise, policies and procedures on the target in order to increase efficiency. Since the restructuring and reorganization of the acquired institution is more difficult if languages and cultures are different, the potential to raise X-efficiency appears to be lower for cross-border than for domestic M&A. This may reduce the incentive to take over or merge with credit institutions in other countries. Consolidation across borders is therefore likely to be limited as long as efficiency barriers exist that prevent that foreign bank can take the full advantage of potential efficiency gains from this consolidation (Berger et al., 2001).

The empirical literature on the efficiency effects of bank M&A suggests that efficiency barriers may indeed exist. Vander Vennet (1998), for example, finds that

[2] The same argument has been put forward by Buch and DeLong (2004). They argue that information costs and banking regulations inhibit cross-border consolidation.

in Europe some mergers tended to improve, whereas other types tended to decrease cost efficiency.[3] Studies that compare the efficiency of foreign-owned and domestic banks do not find much evidence for efficiency gains through cross-border consolidation either. Vander Vennet (1996) among others finds in a related study that foreign-owned banks in Europe had about the same cost efficiency as domestic banks. In contrast, Bonin et al. (2005) find that foreign banks are more cost efficient than domestic banks in ten Central and Eastern European countries. Kraft and Tirtiroglu (1998) for Croatia and Matousek and Taci (2002) for the Czech Republic, in contrast, find no evidence of greater efficiency of foreign banks. These results suggest that in some countries substantial efficiency barriers exist that offset most of any potential efficiency gains from cross-border M&A. Since only the most efficient banks are able to overcome these barriers, efficiency barriers may constitute an important obstacle to banking market integration in Europe.

Besides efficiency barriers there may also be market entry barriers that limit cross-border consolidation. While efficiency barriers lower the potential for efficiency improvements and hence the incentive to move abroad, market entry barriers prevent that a bank which has the incentive is able to do so. Entry barriers may arise, for example, from political interference. Boot (1999) argues that governments may block cross-border or permit domestic M&A because they want the largest institution in the country to be domestically owned. Both efficiency and market entry barriers therefore have the potential to significantly restrict cross-border consolidation in the EU banking sector. Besides these barriers the decision to take over or merger depends on various other bank- and location-specific determinants. Foccarelli and Pozzolo (2001) analyze which bank- and location-specific determinants matter most for cross-border M&A. Based on a data set of about 2500 banks from 29 OECD countries for the period between 1994 and 1997 they estimate the prospect that a bank expands abroad and takes over other credit institutions. They find that banks are more likely to acquire foreign credit institutions if they are large and efficient. Banks which are located in countries that do not restrict outward foreign direct investment are more likely to be involved in cross-border mergers as well.

Our study is related to the study by Foccarelli and Pozzolo (2001) in that it analyzes the determinants of international bank M&A. The focus of our study is, however, not on the acquiring banks, but rather on the banks that are taken over and on the countries where these banks are located. We therefore do not analyze the push

[3] Studies on US bank mergers also find only little or no cost X-efficiency improvements through mergers on average (Berger and Humphrey, 1992; Rhoades, 1998; Cummins et al., 1999 and Fried et al., 1999; De Young, 1999; Perstiani, 1997 and Berger, 1998). The evidence on cost X-efficiency in Europe is mixed as well. Vander Vennet (1996, 1998) finds that some group of M&As, particularly cross-border M&A, tended to improve cost efficiency, whereas other types tend to decrease cost efficiency.

factors of cross-border consolidation, but rather concentrate on the pull factors that attract multinational banks. These factors may be bank- or location-specific. Bank-specific factors may be the level of efficiency and the market share of the target institution. Since one strategy to reap benefits from consolidation is to increase X-efficiency through superior management and organization, we expect that foreign banks mostly target credit institutions that offer the largest potential for X-efficiency gains. These are usually the most inefficient banks in the host country. Banks that seek for market power are conversely expected to mainly acquire or merge with banks that have a large market share. Bank-specific factors therefore determine which banks are taken over. They, however, do not determine in which countries foreign banks invest. This depends among others on the level of market entry barriers and the degree of political interference in the host country.

Since direct market entry barriers like restrictions on foreign ownership limit the free flow of capital, they are prohibited in the EU. Politicians, hence, have to look for other ways to block cross-border acquisitions. In this paper, we argue that politicians may use merger control to block cross-border M&A for other than prudential reasons. Since politicians have more scope to block cross-border deals if merger control lacks procedural transparency, we expect that banks in countries where merge control is not transparent are less likely to be taken over by foreign credit institutions than banks which are located in countries where merger control is transparent.

3 Empirical Model

Since the scope for political interference is assumed to be larger when merger control lacks procedural transparency, a low degree of transparency of merger control is, on the one hand, expected to reduce the probability that a bank becomes target of a cross-border acquisition. It may, on the other hand, increase the likelihood that it is taken over by a domestic credit institution if politicians promote the formation of ‘national champions’. This makes it necessary to estimate the probability that a bank is taken over by a domestic and a foreign credit institution separately. Hence, we use a multinominal logit framework that allows multiple choices.

There are different methods to estimate models with multiple choices. One method is to estimate it as a multinomial probit model. Because of the need to evaluate multiple integrals of the normal distribution, the probit model has, however, found rather limited use in this setting (Greene, 2003). We therefore choose to estimate a multinomial logit model as proposed by McFadden (1973) and already applied by Focarelli et al. (2002) to analyze the determinants of bank M&A. This model relies on the assumption of independently and identically standard extreme value

distributed error terms (Greene, 2003). The probability that a bank in our sample is taken over can then be described as follows:

$$\mathrm{Prob}(Y_i = j) = \frac{\exp(x_i'\beta_{1j} + z_i'\beta_{2j})}{\sum_{j=1}^{J}\exp(x_i'\beta_{1j} + z_i'\beta_{2j})}$$

where i = 1, 2, 3, …. represents the individual bank and j = 1, 2, 3 the possible outcomes (1 = no acquisition, 2 = domestic acquisition and 3 = cross-border acquisition), x = bank-specific and z = location-specific explanatory variables. To remove the indeterminacy associated with this model, we follow the convention and define Y = 1 (no acquisition) as the base category. This gives the following probability for each outcome:

$$\mathrm{Prob}(Y_i = j) = \frac{\exp(x_i'\beta_{1j} + z_i'\beta_{2j})}{1+\sum_{j=1}^{J}\exp(x_i'\beta_{1j} + z_i'\beta_{2j})},$$

and for the reference category:

$$\mathrm{Prob}(Y_i = 1) = \frac{1}{1+\sum_{j=1}^{J}\exp(x_i'\beta_{1j} + z_i'\beta_{2j})}$$

All coefficients are hence estimated relative to this base and express the probability that a bank is taken over by domestic or foreign banks relative to the probability that the bank is not taken over. This model is estimated by standard maximum-likelihood estimation techniques.

4 Data

4.1 Bank Sample

To estimate our model we constructed a data set on bank M&A in which the target institution was located in one of the 25 EU member countries between 1997 and 2006. Information on M&A comes from the Zephyr database. Balance-sheet data has been taken from Bankscope. Both databases have been provided by Bureau van Dijk. We use consolidated balance sheets whenever possible and concentrated on commercial banks only. Because balance-sheet data were not available for every target institution some target banks had to be dropped from the sample. The final data set includes 366 deals of which 171 were cross-border and 195 domestic. Since multinominal logit estimation requires a reference group we constructed a data set comprising the 1219 commercial banks in our country sample that have not been subject to an acquisition during the observation period. The whole bank sample

consists of 1534 credit institutions. This finally gave us 6709 bank-year observations.[4] To eliminate outliers we have winsorized all observations of the bank-specific variables which are below the 1% and above the 99%-percentile of the respective variable.

Some descriptive statistics for the bank sample are given in Table 1. The largest number of commercial banks comes from France (302), Germany (273) and Italy (218), although these countries have experienced considerable domestic consolidation in the past years. This is also reflected by our sample, since the probability that a bank was taken over by another credit institution from the same country during the period under observation is above the average of the EU-25 and the EU-15.[5] While domestic consolidation dominates in the larger EU member states, foreign credit institutions are the main driver of consolidation in the smaller EU countries. Cross-border acquisitions are particularly frequent in the NMS-10. In this region, almost one third of all banks were acquired by foreign investors between 1997 and 2006. This is significantly higher than in the EU-15, where only 4.16 percent of all credit institutions were taken over by foreign investors. Small European countries especially from NMS-10, hence, seem to be more integrated, whereas larger EU-15 countries are less integrated in terms of merger activity.

4.2 Control Variables

4.2.1 Bank-Specific Determinants

The literature suggests that banks are more likely to be target of an acquisition if they are inefficient and large. To control for the motive to increase X-efficiency we use the cost-income ratio (CIR) as a measure for cost and the return on assets (ROA) as a measure for profit efficiency.

Since banks may also be taken over to obtain market power, we include the proportion of bank assets to total banking sector assets (MSHARE). Total banking sector assets have been taken from Bankscope database and include the assets of commercial, savings and cooperative banks. To control for the motive to generate economies of scale and scope, we include the amount of bank assets (SIZE). Cost

---

[4] Since Koehler (2007) has constructed his indices only for 20 EU countries, we had to drop five countries from our sample for which we do not have index values. These countries are Belgium, Cyprus, Denmark, Ireland and the United Kingdom. We need these indices to find out if the degree of transparency of merger control matters for the likelihood of being taken over by domestic and foreign credit institutions.

[5] The EU-15 comprises Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom. The NMS-10 consists of Cyprus, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Slovakia and Slovenia. Together they are labelled EU-25.

economies of scale occur if the average costs of production decreases as the size of the institution increases. Revenue scale economies may arise because some customers may need or prefer the services of larger institutions (Berger et al., 2000). Economies of scope may arise on the cost and revenue side as well. Cost economies of scope may originate among others from sharing physical inputs like offices or computer hardware (Berger et al., 2000). Revenue scope economies may stem among others from the cross-selling of financial products through different distribution channels (Berger et al., 2000).

To control for the business orientation of banks we include the ratio of net-interest to total revenue (NIREV). The importance of retail-banking business may be particularly relevant for banks that take over other credit institutions in order to get access to local retail-banking markets. To find out if banks are more likely to be taken over if they are less risky, we include the ratio of total equity to total assets (CAP) as measure of the overall risk profile of a bank. [6]

Table 3 presents some descriptive statistics on these variables according to whether a bank has been taken over or not. Large banks with a large market share are more likely to be taken over than banks with smaller banks with a smaller market share. This is in line with our hypothesis that banks are taken over to acquire market power and to generate economies of scale and scope. Measured by the cost-income ratio and the ROA target banks are less efficient than credit institutions that have not been taken over. This supports the hypothesis that banks acquire credit institutions to increase X-efficiency. Banks that have not been targeted are also usually better capitalized and are more liquid than banks that have been acquired. The importance of retail-banking business is reflected by the higher proportion of net-interest to total revenue which is higher for targets than for banks which have not been taken over. Particularly, cross-border targets have a much higher value for NIREV than banks that have not been taken over. This is in line with our hypothesis that banks are taken over to get access to local retail-banking markets.

4.2.2 Location-Specific Determinants

Since it not only matters which banks are taken over, but also where these banks are located we have to include location-specific variables in our regression as well. The first variable we include is population (POP). It measures the market potential in the host country. We also include the GDP per-capita (GDPPC) to measure the level of economic development. Both variables have found to be relevant for multinational banking. Goldberg and Saunders (1981), Grosse and Goldberg (1991), Ter Wengel (1995), Brealey and Kaplanis (1996) and Buch (2000), for example, find a positive

[6] See Table 2 in the appendix for the complete list of bank-specific determinants we use in our regressions.

relation between the market potential and the level of income of the host country and the degree of foreign bank presence. While POP and the GDPPC seem to be particularly relevant variables for banks that follow a customer-seeking strategy, the degree of trade integration is expected to be particularly relevant for banks that take over or merge with credit institutions to provide services to customers from the home country. This follow-your-customer strategy has been confirmed among others by Goldberg and Saunders (1981), Hultman and McGee (1989), Grosse and Goldberg (1991), Heinkel and Levi (1992), Ter Wengel (1995), Fisher and Molyneux (1996), Brealey and Kaplanis (1996), Yamori (1998) and Buch (2000). To control for this strategy, we use the ratio of imports to GDP (IMGDP) as indicator for the abundance of home country customers in the host country.

Besides the market potential and the degree of economic integration the structure of the financial system in the host country may also matter. Since banks are expected to primarily expand into countries where they can make the most profits, the degree of competition between banks and the importance of alternative sources of finance have, hence, to be taken into account as well. To control for these determinants we include the market share of the three largest credit institutions (C3) as indicator for the level of competition and the ratio of stock market capitalization relative to GDP (STKMCAP) to measure the importance of capital-market finance.

To find out if merger activity is larger in countries with lower efficiency barriers to integration, we include a variable that measures the amount of telephone mainlines per 1000 people. This variable is called TELELINE and is a proxy for information costs.[7] Market entry barriers also affect the decision if a bank is taken over or not. Nigh et al. (1985), Goldberg and Johnson (1990), Sagari (1992), Ter Wengel (1996), Miller and Parkhe (1998), for instance, find that foreign bank activity is significantly lower in countries that restrict the entry of banks from other countries.

4.2.3 Transparency of Merger Control

Since direct market entry barriers, like ownership limits, are in violation of EU directives, this paper focuses on indirect entry barriers like merger control. Hence, we include variables that measure the scope for political interference. Koehler (2007) measures the scope for political interference with two indices he calls *Approval Authority Index* (hereafter: Approval Index) and *Appointment Authority Index* (hereafter: Appointment Index), which are based on a survey conducted among EU-25 supervisors.[8] The *Approval Index* measures which authority approves

[7] Portes and Rey (2005) use a similar variable than TELELINE. They measure information costs by the amount of telephone traffic in minutes from the host to the home country. Since we concentrate on the target country only, we cannot use such a variable.

[8] More information on index construction and the results for individual countries and regions are available in Koehler (2007). The countries for which he has constructed indices are Austria,

acquisitions in the banking sector, while the *Appointment Index* measures by which authority the head of the supervisory authority is appointed. The *M&A Criteria Index* measures which general criteria (competition and prudence) are used by supervisors to assess the suitability of potential investors and the *M&A Criteria Inde*x (hereafter: Transparency Index) if the criteria to assess the soundness and prudence of a potential investor are documented in publicly available documents. All indices are constructed in a way that a larger index value reflects less scope for politicians and supervisors to block cross-border merger for other than prudential reasons.

To get a first impression about the relevance of merger control for EU banking market integration, we have calculated rank correlation coefficients between these indices and the ratio of banks that have been taken of by domestic and foreign credit institutions, respectively, to the total number of banks in our sample. The correlation coefficients are presented in Table 4. The correlation analysis suggests that the degree of transparency of merger control matters for cross-border consolidation. The *Transparency Index* and the proportion of cross-border targets to the total number of banks are highly and significantly correlated. The correlation coefficient with the proportion of domestic targets is negative, though insignificant. This indicates that cross-border merger activity is particularly high in countries in which supervisors use transparent criteria to assess the suitability of the proposed investor and have less scope to block cross-border and to promote domestic mergers. Cross-border M&A also appear to be significantly more frequent according to the *Appointment Index* in countries in which the head of the supervisory authority is not appointed by the government. This reduces the influence politicians have on the supervisor, since in all countries mergers are approved by supervisory or other specialized authorities and not be the government itself. It also explains why the *Approval Index* is not correlated with the probability of a merger in the EU banking sector. Taken together this implies that M&A between banks from the same country are less likely in countries where politicians have less influence on the supervisory authority to block cross-border M&A.

Not in line with our expectations is the negative correlation coefficient between the proportion of cross-border targets and the *M&A Criteria Index*. The result may be driven by the fact that anti-trust issues are usually taken into account in countries which record the largest number of cross-border M&A in our sample and suggests

---

Finland, Germany, Greece, Portugal, Sweden, Spain, the Netherlands, Luxembourg, France, and Italy as well as Malta, the Czech and Slovak Republic, Slovenia, Estonia, Latvia, Lithuania, Hungary, and Poland. The time period for which he has complete information for all countries and for all indices is 1996 to 2005.

that mergers can also be blocked for anti-trust reasons.[9] This is, however, not the case if the merger has reached community dimension. Then the EU competition task force decides on whether the deals is approved or blocked. Since cross-border M&A usually reach community dimension, the decision by the national supervisor to block cross-border acquisitions for anti-trust reasons can be overruled by the EU task force. The strategy to block cross-border M&A because of anti-trust reasons therefore does not seem to be a viable option for supervisors and politicians and may explain why the correlation coefficient between the *M&A Criteria Index* and the ratio of domestic and cross-border targets is insignificant.

5 Main Results

The correlation analysis suggests that merger control may have played a role as barrier to cross-border consolidation in Europe. To examine the link between the degree of banking market integration and the transparency of merger control more closely, also controlling for other characteristics of banks and countries, we perform a multinominal logit regression analysis. The dependent variable is a variable which takes a 0 if a bank is not acquired (baseline case), 1 if it is taken over by a domestic bank and 2 if it is taken over by a foreign credit institution. As far as we know, this is the first time that the determinants of bank mergers are analyzed according to whether banks have been taken over by foreign or domestic investors.

Since we are only interested in the bank- and location-specific variables at the time of the acquisition, we dropped all target bank observations from our sample for the years after the deal has been completed. The results of our regressions are presented in Table 6. The regression coefficients reported are to be interpreted as affecting the odds ratio with respect to the baseline case and not as marginal probability. Cluster robust standard errors on bank levels are reported in parenthesis. To assess the goodness of fit we use the pseudo R^2.

5.1 Bank- and Location-Specific Determinants

Although the decision to take over a bank depends on both location- and bank-specific determinants, we first run a regression for each group of variables separately. In a second step, we put bank- and location-specific variables together in

[9] This has lead to a smaller index value for these countries, since Koehler (2007) argues that mergers may be blocked supposedly for competition issues. He refers to an example in Poland where a clause in the privatization treaty of bank Pekao that did not allow the acquiring bank Unicredit, to open subsidiaries and/or branches, acquiring control of banks active in the country and making capital investment in any company active in the Polish banking sector for a ten year period (EU Commission, 2006b).

a single regression. We finally add the indices by Koehler (2007) to find out if merger control constitutes a systematic barrier to EU banking market integration.

The regression results suggest that the size of the credit institution is an important determinant for domestic and cross-border mergers. The coefficient for SIZE is positive and highly significant. This indicates that banks are more likely to be taken over if they are large and confirms our hypothesis that banks are taken over to reap benefits from economies of scale and scope.[10] Cross-border mergers are also more likely to happen if the target bank is inefficient. This is indicated by the negative and significant coefficient for the ROA. The result is in line with our hypothesis that banks are taken over to increase X-efficiency, since the potential to improve management techniques and organization is usually larger for banks which operate inefficiently. Since the ROA is insignificant for domestic targets, efficiency enhancement does not seem to be the driving force for domestic M&A.[11] We also include the ratio of equity to total assets (CAP) as indicator of the overall risk profile in our regression. The coefficient of CAP is insignificant for domestic and cross-border targets. This suggests that mergers occur irrespective of the size of the capital buffer and the level of risk of the target bank.[12]

To find out if banks with a large market share are more likely to be taken over, we use MSHARE. Since MSHARE is correlated with SIZE, the latter has to be dropped from the regression. The regression with MSHARE therefore not only controls for market power, but also serves as a robustness check for the regression with SIZE. MSHARE is positive and highly significant for domestic and cross-border targets. This indicates that acquisitions are driven by market power motives as well.[13] To

---

[10] Lanine and Vander Vennet (2006) get the same result for their study of the microeconomic determinants of acquisitions of Eastern European by Western European banks. In contrast to our study, they analyze the determinants of cross-border bank mergers only and estimate a binominal logit model, while we focus on the determinants of both cross-border and domestic M&A and therefore choose to estimate a multinominal logit model.

[11] To check the robustness of our results, we have replaced the return-on assets (ROA) by the cost-income ration (CIR), the coefficient for CIR is positive and significant in almost every regression for domestic and cross-border targets. Because these variables are highly correlated they cannot be used together in a single regression. The same results get Lanine and Vander Vennet (2006). Correlation coefficients for the bank-specific variables are presented Table 6. The results for the regression with CIR are not reported, but are available from the author upon request.

[12] Lanine and Vander Vennet (2007) find no significant influence of the size of the capital buffer on the likelihood that a bank is taken over as well.

[13] The same result get Lanine and Vander Vennet (2007). This confirms their hypothesis that banks from Western European countries are more likely to take over banks from Central and Eastern Europe if they have a large market share in loan and deposit market. They interpret this as evidence for the desire of foreign credit institutions to exploit possible market power in loan

control for the business orientation, we use the ratio of net-interest to total revenue (NIREV). NIREV is insignificant for domestic and significant for cross-border targets. The positive coefficient for cross-border targets is in line with our hypothesis that banks are taken over by foreign investors to get access to local retail-banking markets.

Location-specific determinants also matter for bank mergers. This is reflected by the regression results in column 2 of Table 6. According to them, GDPPC matters for domestic and cross-border deals. It is significant and negatively correlated with the probability of being taken over. This seems to be surprising because banks are expected to primarily expand into countries with a higher level of income. Because of EU of membership per-capita income is, however, expected to converge over time. The negative coefficient for GDPPC in the cross-border equation may, for this reason, be explained by the fact that countries with a low GDPPC are expected to grow faster than countries which already have a high level of income.[14] This suggests that countries with lower per-capita income may offer a larger market *potential* than high-income countries. Current market *size*, however, does not seem to determine whether a bank is taken over or not. POP is mostly insignificant. This may indicate that banks do not expand into countries which have a large market size, but which have a large market potential.

Banks may also be taken over to maintain present customer relationships and to serve customers from their home country. The coefficient of IMGDP confirms this follow-your-customer strategy. It is positive and highly significant for cross-border targets and insignificant for domestic targets. To control for efficiency barriers of integration, we include TELELINE. It turns out to be insignificant for domestic M&A and cross-border M&A. This indicates that information costs do not limit merger activity. Another interesting finding is that the coefficient for C3 is negative and significant for domestic, but insignificant for cross-border mergers. This is what we have expected. Since mergers among domestic banks may encounter problems with the anti-trust authority, they are less likely to take place in countries where market concentration is already very high.[15]

---

and/or deposit pricing. The results for the regression with MSHARE are not reported, but are available from the author upon request.

[14] Lanine and Vander Vennet (2007) use GDP per-capita growth instead of GDPPC and find a negative correlation coefficient between the probability of being taken over and GDP per-capita growth. They conjecture that owing to the expectation of general convergence of the region due to trade and integration with the EU macroeconomic determinants for bank acquisitions are of less importance.

[15] We also used the stock-market capitalization relative to GDP (STKMCAP) as explanatory variable. Because of the high correlation with GDP per-capita we had to drop GDPPC from the regression. The results indicate that the size of the stock market does not matter for domestic,

To find out if the introduction of the Euro had an impact on banking market consolidation, we include a dummy in all regressions that is 1 for all member countries in the European Monetary Union (EMU) and 0 for all other countries in our sample. The EMU dummy is significant and positive for domestic mergers. The positive coefficient may reflect the massive domestic consolidation process that has taken place in the larger Western European countries and which might have been triggered by the introduction of a common currency. There is, however, no consistent evidence that the Euro had a significant impact on cross-border M&A.

Since the decision to take over a bank depends on both location- and bank-specific determinants, we put both groups of variables together in a single model and estimated it again. This, at the same, time serves as a robustness check for the coefficients in the previous regressions. The results are reported in the third column of Table 6. The coefficients and their level of significance remain mostly unchanged. Only the fit improved considerably what indicates that the likelihood that a bank is taken over depends on both bank- and country-specific factors.

5.2 The Importance of Merger Control

To assess the importance of merger control we now include the four indices Koehler (2007) constructed and which measure the scope for politicians and supervisors to block cross-border mergers in the banking sector. To prevent that the effect of one index on the probability that a merger takes place is picked up by another index variable we first put all indices together in one regression. The results are presented in column 4 of Table 6. All indices are insignificant. Only the *Appointment Index* in the regression for domestic targets and the *Merger Criteria* Index in the regression for cross-border targets appear to be weakly correlated with the likelihood of being acquired. Since some of our indices are highly correlated, we ran separate regressions for all indices to prevent multicollinearity. The results of these regressions are presented in columns 5, 6, 7 and 8 of Table 6. In these regressions, only the *M&A Criteria Index* and the *Transparency Index* appear to be positive and highly significant for cross-border targets. This indicates that the probability that a bank is taken over is higher in countries where merger control is more transparent. The insignificant coefficients for domestic targets, in turn, suggest that politicians and supervisors have not used their powers to promote domestic M&A.

---

but for cross-border M&A. The negative coefficient for STKMCAP suggest that banks are more likely to be taken over if they are located in countries where alternative sources of finance are less important and therefore competition between banks and other financial institutions is less intensive than in countries with large stock market capitalization.

To find out whether particularly large credit institutions are less likely to be taken over, we interacted SIZE with the *M&A Criteria* and the *Transparency Index*.[16] The interaction terms are insignificant for domestic, but significant for cross-border targets. The positive sign indicates that particularly larger banks are less likely to be acquired by foreign credit institutions if the degree of transparency of merger control is low. One reason might be as argued by Boot (1999) that politicians want the largest institutions in their country to be domestically owned.

5.3 Robustness Tests

One problem might be that our data set includes also those transaction that aim at increasing a majority shareholding. Supervisors may not block such acquisitions, because domestic banks are already under foreign control. They may also not interfere if government bodies sell state-owned banks to foreign investors as, for example, repeatedly happened by the way of privatization in Central and Eastern Europe. To control for this, we have created a dummy variable for every transaction that has increased a majority shareholding. We also constructed a dummy variable to identify if banks have been sold by government institutions. The inclusion of both variables has not changed our regression results.[17] The results also appear to be robust to the inclusion country and time dummies.

A potential problem of our regression analysis might be that the index only varies for the NMS-10. To check if this has caused the significance of our index, we include a dummy variable for this country group. The dummy appears to be insignificant. The *Transparency Index* kept its positive sign and its level of significance. A second and stronger robustness check is to run a separate regression for the NMS-10 only. If the degree of transparency of merger control matters for cross-border mergers the index should be significant even within this cluster of countries. This is the case. The index kept its positive sign and is still significant. This suggests that our results are not driven by regional differences between the EU-15 and the NMS-10, but rather by country-by-country differences in the degree of transparency of merger control.

To find out if the scope for political interference is captured by other variables than our index, we put the Rule of Law Index (RLAW) from the World Bank Governance Database together with our indices into a single regression (Kaufmann et al., 2006). Since the index measures the quality of the contract enforcement and the

[16] To the group of small banks belongs every banks whose assets are below the 25%-percentile. The group of large banks consists of all credit institutions whose assets are above the 75%-percentile.

[17] The regression results of our robustness checks and model extensions have not been reported, but are available from the author upon request.

independence of the judiciary from politicians, it may also capture what our indices measure. The coefficient for RLAW is insignificant, the *Transparency Index*, however, remains significant. This indicates that the scope for interference through merger control cannot be measured with more general indices on the regulatory framework, but rather that special indices are necessary to find out if merger control constitutes a barrier to integration.

6 Conclusions

The motivation of this paper was to find out what determines the probability that a bank is being taken over by another credit institution. The paper has shown that the answer to this question is not clear-cut. It rather depends on whether banks are taken over by foreign or by domestic investors.

Particularly large banks are less likely to be taken over by foreign credit institutions if merger control lacks transparency. We argue that this is the case because the scope for politicians to block cross-border M&A is larger in countries in which merger control lacks procedural transparency. That merger control has the potential to significantly restrict cross-border consolidation in the EU has already been demonstrated in Italy where the Bank of Italy blocked two cross-border acquisitions in 2005. Our regression results now indicate that this might not only have been the case in Italy, but rather that merger control may constitute a systematic barrier to cross-border consolidation in the EU. For this reason, we regard the recent effort of the EU Commission to raise the transparency of the supervisor review process as an important step to lower market entry barriers and to increase the degree of banking market integration in Europe.

Besides merger control bank-specific determinants also matter. Our regression results indicate that domestic mergers mainly aim at economies of scale and scope. Cross-border M&A, on the opposite, mainly occur to increase market power and to get access to local retail-banking markets. X-efficiency improvements through better management techniques and organization also influence the decision to take over or merge with a foreign credit institution. Besides bank-specific determinants it also matters which characteristics the country has where the target bank is located. We found that M&A are more likely to take place in countries which offer a larger market potential. Our regressions provide, furthermore, evidence that banks follow their customers and expand into countries where a large number of customers from the home country is already present. The degree of banking market concentration, in turn, does not play a role for cross-border, but rather for domestic M&A. This might be explained with the fact that domestic mergers may encounter problems with the anti-trust authority if the merger has the potential to limit competition.

References

Berger, A. N (1998), 'The Efficiency Effects of Bank Mergers and Acquisitions: A Preliminary Look at the 1990s Data', in: Bank Mergers & Acquisitions, Y. Amihud and G. Miller (eds.), Kluwer Academic, p. 79-111.

Berger, A. N and D. B. Humphrey (1992), 'Megamergers in Banking and the Use of Cost Efficiency as an Antitrust Defense', Antitrust Bulletin, Vol. 37, p. 541-600.

Berger, A. N., R. DeYoung, H. Genay and G.F. Udell (2000), 'Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance', Brookings Wharton Papers, Vol. 3.

Berger, A. N., R. DeYoung and G.F. Udell (2001), 'Efficiency Barriers to the Consolidation of the European Financial Services Industry, European Financial Management, Vol. 7 (1), p. 117-130.

Bonin, J. P., I. Hasan and P. Wachtel (2005), 'Bank Performance, efficiency and ownership in transition countries', Journal of Banking and Finance, Vol. 29, p. 31-53.

Boot, A. W. A. (1999), 'European Lessons on Consolidation in Banking', Journal of Banking and Finance, Vol. 23 (2), p. 609-613.

Brealey, R. A. and E. C. Kaplanis (1996), 'The determination of foreign banking location', Journal of International Money and Finance, Vol. 15 (4), p. 577-597.

Buch, C. M. (2000), 'Why do banks go abroad? - Evidence from German Data', Financial Markets, Institutions and Instruments, Vol. 9 (1), p. 33-61.

Buch, C. M. (2003), 'Information or Regulation-What is driving the International Activities of Commercial Banks', Journal of Money, Credit and Banking, Vol. 35 (6), p. 851-869.

Buch, C. M. and G. DeLong (2004), 'Cross-border Bank Mergers - What Lures the Rare Animal?', Journal of Banking and Finance, Vol. 28 (9), p. 2077-2102.

Cabral, I., F. Dierck and J. Vesala, (2002), 'Banking Integration in the Euro Area', Occasional Paper Series, No. 6, European Central Bank, Frankfurt.

Chang, C. E., I. Hasan and W. C. Hunter (1998), 'Efficiency of Multinational Banks: An Empirical Investigation', Applied Financial Economics, Vol. 8 (6), p. 1-8.

Commission of the European Communities (2005), 'Cross-border Consolidation in the EU financial sector', Commission Staff Working Document, Brussels.

Commission of the European Communities (2006a), 'Financial sector: Commission acts to improve supervisory approval process for mergers and acquisitions', in: Press Release, IP/06/1174, Brussels.

Commission of the European Communities (2006b), 'Mergers: Commission launches procedure against Poland for preventing Unicredit/HVB merger', in: Press Release, IP/06/277, Brussels.

Cummins, J. D., S. L. Tennyson, M. A. Weiss (1999), 'Consolidation and Efficiency in the US Life Insurance Industry', Journal of Banking and Finance, Vol. 23(2), p. 325-357.

DeYoung R. (1999), 'Bank Mergers, X-Efficiency, and the Market for Corporate Control', Managerial Finance, Vol. 23, p. 32-47.

DeYoung R. and D. E. Nolle (1996), 'Foreign-owned Banks in the U.S.: Earning Market Share or Buying It?', Journal of Money Credit and Banking, Vol. 28 (4), p. 622-636.

Fisher A. and P. Molyneux (1996), 'A note on the determinants of foreign bank activity in London between 1980 and 1989', Applied Financial Economics, Vol. 6, p. 271-277.

Foccarelli D. and A. F. Pozzolo (2001), 'The patterns of cross-border mergers and shareholdings in OECD countries', Journal of Banking and Finance, Vol. 25, p. 2305-2337.

Foccarelli, D., F. Panetta and C. Salleo (2002), 'Why do banks merge?, Journal of Money, Credit and Banking, Vol. 34 (4), p. 1047-1066.

Fried, H. O., C. A. Knox Lovell and S. Yaisawarng (1999), 'The Impact of Mergers on Credit Union Service Provision', Journal of Banking and Finance, Vol. 23 (2), p. 367-386.

Goldberg L. G. and A. Saunders (1981), 'The determinants of foreign banking activity in the United States', Journal of Banking and Finance, Vol. 5, p. 17-32.

Goldberg L. G. and D. Johnson (1990), 'The determinants of US banking activity abroad', Journal of International Money and Finance, Vol. 9, p. 123-137.

Greene, W. H. (2003), Econometric Analysis, 5th edition, Prentice Hall.

Grosse R. and L. G. Goldberg (1991), 'Foreign bank activity in the United States: An analysis by country of origin', Journal of Banking and Finance, Vol. 15, p. 1093-1112.

Haas, J. and I. Naaborg (2005), **'**Internal Capital Markets in Multinational Banks: Implications for European Transition Economies', DNB Working Paper 51.

Hasan, I. and W. C. Hunter (1996), 'Efficiency of Japanese banks in the United States', Research in Finance, Vol. 14, p. 157-173.

Hasan, I. and K. Marton (2003), 'Development and efficiency of the banking sector in a transitional economy: Hungarian experience', Journal of Banking and Finance, Vol. 27, p. 2249-2271.

Heinkel, R. L. and M. D. Levi (1992), 'The structure of international banking', Journal of International Money and Finance, Vol. 11, p. 251-272.

Hultman C. W. and L. R. McGee (1989), 'Factors Affecting the Foreign Bank Presence in the U.S.', Journal of Banking and Finance, Vol. 13, p. 383-396.

Jemric, I. and B. Vujcic (2002), 'Efficiency of Banks in Croatia: A DEA approach', Comparative Economic Studies, Vol. 44, p. 169-193.

Kaufmann D., A. Kraay, M. Mastruzzi (2006), 'Governance Matters V: Aggregate and Individual Governance Indicators for 1996-2005', World Bank, Washington D.C..

Koehler, M. (2007), 'Merger Control as Barrier to EU Banking Market Integration', ZEW Discussion Paper, 07-082.

Kraft E. and D. Tirtiroglu (1998), 'Bank efficiency in Croatia: A stochastic frontier analysis', Journal of Comparative Economic Studies, Vol. 26, p. 282-300.

Lanine, G. and R. Vander Vennet (2006), 'Microeconomic determinants of acquisitions of Eastern European banks by Western European banks', Economics of Transition, Vol. 15 (2), p. 285-308.

Matousek, R. and A. Taci, (2002), 'Banking efficiency in transition economies: Empirical evidence from the Czech Republic', Economic Change and Restructuring, Vol. 37 (3), p. 225-244.

McFadden (1973), 'A Multinominal Extension of the Linear Logit Model', International Economic Review, Vol. 10, p.382-394.

Miller, S. R. and A. Parkhe (1998), 'Patterns in the Expansion of U.S. Banks' Foreign Operations', Journal of International Business Studies, Vol. 29, p. 359-390.

Nigh, D., K. R. Cho and S. Krishnan (1986), 'The Role of Location-Related Factors in U.S. Banking Involvement Abroad: An Empirical Examination', Journal of International Business Studies, Vol. 17 (3), p. 59-72.

Nikiel, E. M. and T. P. Opiela (2002), 'Customer type and bank efficiency in Poland: Empirical Evidence from the Czech Republic', Contemporary Economic Policy, Vol. 20 (3), p. 255-271.

Peristiani S. (1997), 'Do Mergers Improve the X-Efficiency and Scale Efficiency of U.S. Banks? Evidence from Small Business Data', Journal of Money, Credit and Banking, Vol. 29 (3), p. 326-337.

Portes, R. and H. Rey (2005), 'The Determinants of Cross-Border Equity Flows', Journal of International Economics, Vol. 65(2), p. 269-296.

Rhoades, S. A. (1998), 'The Efficiency Effects of Bank Mergers: An Overview of Case Studies of Nine Mergers', Journal of Banking and Finance, Vol. 22 (3), p. 273-291.

Sagari, S. B. (1992), 'United States Foreign Direct Investment in the Banking Industry', Transnational Corporations, Vol. 1 (3), p. 93-123.

Ter Wengel, J. (1995), 'International trade in banking services', Journal of International Money and Finance, Vol. 14, p. 47-64.

Vander Vennet, R. (1996), 'The Effect of Mergers and Acquisitions on the Efficiency and Profitability of EC Credit Institutions', Journal of Banking and Finance, Vol. 20 (9), p. 1531-1558.

Vander Vennet, R. (1998), 'Causes and Consequences of EU Bank Takeovers', in: The Changing European Financial Landscape, Eijffinger S., K. Koedijk, M. Pagano and R. Portes (eds.), Centre for Economic Policy Research, Brussels, p. 45-61.

Weill, L. (2003), 'Banking efficiency in transition economies: The role of foreign ownership', Economics of Transition, Vol. 11, p. 569-592.

Yamori, N. (1998), 'A note on the location choice of multinational banks: The case of Japanese financial institutions', Journal of Banking and Finance, Vol. 22, p. 109-120.

Appendix

Table 1: Bank Sample

	Total Number of Banks	% of which taken over by domestic investors	% of which taken over by foreign investors
Austria	85	2.35	3.53
Belgium	64	12.50	12.50
Cyprus	22	0.00	0.00
Czech Republic	33	15.15	36.36
Denmark	63	7.94	1.59
Estonia	11	0.00	54.55
Finland	10	10.00	0.00
France	302	11.26	4.97
Germany	273	9.89	4.03
Greece	27	14.81	7.41
Hungary	33	15.15	36.36
Ireland	45	2.22	2.22
Italy	218	23.85	3.21
Latvia	28	3.57	46.43
Lithuania	13	15.38	46.15
Luxembourg	139	7.91	6.47
Malta	14	0.00	7.14
Netherlands	64	0.00	6.25
Poland	62	17.74	22.58
Portugal	32	21.88	3.13
Slovakia	22	9.09	27.27
Slovenia	28	10.71	10.71
Spain	113	10.62	7.96
Sweden	27	7.41	0.00
UK	204	2.45	1.47
Mean	77.28	9.95	7.32
EU-15	111.07	9.62	4.16
NMS-10	24.18	10.90	27.44

Source: Zepyhr, Bankscope (2007) and own calculations. The number of M&A has been taken from Zephyr and the total number of banks from Bankscope. The table reports the total number of commercial banks in the sample as well as the percentage share of commercial banks that were taken over between 1997 and 2006. % of domestic (cross-border) targets denotes the proportion of banks that have been taken over by domestic (foreign) investors.

Table 2: List of Bank-Specific Variables

Name	Definition	Calculation
Bank Size and Market Share		
Size	Size	Log (Total Bank Assets)
MSHARE	market share	Total Bank Assets/Total Banking Sector Assets
Bank Efficiency		
ROA	return-on-assets before taxes	Pre-Tax Profits/Total Assets
CIR	cost-income-ratio	Total Expenses/Total Income
Capital Adequacy and Overall Risk		
CAP	capital adequacy ratio	Total Equity/Total Assets
Business Orientation		
NIREV	net-interest revenue	Net-Interest Income/Total Income

Source: Bankscope (2007)

Table 3: Bank Characteristics

	Mean	Median	Std. Dev.
Summary Statistics for EU-25 Domestic and Cross-Border Targets			
Bank Assets (in th USD)	16 900 000	1 287 698	61 200 000
Market Share	5.68	0.97	9.94
Equity to Total Capital	11.18	7.90	12.96
Cost-Income-Ratio	79.16	72.16	33.98
Return-on-Assets	0.46	0.60	2.30
Net Interest Margin	3.21	2.96	2.02
Liquid Assets to Cust & ST Fundings	25.94	18.20	30.58
Customer Deposits to Total Assets	54.55	56.95	33.30
Net Interest Revenue to Total Revenue	34.68	34.14	15.82
Summary Statistics for EU-25 Domestic Targets			
Bank Assets (in th USD)	18 400 000	1 232 341	64 500 000
Market Share	3.74	0.32	8.29
Equity to Total Capital	12.33	7.74	16.21
Cost-Income-Ratio	84.19	74.44	41.37
Return-on-Assets	0.37	0.42	2.44
Net Interest Margin	3.01	2.59	1.99
Liquid Assets to Cust & ST Fundings	25.45	21.61	22.38
Customer Deposits to Total Assets	51.01	51.87	25.46
Net Interest Revenue to Total Revenue	33.73	33.31	16.28
Summary Statistics for EU-25 Cross-Border Targets			
Bank Assets (in th USD)	15 500 000	1 341 929	58 500 000
Market Share	7.39	2.07	10.95
Equity to Total Capital	10.09	8.06	8.87
Cost-Income-Ratio	74.48	70.30	24.57
Return-on-Assets	0.54	0.78	2.16
Net Interest Margin	3.40	3.33	2.05
Liquid Assets to Cust & ST Fundings	26.39	15.16	36.60
Customer Deposits to Total Assets	57.89	61.30	39.15
Net Interest Revenue to Total Revenue	35.59	35.24	15.41
Summary Statistics for EU-25 Banks that have not been taken over			
Bank Assets (in th USD)	8 773 429	700 210	41 600 000
Market Share	1.82	0.12	5.43
Equity to Total Capital	12.59	7.89	15.09
Cost-Income-Ratio	68.88	64.48	35.93
Return-on-Assets	0.70	0.57	1.90
Net Interest Margin	2.73	2.21	2.39
Liquid Assets to Cust & ST Fundings	37.81	24.57	41.93
Customer Deposits to Total Assets	60.72	51.94	100.97
Net Interest Revenue to Total Revenue	30.38	29.03	19.09

Source: Zephyr and Bankscope (2007). The targets have been identified by Zephyr and their characteristics have been collected from Bankscope for the period between 1997 and 2006. Summary statistics for targets refer to the year in which the deal has been completed. The statistics for the credit institutions that were not taken have been calculated for the whole period. To eliminate the influence of outliers we have winsorized all observations below the 1%-percentile and above the 99%-percentile.

Table 4: Correlation Coefficients between Merger Control Indices

	Approval Authority Index	Appointment Authority Index	M&A Criteria Index	Transparency of M&A Criteria Index
Approval Authority Index	1.00			
Appointment Authority Index	0.19	1.00		
M&A Criteria Index	-0.03	-0.21	1.00	
Transparency of M&A Criteria Index	0.24	0.84*	-0.24	1.00
% of domestic targets	0.05	-0.31	0.11	-0.10
% of cross-border targets	0.05	0.63*	-0.26	0.64*

Source: Zephyr, Bankscope, Koehler (2007) and own calculations. * indicates significance at the 5%-level.

Table 5: Correlation Coefficients between Bank-Specific Variables

	SIZE	MSHARE	ROA	CIR	CAP	NIREV
SIZE	1.00					
MSHARE	0.39*	1.00				
ROA	-0.00	0.03*	1.00			
CIR	-0.18	-0.05*	-0.55*	1.00		
CAP	0.48*	-0.11*	0.14*	0.07*	1.00	
NIREV	-0.21*	-0.00	0.05*	-0.02*	0.25*	1.00

Source: Bankscope and own calculations. * indicates significance at the 5%-level.

Table 6: Regression Results

	1		2		3	
	dom	**cb**	**dom**	**cb**	**dom**	**cb**
SIZE	**0.206***** (0.053)	**0.281***** (0.063)			**0.272***** (0.058)	**0.487***** (0.076)
ROA	-0.580 (0.0828)	-0.064 (0.081)			-0.056 (0.076)	-0.115** (0.058)
NIREV	**0.010*** (0.005)	**0.036***** (0.006)			0.006 (0.006)	**0.030***** (0.010)
CAP	**0.009**** (0.007)	0.008 (0.008)			0.012 (0.008)	0.005 (0.010)
EMU	**0.608**** (0.252)	**-1.633***** (0.300)	**0.875***** (0.281)	0.344 (0.295)	**1.100***** (0.419)	0.540 (0.427)
POP			0.125 (0.148)	0.069 (0.166)	-0.021 (0.223)	**-0.376**** (0.169)
GDPPC			**-0.947***** (0.292)	**-1.263***** (0.328)	**-1.373***** (0.500)	**-1.700***** (0.417)
IMGDP			1.334 (1.428)	**4.297***** (1.077)	1.320 (1.828)	**4.519***** (1.203)
TELELINE			0.003 (0.002)	0.000 (0.002)	0.003 (0.003)	0.004 (0.002)
C3			**-3.469***** (1.034)	-0.922 (0.921)	**-2.980**** (1.290)	-0.978 (1.012)
Approval Index						
Appointment Index						
M&A Criteria Index						
Transparency Index						
Observations	6709		11631		5624	
Pseudo R^2	0.05		0.07		0.15	

Table 6 (cont.): Regression Results

	4		5		6		7		8	
	dom	**Cb**	**dom**	**cb**	**dom**	**cb**	**dom**	**cb**	**Dom**	**cb**
SIZE	**0.265***** (0.059)	**0.500***** (0.736)	**0.272***** (0.578)	**0.488***** (0.767)	**0.264***** (0.591)	**0.492***** (0.074)	**0.273***** (0.058)	**0.497***** (0.074)	**0.273***** (0.058)	**0.503***** (0.074)
ROA	-0.060 (0.076)	**-0.130**** (0.623)	-0.056 (0.076)	**-0.117**** (0.059)	-0.058 (0.075)	**-0.113*** (0.058)	-0.057 (0.771)	**-0.124*** (0.064)	-0.056 (0.076)	-0.129 (0.060)
NIREV	0.005 (0.006)	**0.026***** (0.008)	0.006 (0.006)	**0.030***** (0.008)	0.005 (0.006)	**0.030***** (0.008)	0.006 (0.006)	**0.027***** (0.008)	0.006 (0.006)	**0.027***** (0.008)
CAP	0.011 (0.008)	0.006 (0.010)	0.012 (0.008)	0.005 (0.101)	0.118 (0.008)	0.005 (0.010)	0.012 (0.008)	0.005 (0.010)	0.012 (0.008)	0.007 (0.102)
EMU	1.047 (0.419)	0.407 (0.435)	**1.100***** (0.420)	0.506 (0.434)	**1.102***** (0.414)	0.508 (0.435)	**1.100**** (0.425)	0.504 (0.442)	**1.095***** (0.414)	0.361 (0.430)
POP	-0.275 (0.278)	-0.331 (0.258)	-0.019 (0.224)	**-0.369**** (0.172)	-0.272 (0.266)	-0.274 (0.245)	-0.006 (0.238)	**-0.364**** (0.170)	-0.005 (0.272)	-0.137 (0.190)
GDPPC	**-1.574***** (0.529)	**-1.898***** (0.484)	**-1.377***** (0.506)	**-1.668***** (0.417)	**-1.562***** (0.476)	**-1.650***** (0.452)	**-1.410***** (0.493)	**-2.010***** (0.416)	**-1.353***** (0.517)	**-1.562***** (0.444)
IMGDP	0.910 (2.172)	**5.772***** (1.387)	1.321 (1.831)	**4.397***** (1.212)	0.926 (1.685)	**4.746***** (1.143)	1.857 (2.093)	**6.248***** (1.261)	1.310 (1.835)	**4.829***** (1.242)
TELELINE	0.004 (0.003)	**0.006**** (0.003)	0.003 (0.003)	0.003 (0.002)	0.004 (0.003)	0.003 (0.002)	0.003 -0,003	0.006 (0.002)	0.003 (0.003)	**0.005*** (0.002)
C3	**-3.790***** (1.389)	-1.224 (1.300)	**-2.990**** (1.336)	-0.792 (1.070)	-3.619 (1.390)	-0.702 (1.238)	-2.971 (1.292)	-1.218 (1.032)	-2.951 (1.331)	-0.670 (1.014)
Approval Index	-0.036 (1.100)	0.107 (1.084)	-0.054 (1.051)	0.838 (1.128)						
Appointment Index	**-2.044*** (1.113)	-0.327 (0.688)			-1.379 (0.890)	0.335 (0.673)				
M&A Criteria Index	0.584 (0.973)	**1.322*** (0.721)					**0.631** (0.804)	**1.722***** (0.470)		
Transparency Index	0.941 (1.042)	0.772 (0.678)							**0.113** (0.731)	**1.397***** (0.466)
Observations	5624		5624		5624		5624		5624	
Pseudo R^2	0.16		0.15		0.15		0.16		0.16	

Source: Own calculations. */**/*** indicates significance at the 10/5/1 %-level. 'Dom' presents the results for the regression for domestic and 'cb' the results of the regression for cross-border targets. Estimates have been calculated by multinominal logit estimation with cluster robust standard-errors. The possible outcomes are 0 = no acquisition, 1 = domestic acquisition and 2 = cross-border acquisition.