Discussion Paper No. 08-009

Transparency of Regulation and Cross-Border Bank Mergers

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First Version: February 2008
This Version: January 2010

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Abstract:
There is ample anecdotal evidence that political influence constitutes a barrier to the integration of the EU banking market. Based on a dataset on the transparency on the supervisory review process of bank mergers in the EU, I estimate the probability that a bank is taken over as a function of bank and country characteristics and the transparency of merger control. The results indicate that banks are systematically more likely to be taken over by foreign credit institutions if the regulatory process is transparent. Particularly large banks seem to be less likely to be taken over by foreign banks if merger control lacks transparency.

Keywords:
Mergers and acquisitions, banks, barriers to consolidation, political interference

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[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, Hyun Shin, Christa Hainz, Claudia Buch and the participants of the *6th Infinity Conference on International Finance* and the *2nd Conference on Banking on Regulation - Integration and Financial Stability* for comments and discussions that helped to improve the paper. Sabrina Keller, Philipp Haenle, Katharina Eck, Martin Völpel 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.

Every time there is an attack on the banking system, every government in Europe is active, they intervene… France is just like the others."
(Henri Guaino, close advisor of French President Nicolas Sarkozy)

1 Introduction

Although the EU has removed barriers to cross-border banking through the harmonization of regulations and liberalization, the number of cross-border mergers and acquisitions (M&A) in the EU banking sector is still small compared to cross-border M&A in other sectors (European Commission, 2005a). There are, however, large differences in the importance of the cross-border dimension in the EU banking market. While the level of cross-border consolidation is low in Western European countries, cross-border M&A are more frequent in Central and Eastern Europe (Cabral et. al., 2002). This suggests there are still barriers to cross-border M&A in some EU countries. This paper analyzes whether government intervention is an obstacle to M&A in the EU banking sector.

That national governments may constitute a barrier to banking market integration in the EU has recently been demonstrated in France as the French government made clear that it would protect *Société Générale* from being taken over by foreign banks. '*Every time there is an attack on the banking system, every government in Europe is active, they intervene. France is just like the others*', said a close advisor of French president Nicolas Sarkozy. This was not the first time that French politicians intervened in the acquisition of domestic banks. The case of *Crédit Lyonnais* is another example. *Crédit Lyonnais* was privatized in 1999 with the government retaining 10 percent of ownership shares until the end of 2000. This made the cross-border acquisition of *Crédit Lyonnais* more difficult, since government officials repeatedly stated they would oppose a takeover by a foreign credit institution. The importance of the political dimension for bank acquisitions is also reflected by a statement of the former chairman of *Lloyds TSB*. In an interview with the French newspaper *Le Figaro*, he said that *Lloyds* would like to take over *Crédit Lyonnais*, but was put off by the regulatory and political climate in France. Political influence also played a role in the bidding war for *Crédit Industriel et Commercial* (CIC) in 1998 (Boot, 1999). Although the Dutch *ABN Amro* was favoured because of its excellent track record vis-à-vis competing French bidders, CIC was sold to *Crédit Mutuel*. The political dimension of M&A seems to be important in other EU countries as well. In Portugal, politicians blocked the acquisition of the financial group *Champlinaud* by the Spanish *Banco Santander Central Hispanio* in 1999. In Italy, the acquisition of *Banca Antonveneta* and *Banca Nazionale de Lavoro* by *ABN AMRO* and the Spanish *Banco Bilbao Vizcaya Argentaria* were blocked by the Bank of Italy in 2005. Because it became later public that both deals were

not blocked for prudential reasons, but to protect domestic banks from foreign investors, the EU Commission brought actions against Italy for the infringement of the principle of the free movement of capital and the freedom of establishment. The EU Commission complained that the merger review process of the Bank of Italy creates uncertainty and lacks transparency. This may lead to a situation in which the supervisor can refuse authorization of a merger based on opaque concerns, e.g. regarding the 'stability of governance' (European Commission, 2005b).

Although these examples demonstrate that government intervention makes cross-border M&A more difficult, systematic empirical evidence is missing. This paper aims to fill this gap. It relies on a unique database on the transparency of merger control in the EU banking sector. The paper proceeds as follows. Section 2 reviews the reasons for and the barriers to domestic and cross-border consolidation in the banking sector. Section 3 presents the empirical model and Section 4 the dataset. The determinants that affect the decision to take over domestic or foreign banks are presented in Section 5. In Section 6, I use a logit and multinomial logit framework to estimate the probability that a bank is taken over as a function of bank characteristics, country characteristics and the transparency of merger control. The robustness of the results is checked in Section 7. Section 8 concludes. I find that cross-border takeovers are systematically more likely if merger control is more transparent. In particular, large banks are more likely to be taken over by foreign credit institutions if merger control is more transparent. This supports the hypothesis that politicians and supervisors block cross-border M&A to protect local credit institutions from foreign investors. Domestic M&A are, in contrast, not affected.

2 Motives and Barriers to Consolidation in the EU Banking Sector

M&A are undertaken for motives that can broadly be distinguished into value-maximizing and non-value maximizing ones. Managers may engage in takeovers that are not driven by value maximization if they derive utility from empire building. Takeovers can then be viewed as a manifestation of the potential conflict of interest between shareholders and managers. In line with that Allen and Cebenoyan (1991) find that banks with a widely dispersed ownership structure and considerable power of the management are more likely to make acquisitions that increase size than banks that are dominated by a large shareholder that monitors the management. If the interests of managers and shareholders are aligned, M&A are undertaken to increase profits and to maximize shareholder value. One way is to generate economies of scale and

scope from takeovers (Berger et al., 2000). Despite the potential to generate cost synergies cross-border consolidation is limited in the EU banking sector. The number of cross-border M&A is particular low in Western Europe, while the cross-border dimension is more important in Central and Eastern Europe. Berger et al. (2001) explain the absence of cross-border M&A in the banking sector with the existence of barriers that reduce the efficiency gains that can be generated from consolidation. Examples for efficiency barriers are differences in the regulation and supervision of banks. Since foreign banks have to comply with regulations at home and abroad, domestic banks have cost advantages because complying with two different sets of regulations imposes additional costs on foreign banks. Differences in regulations also limit the degree to which products can be standardized across borders. This has recently been confirmed by a survey of the EU Commission (2005a). The survey indicates that differences in product regulation and consumer protection are an important barrier to cross-border consolidation in the EU financial sector. This makes cross-border takeovers less attractive relative to domestic M&A, since cost synergies are a key driver for consolidation in the financial sector (Berger et al., 2004).

Takeovers may also lead to X-efficiency gains. X-efficiency gains arise if the acquiring institution is more efficient *ex-ante* and brings the efficiency of the acquired bank up to its own level (Berger et al., 2000). Owing to cultural diversity, different languages and corporate cultures they are likely to be limited in cross-border M&A. Cross-border acquisitions may also be less attractive as compared to domestic M&A due to problems in monitoring managers at distance (Buch and De Long, 2003 and Buch, 2005; Berger et al., 2004). This is consistent with Buch and DeLong (2004). They explain the relative absence of cross-border deals in the banking sector by regulatory barriers and information costs related to distance and cultural factors. The empirical literature on the efficiency effects of M&A in the banking sector suggests that efficiency barriers exist. Beitel and Schierenbeck (2006), for example, find that the changes of the combined value of the bidder and target are zero or even negative in case of cross-border M&A, while the values of the combined institution is positive for domestic takeovers. Studies that compare the efficiency of foreign and domestic banks do not find much evidence for efficiency gains through cross-border M&A either. Vander Vennet (1996), for instance, concludes that foreign banks in Europe had about the same cost efficiency as domestic credit institutions, while Bonin et al. (2005) find that foreign banks are more cost efficient than domestic banks in Central and Eastern Europe. This indicates that foreign banks have advantages over local credit institutions in developing countries (Berger, 2007). In contrast, the research for developed countries suggests that foreign banks are less efficient than local institutions in industrial countries (Berger,

2007). Since efficiency gains are a key driver for consolidation in the banking sector, cross-border consolidation is likely to be limited in Western Europe as long as efficiency barriers exist that offset most of the potential efficiency gains from takeovers.

Banks are also taken over to increase market share and to get access to foreign banking markets. The latter may be particularly relevant for banks that have a large market share in their home country and are restricted in acquiring local banks for antitrust concerns. Furthermore, cross-border M&A are considered the most effective way to enter foreign retail-banking markets (Cabral et al., 2002). This is consistent with the literature that analyzes foreign bank expansion. It usually finds that subsidiaries are the dominant entry mode for banks that operate with local clients, while branches are more often chosen to provide financial services to local clients when they operate abroad (Foccarelli and Pozzolo, 2005 and Cerutti et al., 2007). Subsidiaries are usually established via the acquisition of local banks. In particular, banks with a large branch network and a large market share are attractive targets. Despite the benefits of taking over such banks, large cross-border deals are limited in Western Europe. Banks mainly enter these countries via branches or via the acquisition of small credit institutions. In the EU banking sector, market entry via branches is easier than via subsidiaries, since branches do not need prior approval by the supervisor in the host country. The acquisition of small banks, in turn, is less likely to be blocked if politicians and supervisors only want the largest banks in domestic hands.

The role of politicians and supervisors in cross-border consolidation in the EU banking sector is emphasized by Boot (1999). He argues that central banks, ministries of finance and domestic banks operate in close concert to block cross-border and to promote domestic M&A. For Berger (2007) implicit government barriers are one of the main reasons for the small market share of foreign banks in Western Europe relative to Central and Eastern Europe. These include delaying or denying cross-border takeovers and encouraging domestic banks to merge with each other to become larger and more difficult to acquire (Berger, 2007). This was demonstrated in Italy in 2005 in case of the acquisition of *Banca Antonveneta* (BA) and *Banca Nazionale de Lavoro* (BNL) by the Dutch *ABN Amro* and the Spanish *Banco Bilbao Vizcaya Argentaria* (BBVA). Both deals were blocked by the Bank of Italy. Although the acquisition of BA was finally approved, the merger review process considerably delayed the deal and increased uncertainty and risk for *ABN Amro*. The second deal, however, failed after BBVA withdrew its takeover bid in response to a counterbid by the Italian insurer *Unipol*. Because it became later public that both deals were not blocked for prudential reasons, but to protect local banks from foreign investors, the EU Commission brought actions against Italy for infringement of the principle of

the free movement of capital and the freedom of establishment. Furthermore, the Commission complained that the merger review process of the *Bank of Italy* creates legal uncertainty and lacks transparency. This may lead to a situation in which the supervisor can block M&A based on opaque concerns (European Commission, 2005b).

Berger (2007) mentions further explicit and implicit government barriers to consolidation. Examples for explicit government barriers are restrictions on capital flows and foreign ownership. Since many explicit barriers have been lowered over time, implicit barriers may be more important to cross-border consolidation in the EU banking sector at present (Berger, 2007). In contrast to explicit barriers, they do not single out foreign banks in a formal way. Implicit barriers arise not only from the actions of politicians and supervisors to block cross-border M&A during merger control, but also from differences in the rules and regulations that govern banks and their market environment (Berger, 2007). Another implicit government barrier to cross-border consolidation is direct ownership and subsidy of banks by the state (Berger, 2007). Banks that are subsidized often have mandates to make loans at below-market rates to targeted customers like specific firms, industries or regions. State-owned banks may also have lower credit standards than private banks. In some countries, state banks also have a large market share. Together this may crowd out private banks and make foreign bank entry and cross-border acquisitions less attractive (Berger, 2007).

To identify the motives for and the barriers to consolidation, several empirical studies have analyzed the determinants of domestic and cross-border M&A in the banking sector. Foccarelli and Pozzolo (2001) focus on the acquirer. They find that large and efficient banks are more likely to be the acquirer in cross-border takeovers in the OECD. Banks with a larger share of non-interest income are also more likely to engage in cross-border acquisitions. This is consistent with the hypothesis that efficient banks are more likely to overcome efficiency barriers and to generate a sufficient return on investment from takeovers. Pasiouras et al. (2007) focus on acquirer and targets in 15 EU countries. Their results indicate that targets are larger in size, less capitalized, less liquid and less efficient compared to banks that were not involved in M&A. This is consistent with Hernando et al. (2009). They distinguish between cross-border and domestic M&A and find that poorly managed banks are more likely to be acquired in the EU. Large banks are also more likely to be taken over in case of domestic M&A. Banks operating in more concentrated markets are, in contrast, less likely to be acquired by domestic banks, but are more likely to be taken over by banks from other countries. This suggests that the likelihood that a bank is taken over not only depends on the characteristics of the bank, but also on the

characteristics of the country where the bank is located. The effect of these characteristics may, furthermore, differ for domestic and cross-border takeovers.

This paper contributes to the existing literature on the determinants of M&A in the banking sector by concentrating on explicit and implicit government barriers consolidation. First of all, I analyze whether explicit government barriers like restrictions on banking activities and international capital flows reduce the likelihood that a bank is taken over. Second, I examine whether merger control is an implicit barrier to consolidation. As demonstrated in Italy in 2005, supervisors and politicians have considerable scope to block cross-border takeovers if the merger review process lacks transparency. The aim of this paper is to find out whether merger control is not only a barrier to cross-border consolidation in Italy, but whether it constitutes a systematic barrier to M&A in the EU banking sector.

3 Empirical Model

To find out which banks are more likely to be taken over, I estimate a logistic model:

$$P_{jt} = \frac{\exp(X_j \beta)}{(1+\exp(X_j \beta))}$$

where P_{jt} is the probability that bank j is taken over in period t. X is a matrix of bank- and country-specific variables that are relevant for a bank becoming a target. β is the vector of coefficients.

Problematic is that the effect of the explanatory variables may differ for domestic and cross-border M&A. Banks may, for example, by less likely to be acquired by foreign banks if supervisors and politicians block cross-border takeovers. Domestic M&A may, in contrast, be more likely if politicians promote mergers among local credit institutions to make them larger and more difficult to acquire. Hence, I additionally estimate a multinomial logit model that allows multiple choices. The probability that a bank is taken over is then described as follows:

$$P^{D}_{jt} = \frac{\exp(X_j \beta^{D})}{(1+\exp(X_j \beta^{D})\exp(X_j \beta^{CB}))}$$

and

$$P_{jt}^{CB} = \frac{\exp(X_j \beta^{CB})}{(1+\exp(X_j \beta^{D})\exp(X_j \beta^{CB}))}$$

where P_{jt}^{D} and P_{jt}^{CB} is the probability that a bank is taken over by a domestic and a foreign bank, respectively. β^{D} and β^{CB} are the vector of coefficients. The effect of the explanatory variables is, hence, allowed to differ for domestic and cross-border M&A.

4 Data

The dataset includes data on banks and M&A in the EU banking sector for the period between 1997 and 2005. The countries included are Austria, Belgium, the Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Latvia, Lithuania, the Netherlands, Poland, Portugal, the Slovak Republic, Slovenia, Sweden and the United Kingdom. Information on M&A comes from *Zephyr* (2008). Balance-sheet data is taken from the *BankScope* (2008). I use consolidated balance sheets whenever possible and focus on commercial banks.

The geographical distribution of banks and deals is reported in Table 1. The dataset includes 1,407 banks. The largest number of banks is located in Germany (256), France (246), Italy (158) and the United Kingdom (153). All other countries have fewer than 100 banks. The dataset comprises 150 deals of which 77 were domestic and 73 cross-border. Table 1 indicates that there are differences in takeover activity across countries. While domestic takeovers outnumber cross-border M&A in most Western European countries, cross-border deals are more important in Central and Eastern Europe. Cross-border consolidation is more advanced in Central and Eastern European countries, because many countries from this region suffered from banking crises in the 1990s and allowed failed banks to be taken over by foreign credit institutions (Hernando et al., 2009). The privatization of state-owned banks has further increased the level of cross-border consolidation in Central and Eastern Europe. Both suggest that these countries have reduced barriers to the entry of foreign banks (Berger, 2007). The distribution of deals across years is reported in Table 2. Table 2 indicates that cross-border M&A were particularly important in 2005.

5 Determinants of M&A in the EU Banking Sector

5.1 Bank Characteristics

To find out which banks are more likely to be taken over, I include total bank assets (SIZE), the return-on-assets (ROA), the ratio of net-interest revenue to

total revenue (NIREV), the ratio of total equity to total bank assets (CAPITAL) and the ratio of liquid assets to customer and short-term funding (LIQUID) in the regression model. To eliminate outliers, all variables are winsorized at the 1- and 99-percent level. For a list of variables used in the regression analysis see Table 3.

ROA - The return-on-assets controls for the motive to generate X-efficiency gains from takeovers. Since X-efficiency gains are more likely to be achieved if the target is inefficient, I expect that banks with a low ROA are more likely to be acquired. Underperforming banks may not only offer greater opportunities for efficiency enhancement. They may also be more risky if the source of the underperformance is a high level of bad loans. In such a case, a domestic acquirer may be in a better position to reduce the amount of bad loans and to improve performance than a foreign acquirer. This suggests that efficiency enhancement should *a priori* be more relevant for domestic than for cross-border M&A.

SIZE - The logarithm of total bank assets measures the size of the bank. SIZE controls for the motive to generate economies of scale and scope. Since economies of scale and scope increase with bank size, large banks are more attractive targets. However, organizational complexity also increases with SIZE. This may reduce the potential to generate cost synergies from takeovers and lower the probability that a large bank is taken over. The acquisition of large banks may also be more likely to raise problems with the antitrust authority. This should be particularly relevant for domestic M&A, since foreign credit institutions usually do not have any or only a small market share in the host country. This suggests that the effect of SIZE may differ for domestic and cross-border M&A.

NIREV - To control for the business model of a bank, I use the ratio of net-interest revenue to total revenue. A large proportion of interest income indicates that a bank is more active in retail-banking. This may be relevant for banks that take over foreign banks to get access to local retail-banking markets. Since foreign retail-banking markets are not easily conquerable from distance, the most effective way to get access to such markets seems to be the merger with or the acquisition of an existing local credit institution (Cabral et al., 2002). Retail-banking has become more attractive because it provides a more stable source of income than investment banking. Retail-banks also face lower refinancing costs, since refinancing via deposits is cheaper than via interbank borrowing. Both has become visible in the recent crisis. However, retail-banking is often regarded as more costly in terms of the required branch network and staff (Demirgüc-Kunt and Huizinga, 2000). Non-interest-earning activities are also often considered as having a larger growth potential than interest-earning activities. For this reason,

NIREV is often regarded as measuring bank inefficiency as well (Foccarelli and Pozzolo, 2001). Banks with a larger proportion of net-interest revenue to total revenue may, hence, not only have a stronger focus on retail-banking activities, but may also be less efficient. Both suggest that credit institutions with a larger proportion of net-interest revenue to total revenue are more likely to be acquired. Since market access is more important for foreign than for domestic banks, NIREV should *a priori* be more relevant for cross-border M&A.

CAPITAL - To control for bank capital, I include the ratio of total equity to total bank assets. The effect of CAPITAL is not clear *a priori.* On the one hand, a higher level of capital may raise the probability that a bank is acquired if highly capitalized banks are less diversified. Such banks are attractive for acquirers that are more diversified, since the acquirer can free capital if he transfers his knowledge on risk diversification on the target. However, a high level of capital may also indicate better management skills. This may reduce the likelihood that a bank is acquired, since X-efficiency gains are expected to be smaller. Moreover, Hannan and Pilloff (2006) point out that acquirers prefer highly leveraged (low capitalized) targets because it enables them to maximize the magnitude of post-merger performance gains relative to the cost of achieving those gains.

LIQUID - The ratio of liquid assets to customer and short-term funding is included to find out whether liquidity affects that likelihood that a bank is taken over. The effect of LIQUID is not clear *a priori*. On the one hand, banks are more likely to be acquired if they are close to illiquidity and need external support. Hence, a low level of liquidity should raise the likelihood that a bank is taken over. On the other hand, a high level of liquidity may indicate a lack of investment opportunities and managerial inefficiency. This should make banks more attractive to potential investors and increase the likelihood that a bank is acquired.

Table 4 present summary statistics for the bank-specific variables. T-tests on the sample mean are reported in Table 5 and piecewise correlation coefficients in Table 6. The numbers are broadly consistent with the hypotheses put forward. Large banks (SIZE) are more likely to be taken over than small credit institutions consistent with the hypothesis that banks are acquired to obtain market power and to generate economies of scale and scope. Measured by the cost-income ratio (CIR) and the return-on-assets (ROA) targets are also less efficient than banks that were not acquired. This supports the hypothesis that banks tend to take over less efficient credit institutions to generate X-efficiency gains from better management and organization. Particularly domestic M&A seem to be driven by the motive to improve X-efficiency. Banks that were not taken over are, in contrast, significantly better capitalized (CAPITAL) and more

liquid (LIQUID) consistent with the hypothesis that less capitalized and less liquid banks are more likely to be acquired. The proportion of net interest revenue to total revenue (NIREV), in contrast, is significantly higher for targets than for banks that were not acquired. This indicates that targets are more active in retail-banking. In particular, cross-border targets derive a large proportion of their income from interest-earning activities. This supports the hypothesis that foreign banks take over domestic credit institutions to get access to local retail-banking markets.

5.2 Explicit and Implicit Government Barriers to Consolidation

The likelihood that a bank is taken over may also depend on the extent of explicit and implicit government barriers to consolidation (Berger, 2007). Such barriers arise from the legal and regulatory environment in the country where the potential target is located. Berger et al. (2004), for example, show that banks are more likely to take over foreign banks if regulatory restrictions on financial activities are low and supervisory authorities more reliable. Pasiouras et al. (2007) find that the level of banking regulations affects the decision of a bank to acquire a credit institution in the EU-25 as well. In particular, more stringent capital and disclosure requirements raise the likelihood that a bank is acquired. This is consistent with Buch and DeLong (2004). They find that financial institutions appreciate strict regulatory standards and do not engage in regulatory arbitrage. Their overall results, however, suggest that banking regulation and supervision only plays a relatively modest role in explaining cross-border M&A.

More relevant may be whether capital flows and ownership are restricted. To find out whether such explicit government barriers limit consolidation in the EU banking market, I include an *Index on Investment Freedom* (INVFREE). The likelihood that a bank is taken over may also depend on whether banks are restricted in their business activities. Cross-border consolidation may also be limited by government ownership and subsidy of banks by the state (Berger, 2007). To find out whether government ownership and restrictions on financial activities reduce the probability that a bank is taken over, I use an *Index on Financial Freedom* (FINFREE). Both indices are from the Heritage Foundation (2008). Since a larger value for FINFREE and INVFREE indicates fewer restrictions on capital flows and greater financial freedom, I expect that both indices are positively related with the likelihood that a bank is taken over. In particular, cross-border M&A should be more likely if investment and financial freedom is high.

Consolidation may also be limited by merger control if supervisors block certain takeovers during the merger review process to protect local credit institutions. This was demonstrated in Italy in 2005 in case of *Banca Antonveneta* (BA) and

Banca Nazionale de Lavoro (BNL). For Berger (2007), such implicit government barriers are one of the main reasons for the small market share of foreign banks in Western Europe relative to Central and Eastern Europe. To find out whether merger control constitutes an implicit barrier to consolidation, I include the *Independence of the Supervisory Authority Index* (INDEPENDENCE) and the *Transparency of Merger Control Index* (TRANSPARENCY). Both indices are taken from Köhler (2007). Summary statistics for INDEPENDENCE and TRANSPARENCY are presented in Table 7.

INDEPENDENCE - The *Independence of the Supervisory Authority Index* measures the degree of independence of the supervisory authorities in the EU banking sector. The index ranges from zero to two with higher values indicating that the supervisor is more independent. I assume that politicians should be less able to put pressure on the supervisor to block cross-border M&A if the supervisory authority is more independent. Hence, it should be easier for foreign credit institutions to take over domestic banks if the supervisor is more independent. Domestic M&A may, in contrast, be less likely. This suggests that the effect of INDEPENDENCE may differ for domestic and cross-border takeovers.

TRANSPARENCY - The *Transparency of Merger Control Index* measures the degree of transparency of the merger review process in the EU banking sector. The index ranges from zero to one with higher values indicating a greater degree of transparency. I assume that regulators have more scope to block certain takeovers if merger control lacks transparency. This is emphasized by the EU Commission (2005b). The Commission argues that the supervisor has more scope to block certain takeovers in the banking sector if merger control lacks transparency. This suggests that it should be easier for foreign banks to take over a domestic bank if merger control is more transparent. If politicians promote mergers among local banks, domestic M&A may, in contrast, be less likely. This suggests that the effect of TRANSPARENCY may differ for domestic and cross-border M&A.

5.3 Other Country Characteristics

To find out whether the likelihood that a bank is taken over depends on other country characteristics as well, I include the ratio of aggregate imports to GDP (IMGDP), the size of the bank sector (DBAGDP), the level of stock market capitalization (STKMCAP) and the degree of banking market concentration (C3).

IMGDP – The ratio of ratio of aggregate imports to GDP measures the degree of trade openness of a country. IMGDP should be relevant for banks that want to provide trade-related services to local clients when they operate abroad (Heinkel and Levi, 1992, Ter Wengel, 1995 and Yamori, 1998). Banks located in countries that are more open to trade should, hence, be more likely to be taken over. However, the empirical evidence suggest that banks that pursue a follow-your-customer strategy often use branches as main entry mode, while subsidiaries are more often chosen in order to operate with local clients (Foccarelli and Pozzolo, 2005 and Cerutti et al., 2007). The follow-your-customer strategy may, thus, not be the dominant motivation behind cross-border M&A. IMGDP may also matter for domestic banks if they provide services to foreign customers. However, *a priori* IMGDP should be more relevant for cross-border M&A.

DBAGDP – The size of the banking sector is measured by the ratio of total banking sector assets to GDP. The effect of DBAGDP on the probability that a bank is taken over is not clear *a priori*. On the one hand, a larger banking sector may raise the probability that a bank is taken, since a larger banking market offers greater opportunities to generate economies of scale and scope (Buch and DeLong, 2004). A large banking sector also offers a larger market potential than a small banking market. This makes a country more attractive for cross-border takeovers. Greater expansion opportunities may, furthermore, reduce the need of local institutions to expand abroad. This should make domestic M&A more likely. On the other hand, a larger banking sector may reduce the likelihood that a bank is acquired if larger and more developed banking markets are less profitable (Buch and DeLong, 2004 and Demirgüc-Kunt and Huizinga, 1999 and 2000).

STKMCAP – The ratio of stock market capitalization to GDP measures the size of the stock market. The effect of STKMCAP on the probability that a bank is acquired is ambigious. On the one hand, a higher level of stock market capitalization may reduce the probability that a bank is taken over, since competition is greater in larger and more developed financial systems (Demirgüc-Kunt and Huizinga, 2000). However, a larger stock market may allow firms to be better capitalized. This should reduce the risk of loan default (Demirgüc-Kunt and Huizinga, 2000). Furthermore, at a higher level of stock market capitalization, more information on publicly traded firms is available. This enables banks to better evaluate credit risk (Demirgüc-Kunt and Huizinga, 2000). This should increase profits and raise the likelihood that a bank is taken over.

C3 – The level of banking market concentration is measured by the market share of the three largest banks. The effect of C3 is not clear *a priori* (Hannan and

Rhoades, 1987 and Hannan and Pilloff, 2006). On the one hand, a high level of banking market concentration may raise the probability that a bank is taken over by a domestic bank, since market power can be enhanced by the acquisition. On the other hand, domestic M&A may be less likely if antitrust authorities fear that the merger reduces the level of banking market competition. Cross-border M&A are less likely to be challenged for antitrust concerns, because a foreign acquirer likely has only a small or no market share in the target's domestic market. Cross-border M&A may also be more likely if concentrated banking markets are more profitable owing to less competition between local banks. This suggests that C3 may affect domestic and cross-border takeovers in the EU banking sector differently.

Finally, I include a dummy variable which is set equal to one for countries that are members of the European Monetary Union (EMU) and zero otherwise. EMU membership may increase the probability that a bank is taken over by a bank from another EMU country, since a common currency eliminates exchange-rate risks. This should facilitate cross-border consolidation in the euro area. If banks are afraid of being taken over by foreign banks, EMU may also raise the pressure for domestic consolidation. For a list of the variables used in the regression analysis see Table 3.

6 Results

6.1 Logit Regression

The regression analysis proceeds in different steps. First, I include the bank-specific and the country-specific variables separately in the regression. Then both types of variables are put together in the same regression. This model constitutes my baseline. In the next step, I add one legal and regulatory variable after the other to the baseline model. Finally, I estimate a model with all regulatory variables together in a single regression. The results of the logit regressions are reported in Table 8. To account for time-fixed effects, I use time dummy variables. The regression coefficients reported are to be interpreted as affecting the odds ratio with respect to the baseline case and not as marginal probability.

The results are in line with the hypotheses put forward. Consistent with Pasiouras et al. (2007), I find that large banks are more likely to be taken over as indicated by the significant and positive coefficient for SIZE. Less efficient banks are also more likely to be acquired. ROA is significant and has a negative sign. This suggests that takeovers in the EU banking sector are driven by the motive to generate efficiency gains from economies of scale and scope and

higher X-efficiency. To test the robustness of the result, I replace ROA by the cost-income ratio (CIR). CIR is significant and negative indicating that banks with a lower level of cost-efficiency are more likely to be taken over. NIREV is significant as well. The positive coefficient suggests that banks with stronger focus on retail-banking activities are more likely to be acquired. The degree of liquidity and the level of capitalization, in contrast, do not matter. Both LIQUID and CAPITAL are insignificant.

The probability that a bank is taken over also depends on the characteristics of the country where it is located. I find that banks from countries with a larger stock market (STKMCAP) and a larger banking sector (DBAGDP) are less likely to be taken over. This is consistent with Buch and DeLong (2004), Pasiouras et al. (2007) and Pozzolo (2009). Demirgüc-Kunt and Huizinga (1999) offer an explanation. They argue that profit opportunities are lower in countries with a larger and more developed financial system. Since profits are one of the main drivers for consolidation, banks are less likely to be taken over if a bank is located in a country with more competitive financial sector. The degree of banking market concentration (C3), in contrast, does not matter. IMGDP and EMU are not significant either.

The probability that a bank is taken over also depends on the extent of explicit and implicit government barriers to consolidation. The results for INVFREE suggest that banks are more likely to be acquired if capital flows are not restricted. However, there is no evidence that greater financial freedom (FINFREE) makes takeovers more likely. The transparency of the merger review process also matters. TRANSPARENCY is significant and has a positive sign consistent with the hypothesis that banks are more likely to be acquired if merger control is more transparent. The degree of independence of the supervisory authority, in contrast, does not matter. INDEPENDENCE is insignificant.

6.2 Multinomial Logit Regression

Problematic is that the effect of the explanatory variables may differ for domestic and cross-border M&A. Banks may, for example, be less likely to be acquired by foreign banks if supervisors block cross-border M&A during merger control. Domestic takeovers may, in contrast, be more likely if supervisors and politicians promote mergers among local banks to form ‘national champions’. Hence, I additionally estimate a multinomial logit model that allows multiple choices.

The results of the multinomial logit regressions are reported in Table 9. They confirm the results of the logistic regressions. SIZE increases the probability that

a bank is taken over. Inefficient banks are also more likely to be acquired. Both is consistent with previous studies on domestic and cross-border M&A in the EU banking sector (Lanine and Vander Vennet, 2007; Pasiouras et al., 2007 and Hernando et al., 2009). NIREV is significant and positive for cross-border M&A in line with the hypothesis that banks take over foreign credit institutions to get access to local banking markets. As expected, NIREV is not significant for domestic deals. LIQUID and CAPITAL remain insignificant for both domestic and cross-border M&A.

The results for the country-specific variables also differ for domestic and cross-border M&A. I find significant differences for IMGDP. The significant and positive coefficient in the equation for cross-border M&A is consistent with the follow-your-customer strategy according to which banks expand into countries where customers from the home country are located in order to provide services related to their business. Domestic takeovers, in contrast, seem to less likely in countries that are more open to trade. The effect of STKMCAP and DBAGDP, in contrast, does not differ for domestic and cross-border M&A. Both variables are significant and reduce the likelihood that a bank is taken over. As in case of the logit regressions, the degree of banking market concentration (C3) and EMU are not significant.

The effect of INVFREE differs for domestic and cross-border takeovers. While domestic takeovers are not affected by restrictions on international capital flows, cross-border M&A are. The positive and significant coefficient for FINFREE in the equation for cross-border M&A suggest that banks are more likely to be taken over by foreign banks if international capital flows are not restricted. However, if I include FINFREE, INDEPENDENCE and TRANSPARENCY as additional explanatory variables, INVFREE becomes insignificant. FINFREE is not significant either. The results, hence, do provide strong evidence that explicit government barriers like restrictions on capital flows and financial activity limit consolidation in the EU banking sector. This might have been expected, since many explicit barriers to consolidation in the EU banking sector have been lowered over time through regulatory harmonization and liberalization (Berger, 2007).

6.3 Merger Control as Barrier to Consolidation in the EU Banking Sector

The logit regressions indicate that banks in the EU are more likely to be acquired if the merger review process is more transparent. To find whether the effect differs for domestic and cross-border takeovers, I next include

INDEPENDENCE and TRANSPARENCY. The results are reported in columns 6 to 9 of Table 9.

As expected, the results differ for domestic and cross-border M&A. While INDEPENDENCE remains insignificant for domestic and cross-border takeovers, TRANSPARENCY is significant for cross-border, but insignificant for domestic M&A. The positive coefficient indicates that banks are less likely to be taken over by a foreign credit institution if merger control lacks transparency. In this case, supervisors have more scope to block cross-border takeovers. This was demonstrated in Italy in 2005 in the case of *Banca Antonveneta* and *Banca Nazionale de Lavoro*. The results indicate that a lack of transparency of the merger review process not only restricts cross-border consolidation in Italy, but that it constitutes a systematic barrier to cross-border takeovers in the EU banking sector. This is in line with a survey of the EU Commission (2005a). The survey identifies the merger review process, the misuse of supervisory powers and political interference as important barriers to cross-border consolidation in the EU financial sector. Particularly large banks with previous experience in M&A regard them as important barrier to cross-border consolidation. This is consistent with recent comments of the French government that it would protect *Société Générale* from being acquired by a foreign bank. *Société Générale* is the second largest bank in France. The results are also in line with Boot (1999). He argues that the political dimension of bank mergers is particularly important if politicians want to protect national flagships. This suggests that cross-border acquisitions of large banks are more likely to be blocked in the EU banking sector than the acquisition of small banks by foreign credit institutions.

To test this hypothesis, I create three dummy variables each representing a different bank size. Banks are considered as small if their assets are below the 25-percentile (SMALL), medium-sized if their assets lie within the 25- and 75-percentile (MEDIUM) and large if their assets exceed the 75-percentile (LARGE). Since I multiply these dummies with the TRANSPARENCY, each coefficient measures the effect of TRANSPARENCY for a different bank size. The results of the regressions with the interaction terms are presented in Table 10. The interaction terms turn out to be insignificant for domestic, but significant for cross-border takeovers. The coefficients, however, suggest that the effect of TRANSPARENCY is significantly higher for large than for small and medium-sized banks. This supports the hypothesis that particularly cross-border acquisitions of large banks are more likely to be blocked if merger control lacks transparency.

7 Robustness Checks

To check the robustness of the regression results, I perform several robustness tests. First, to control for the fact that many Central and Eastern European countries opened their banking sectors to foreign investors during their transformation to a market-based economy and in response to privatization, I include a dummy variable which is equal to one for countries that are located in Central and Eastern Europe (CEEC) and zero otherwise. Second, I estimate the model only for the countries located in Central and Eastern Europe. Third, I include a set of country dummies. Country dummies control for omitted variables that do not vary over time and that are specific to each country. Examples for such time-invariant determinants of takeovers are culture or language. Country dummies also control for the attitude of the government toward foreign investment in the banking sector as long as it does not change over time. Fourth, to test the robustness of the multinomial logit regressions, I run separate logit regressions for domestic and cross-border M&A. Furthermore, I re-estimate my model using multinomial probit instead of multinomial logit regression. The results, however, do not change. TRANSPARENCY is significant and positive for cross-border, but not significant for domestic M&A. INDEPENDENCE remains insignificant. The results are not reported for the sake of brevity.

8 Conclusions

Although the EU has removed barriers to cross-border banking through the harmonization of regulations and liberalization, the number of cross-border mergers and acquisitions (M&A) in the EU banking sector is still small compared to cross-border M&A in other sectors (European Commission, 2005a). There are, however, large differences in the importance of the cross-border dimension in EU banking markets. While the level of cross-border consolidation is particularly low in the larger Western European countries, cross-border M&A are more frequent in Central and Eastern European countries (Cabral et. al., 2002). The motivation of this paper was to find out whether these differences can be explained by explicit and implicit government barriers to consolidation.

The paper shows that cross-border consolidation in the EU banking sector is mainly limited by implicit government barriers. Implicit barriers arise from merger control if politicians and supervisors block cross-border takeovers during the merger review process for opaque concerns. In particular, large banks are less likely to be taken over by foreign credit institutions if merger control lacks transparency. For this reason, the recent effort of the EU Commission to increase the transparency of the merger review process is an important step to

lower implicit barriers to consolidation and to increase the degree of banking market integration in Europe. Explicit barriers like, for example, restrictions on capital flows and financial activities, in contrast, do not seem to matter. Such barriers have been lowered over time by liberalization and regulatory harmonization.

The results have implications for efficiency in the EU banking sector. Since government intervention is usually not driven by efficiency considerations, a greater degree of transparency of the merger review process should not only make cross-border takeovers more likely, but also improve efficiency and boost bank valuation. This corresponds to Carletti et al. (2007). They analyze whether changes in merger control legislation toward a greater focus on competition instead of financial soundness affect stock-prices in the EU banking sector. Their results suggest that a stronger focus on competition and efficiency in the merger review process leads to a positive reaction of bank stocks. Stock market reactions are particularly strong if merger control is more transparent and the authority in charge more independent. Both reduces the discretion of the regulatory process and enhances the efficiency of envisioned M&A in the EU banking sector (Carletti et al., 2007).

Furthermore, the regression results suggest that consolidation in the EU banking sector is driven by the desire to generate economies of scale and scope. X-efficiency gains through better management techniques and organization influence the decision to take over another credit institution as well. Efficiency gains are usually found to be easier to achieve in developing countries in which foreign banks have relative advantages over local banks. In developed countries, in contrast, foreign banks are less efficient than local institutions (Berger, 2007). This suggests that the efficiency gains generated from cross-border takeovers may not be sufficient to outweigh the relative disadvantages of foreign banks in Western Europe. Since efficiency gains are a key driver for consolidation in the banking sector, cross-border consolidation is, hence, likely to be limited in Western Europe as long as efficiency barriers exist that offset most of the potential efficiency gains from takeovers. This indicates that the small number of cross-border M&A in Western Europe relative to Central and Eastern Europe is primarily the result of a combination of net comparative disadvantages of foreign banks in these countries and relatively high implicit barriers to consolidation.

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Appendix

Table 1: Banks and Deals by Country

	Number of Banks	Number of M&A	of which: Domestic M&A	of which: Cross-Border M&A
Austria	57	2	1	1
Belgium	36	1	1	0
Cyprus	18	0	0	0
Czech Republic	27	7	1	6
Denmark	60	3	3	0
Estonia	6	11	0	11
Finland	7	0	0	0
France	246	13	7	6
Germany	256	27	20	7
Greece	25	3	1	2
Hungary	21	8	2	6
Ireland	39	1	0	1
Italy	158	22	21	1
Latvia	25	9	1	8
Lithuania	11	5	1	4
Netherlands	49	2	0	2
Poland	51	10	8	2
Portugal	10	1	1	0
Slovak Republic	21	11	1	10
Slovenia	25	4	2	2
Spain	87	4	3	1
Sweden	19	2	2	0
United Kingdom	153	4	1	3
Total	1,407	150	77	73

Source: Zepyhr (2008), Bankscope (2008)

Table 2: Deals by Year of Completion

Year	Number of M&A	of which: Domestic M&A	of which: Cross-Border M&A
1997	4	1	3
1998	3	1	2
1999	15	10	5
2000	20	11	9
2001	22	14	8
2002	26	15	11
2003	16	7	9
2004	15	8	7
2005	29	10	19
Total	150	77	73

Source: Zepyhr (2008)

Table 3: Variables

SIZE	Log(Total Bank Assets) Source: Bankscope (2008)
ROA	Return-on-Assets Source: Bankscope (2008)
CIR	Cost-Income Ratio Source: Bankscope (2008)
CAPITAL	Total Equity/Total Assets Source: Bankscope (2008)
LIQUID	Liquid Assets/Customer and Short-Term Funding Source: Bankscope (2008)
NIREV	Net-Interest Revenue/Total Revenue Source: Bankscope (2008)
IMGDP	Total Imports/Total GDP Source: Datastream (2008)
DBAGDP	Deposit Money Bank Assets/GDP Source: Worldbank (2008)
STKMCAP	Stock Market Capitalization/GDP Source: Worldbank (2008)
C3	Market Share of the Three Largest Banks Source: Worldbank (2008)
FINFREE	Financial Freedom Index Source: Heritage Foundation (2008)
INVFREE	Investment Freedom Index Source: Heritage Foundation (2008)
INDEPENDENCE	Independence of Supervisory Authority Index Source: Köhler (2007)
TRANSPARENCY	Transparency of Merger Control Index Source: Köhler (2007)
EMU	Dummy Variable indicating whether a bank is located in a country that is member of the European Monetary Union
CEEC	Dummy Variable indicating whether a bank is located in Central and Eastern Europe
SMALL	Dummy variable indicating whether a bank is small. Banks are considered as small if their assets are below the 25-percentile.
MEDIUM	Dummy variable indicating whether a bank is small. Banks are considered as medium-sized if their assets are above the 25-percentile, but below the 75-percentile.
LARGE	Dummy variable indicating whether a bank is small. Banks are considered as large if their assets are above the 75-percentile.
TRANSPARENCY*SMALL	Interaction term between INDEPENDENCE and SMALL
TRANSPARENCY*MEDIUM	Interaction term between INDEPENDENCE and MEDIUM
TRANSPARENCY*LARGE	Interaction term between INDEPENDENCE and LARGE

Table 4: Summary Statistics

All Banks	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Log(Total Bank Assets) (SIZE)	5,815	13.55	13.39	19.60	9.49	1.91
Cost-Income Ratio (CIR)	5,724	71.33	66.56	273.55	7.69	35.84
Return-on-Assets (ROA)	5,815	0.65	0.58	9.19	-9.08	1.88
Total Equity/Total Assets (CAPITAL)	5,815	12.46	8.47	88.50	1.00	12.96
Liquid Assets/Customer and Short-Term Funding (LIQUID)	5,815	37.32	22.63	271.43	0.00	45.54
Net-Interest Revenue/Total Revenue (NIREV)	5,815	32.82	32.45	92.86	-6.55	18.28

Domestic and Cross-Border Targets	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Log(Total Bank Assets) (SIZE)	150	14.30	14.13	19.60	9.49	2.01
Cost-Income Ratio (CIR)	149	82.51	75.52	250.00	19.97	33.50
Return-on-Assets (ROA)	150	0.21	0.59	8.13	-9.08	2.16
Total Equity/Total Assets (CAPITAL)	150	10.54	8.24	73.30	1.00	9.69
Liquid Assets/Customer and Short-Term Funding (LIQUID)	150	25.86	20.03	180.19	0.02	25.37
Net-Interest Revenue/Total Revenue (NIREV)	150	35.44	35.25	78.54	-0.32	14.94

Domestic Targets	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Log(Total Bank Assets) (SIZE)	77	14.44	14.21	19.60	9.49	2.20
Cost-Income Ratio (CIR)	76	87.64	76.85	250.00	34.49	40.12
Return-on-Assets (ROA)	77	0.07	0.31	8.13	-9.08	2.26
Total Equity/Total Assets (CAPITAL)	77	10.56	7.60	73.30	1.00	11.01
Liquid Assets/Customer and Short-Term Funding (LIQUID)	77	26.32	25.80	105.80	0.15	21.67
Net-Interest Revenue/Total Revenue (NIREV)	77	32.84	32.59	78.54	3.94	14.78

Cross-Border Targets	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Log(Total Bank Assets) (SIZE)	73	14.15	14.08	19.60	10.49	1.79
Cost-Income Ratio (CIR)	73	77.18	73.89	173.26	19.97	23.96
Return-on-Assets (ROA)	73	0.35	0.81	3.02	-9.08	2.05
Total Equity/Total Assets (CAPITAL)	73	10.53	8.58	53.61	1.00	8.16
Liquid Assets/Customer and Short-Term Funding (LIQUID)	73	25.38	15.12	180.19	0.02	28.91
Net-Interest Revenue/Total Revenue (NIREV)	73	38.19	39.51	77.77	-0.32	14.72

Banks that were not taken over	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Log(Total Bank Assets) (SIZE)	5,665	13.53	13.37	19.60	9.49	1.90
Cost-Income Ratio (CIR)	5,575	71.03	66.26	273.55	7.69	35.86
Return-on-Assets (ROA)	5,665	0.66	0.58	9.19	-9.08	1.87
Total Equity/Total Assets (CAPITAL)	5,665	12.51	8.47	88.50	1.00	13.03
Liquid Assets/Customer and Short-Term Funding (LIQUID)	5,665	37.62	22.69	271.43	0.00	45.91
Net-Interest Revenue/Total Revenue (NIREV)	5,665	32.75	32.22	92.86	-6.55	18.35

Source: Bankscope (2008). Note: To eliminate outliers, all bank-specific variables are winsorized at the 1- and 99-percent level.

Table 5: T-Test on the Sample Mean

T-Test on Sample Mean: Domestic and Cross-Border Targets vs. Banks that were not acquired

	Domestic and Cross-Border Targets	Banks that were not acquired	T-Test Statistic
	Mean	Mean	
Log(Total Bank Assets) (SIZE)	14.30	13.53	-4,63***
Cost-Income Ratio (CIR)	82.51	71.03	-4,12***
Return-on-Assets (ROA)	0.21	0.66	2,54**
Total Equity/Total Assets (CAPITAL)	10.54	12.51	2,43**
Liquid Assets/Customer and Short-Term Funding (LIQUID)	25.86	37.62	5,45***
Net-Interest Revenue/Total Revenue (NIREV)	35.44	32.75	-2,16**

T-Test on Sample Mean: Domestic Targets vs. Banks that were not acquired

	Domestic Targets	Banks that were not acquired	T-Test Statistic
	Mean	Mean	
Log(Total Bank Assets) (SIZE)	14.44	13.53	-3,60***
Cost-Income Ratio (CIR)	87.64	71.03	-3,59***
Return-on-Assets (ROA)	0.07	0.66	2,28**
Total Equity/Total Assets (CAPITAL)	10.56	12.51	1.54
Liquid Assets/Customer and Short-Term Funding (LIQUID)	26.32	37.62	4,44***
Net-Interest Revenue/Total Revenue (NIREV)	32.84	32.75	-0.05

T-Test on Sample Mean: Cross-Border Targets vs. Banks that were not acquired

	Cross-Border Targets	Banks that were not acquired	T-Test Statistic
	Mean	Mean	
Log(Total Bank Assets) (SIZE)	14.15	13.53	-2,95***
Cost-Income Ratio (CIR)	77.18	71.03	-2,16**
Return-on-Assets (ROA)	0.35	0.66	1.27
Total Equity/Total Assets (CAPITAL)	10.53	12.51	2,04**
Liquid Assets/Customer and Short-Term Funding (LIQUID)	25.38	37.62	3,56***
Net-Interest Revenue/Total Revenue (NIREV)	38.19	32.75	-3,12***

T-Test on Sample Mean: Domestic Targets vs. Cross-Border Targets

	Domestic Targets	Cross-Border Targets	T-Test Statistic
	Mean	Mean	
Log(Total Bank Assets) (SIZE)	14.44	14.15	0.88
Cost-Income Ratio (CIR)	87.64	77.18	1,94*
Return-on-Assets (ROA)	0.07	0.35	-0,81
Total Equity/Total Assets (CAPITAL)	10.56	10.53	0.02
Liquid Assets/Customer and Short-Term Funding (LIQUID)	26.32	25.38	0.22
Net-Interest Revenue/Total Revenue (NIREV)	32.84	38.19	-2,22**

Source: Own Calculations. ***/**/* indicates significance at the 1/5/10-percent level.

Table 6: Correlation Analysis

	SIZE	ROA	NIREV	CAPITAL	LIQUID	LIST	EMU	CEEC	IMGDP	STKMCAP	DBAGDP	C3	INVFREE	FINFREE	INDEPEN-
SIZE	1														
ROA	0.0037	1													
NIREV	-0.2290*	0.0903*	1												
CAPITAL	-0.4001*	0.1309*	0.1762*	1											
LIQUID	-0.1900*	-0.0240*	-0.1052*	0.4530*	1										
LIST	0.0566*	0.0675*	0.1401*	-0.0007	-0.1018*	1									
EMU	0.0890*	-0.0643*	-0.0828*	-0.0202	0.0101	-0.1213*	1								
CEEC	-0.1476*	0.0264*	0.0008	0.0076	-0.1761*	0.0133	-0.4048*	1							
IMGDP	-0.0583*	0.0148	-0.0651*	-0.0602*	-0.1260*	0.0285*	-0.2194*	0.5775*	1						
STKMCAP	0.1344*	0.0497*	-0.0149	0.0601*	0.1450*	-0.1031*	-0.0025	-0.4727*	-0.2762*	1					
DBAGDP	0.1711*	-0.0302*	-0.0679*	-0.0100	0.1701*	-0.0170	0.2111*	-0.7016*	-0.3407*	0.4020*	1				
C3	-0.0494*	0.0256*	0.0152	-0.0880*	-0.0979*	0.2495*	-0.1405*	0.0524*	0.4395*	-0.1539*	0.0582*	1			
INVFREE	0.0769*	-0.0303*	-0.0008	0.0041	0.1095*	0.0022	0.1063*	-0.1556*	0.1077*	-0.0098	0.3949*	0.1850*	1		
FINFREE	0.0537*	0.0787*	0.0900*	0.0545*	0.0446*	0.0880*	-0.4983*	0.0316*	0.2216*	0.3432*	0.1247*	-0.0231*	0.2192*	1	
INDEPENDENCE	-0.1126*	0.0119	0.0644*	0.0312*	-0.0508*	0.0758*	-0.2708*	0.4562*	0.3289*	-0.2184*	-0.4198*	0.0000	-0.0709*	-0.0389*	1
TRANSPARENCY	-0.1648*	0.0414*	0.0764*	0.0203	-0.1088*	0.0653*	-0.3392*	0.5961*	0.5831*	-0.3631*	-0.5233*	0.1540*	0.0040	0.2020*	0.6563*

Note: * indicates significance at the 10-percent level.

Table 7: Merger Control Indices

The *Independence of the Supervisory Authority Index* and the *Transparency of Merger Control Index* are from Köhler (2007). Both indices are constructed based on a survey among the supervisory authorities in the EU banking sector. Index values are not available for Belgium. Cyprus, Denmark, Ireland and the United Kingdom. The *Independence of Supervisory Authority Index* measures the degree of independence of the supervisory authority. The index is constructed based on data from the *Banking and Supervision Database* of the *World Bank* (Barth et al., 2001 and 2006). It ranges from zero to two with higher values indicating a greater degree of independence of the supervisor.

Independence of the Supervisory Authority Index (INDEPENDENCE)

	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Austria	193	0.68	1.00	1.00	0.00	0.47
Belgium	.	.	.	.	.	.
Cyprus	.	.	.	.	.	.
Czech Republic	90	0.71	1.00	1.00	0.00	0.46
Denmark	.	.	.	.	.	.
Estonia	31	1.50	1.50	1.50	1.50	0.00
Finland	16	1.00	1.00	1.00	1.00	0.00
France	1,027	1.00	1.00	1.00	1.00	0.00
Germany	1,440	1.00	1.00	1.00	1.00	0.00
Greece	62	1.00	1.00	1.00	1.00	0.00
Hungary	98	1.00	1.00	1.00	1.00	0.00
Ireland	.	.	.	.	.	.
Italy	506	1.00	1.00	1.00	1.00	0.00
Latvia	51	1.50	1.50	1.50	1.50	0.00
Lithuania	107	2.00	2.00	2.00	2.00	0.00
Netherlands	153	1.00	1.00	1.00	1.00	0.00
Poland	217	1.00	1.00	1.00	1.00	0.00
Portugal	19	1.00	1.00	1.00	1.00	0.00
Slovak Republic	102	1.37	1.50	1.50	1.00	0.22
Slovenia	112	1.50	1.50	1.50	1.50	0.00
Spain	235	1.00	1.00	1.00	1.00	0.00
Sweden	78	1.00	1.00	1.00	1.00	0.00
United Kingdom	.	.	.	.	.	.
Total	4,537	1.03	1.00	2.00	0.00	0.23

Source: Köhler (2007)

The *Transparency of Merger Control Index* measures the degree of transparency of merger control. The index is based on a survey among the supervisory authorities in the EU banking sector and ranges from zero to one with higher values indicating a greater degree of transparency of the merger review process. The degree of transparency of merger control is measured based on the number of criteria that are used by the supervisory authorities to assess the soundness and prudence of the potential investor.

Transparency of Merger Control Index (TRANSPARENCY)

	Obs.	Mean	Median	Max.	Min.	Std. Dev.
Austria	193	0.00	0.00	0.00	0.00	0.00
Belgium	.	.	.	.	.	.
Cyprus	.	.	.	.	.	.
Czech Republic	90	0.00	0.00	0.00	0.00	0.00
Denmark	.	.	.	.	.	.
Estonia	31	0.63	0.67	0.67	0.33	0.12
Finland	16	0.00	0.00	0.00	0.00	0.00
France	1,027	0.00	0.00	0.00	0.00	0.00
Germany	1,440	0.00	0.00	0.00	0.00	0.00
Greece	62	0.00	0.00	0.00	0.00	0.00
Hungary	98	0.33	0.33	0.33	0.33	0.00
Ireland	.	.	.	.	.	.
Italy	506	0.00	0.00	0.00	0.00	0.00
Latvia	51	0.67	0.67	0.67	0.67	0.00
Lithuania	107	1.00	1.00	1.00	1.00	0.00
Netherlands	153	0.00	0.00	0.00	0.00	0.00
Poland	217	0.00	0.00	0.00	0.00	0.00
Portugal	19	0.33	0.33	0.33	0.33	0.00
Slovak Republic	102	0.36	0.00	1.00	0.00	0.48
Slovenia	112	0.23	0.33	0.33	0.00	0.15
Spain	235	0.00	0.00	0.00	0.00	0.00
Sweden	78	0.00	0.00	0.00	0.00	0.00
United Kingdom	.	.	.	.	.	.
Total	4,537	0.05	0.00	1.00	0.00	0.20

Source: Köhler (2007)

Table 8: Logit Regression

Table 8 reports the results of logistic regressions. Robust standard-errors clustered on bank-level are reported in parentheses. The time-dummies and the constant term are not reported. The dependent variable is a binary variable that is one if a bank was taken over between 1997 and 2005 and zero otherwise. The regression coefficients reported are to be interpreted as affecting the odds ratio with respect to the baseline case and not as marginal probability. To eliminate outliers, all bank-specific explanatory variables are winsorized at the 1- and 99-percent level. The full sample includes 1407 commercial banks and 150 deals of which 77 are domestic and 73 cross-border M&A. Since INDEPENDENCE and TRANSPARENCY are not available for all countries, the number of observation drops from 5815 to 4537. The smaller sample includes 1103 banks and 141 deals of which 72 were domestic and 69 cross-border. For a list of the variables used in the regression analysis see Table 3.

	Model 1 *Bank Characteristics*	Model 2 *Country Characteristics*	Model 3 *Baseline*	Model 4 *Investment Freedom*	Model 5 *Financial Freedom*	Model 6 *Independence of the Supervisor*	Model 7 *Transparency of Merger Control*	Model 8
SIZE	0.233***		0.417***	0.412***	0.416***	0.430***	0.446***	0.442***
	(4.05)		(6.34)	(6.40)	(6.31)	(6.40)	(6.77)	(6.89)
ROA	-0.173***		-0.196***	-0.198***	-0.201***	-0.174***	-0.182***	-0.184***
	(-3.59)		(-4.10)	(-4.01)	(-4.15)	(-3.45)	(-3.60)	(-3.51)
NIREV	0.0152***		0.0210***	0.0205***	0.0206***	0.0201***	0.0190***	0.0172**
	(2.97)		(3.32)	(3.19)	(3.24)	(3.05)	(2.84)	(2.49)
CAPITAL	0.00346		0.00292	0.00264	0.00248	0.00397	0.00647	0.00684
	(0.38)		(0.29)	(0.26)	(0.24)	(0.38)	(0.63)	(0.66)
LIQUID	-0.00676***		-0.0000312	-0.000737	-0.000273	0.00194	0.00165	0.000822
	(-2.66)		(-0.01)	(-0.31)	(-0.12)	(0.78)	(0.66)	(0.32)
EMU		0.205	0.0339	-0.000434	0.171	0.358	0.289	0.436
		(0.75)	(0.12)	(-0.00)	(0.56)	(0.75)	(0.60)	(0.95)
IMGDP		1.628**	1.584*	1.306*	1.159	2.359**	1.807	1.385
		(1.99)	(1.94)	(1.66)	(1.38)	(2.00)	(1.43)	(1.10)
STKMCAP		-1.105***	-1.463***	-1.255***	-1.617***	-1.309***	-1.185**	-0.943**
		(-3.38)	(-3.92)	(-3.51)	(-4.29)	(-2.78)	(-2.51)	(-2.07)
DBAGDP		-1.091***	-1.364***	-1.793***	-1.433***	-1.543***	-1.240***	-1.843***
		(-2.88)	(-3.71)	(-4.65)	(-3.86)	(-3.42)	(-2.76)	(-3.80)
C3		0.115	0.277	-0.208	0.524	0.547	0.256	-0.226
		(0.12)	(0.31)	(-0.26)	(0.60)	(0.58)	(0.27)	(-0.24)
INVFREE				0.0290***				0.0275**
				(2.66)				(2.08)
FINFREE					0.0106			0.00921
					(1.36)			(0.93)
INDEPENDENCE						0.0240		-0.514
						(0.06)		(-1.18)
TRANSPARENCY							1.001**	1.194**
							(2.48)	(2.37)
Observations	5,815	5,815	5,815	5,815	5,815	4,537	4,537	4,537
Pseudo R^2	0.063	0.104	0.164	0.173	0.165	0.163	0.168	0.180
Log Likelihood	-652.7	-624.1	-582.5	-576.3	-581.4	-526.0	-522.5	-515.4

Note: */**/*** indicates significance at the 10/5/1 %-level.

Table 9: Multinomial Logit Regression

Table 9 reports the results of multinomial logit regressions. Robust standard-errors clustered on bank-level are reported in parentheses. The time-dummies and the constant term are not reported. Standard errors are reported in parenthesis. The dependent variable is a polytomous variable that is zero if a bank was not taken over, one if it was taken by a domestic and two if it was acquired by a foreign bank between 1997 and 2005. The regression coefficients reported are to be interpreted as affecting the odds ratio with respect to the baseline case and not as marginal probability. To eliminate outliers, all bank-specific explanatory variables are winsorized at the 1- and 99-percent level. The full sample includes 1407 commercial banks and 150 deals of which 77 are domestic and 73 cross-border M&A. Since INDEPENDENCE and TRANSPARENCY are not available for all countries, the number of observation drops from 5815 to 4537. The smaller sample includes 1103 banks and 141 deals of which 72 were domestic and 69 cross-border. For a list of the variables used in the regression analysis see Table 3.

	Model 9 *Bank Characteristics*		Model 10 *Country Characteristics*		Model 11 *Baseline*		Model 12 *Investment Freedom*		Model 13 *Financial Freedom*		Model 14 *Independence of the Supervisor*		Model 15 *Transparency of Merger Control*		Model 16	
	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A	Domestic M&A	Cross-Border M&A
SIZE	0.284***	0.177**			0.359***	0.482***	0.353***	0.485***	0.360***	0.480***	0.366***	0.503***	0.368***	0.533***	0.367***	0.537***
	(3.49)	(2.31)			(4.40)	(4.97)	(4.38)	(5.12)	(4.39)	(4.98)	(4.33)	(5.05)	(4.37)	(5.47)	(4.38)	(5.62)
ROA	-0.195***	-0.147**			-0.187***	-0.213***	-0.185***	-0.216***	-0.189***	-0.217***	-0.175***	-0.182***	-0.176***	-0.192***	-0.177***	-0.195***
	(-3.20)	(-2.13)			(-3.06)	(-3.30)	(-2.98)	(-3.21)	(-3.07)	(-3.34)	(-2.73)	(-2.59)	(-2.76)	(-2.79)	(-2.69)	(-2.75)
NIREV	0.00822	0.0227***			0.00808	0.0347***	0.00771	0.0341***	0.00739	0.0344***	0.00781	0.0352***	0.00725	0.0330***	0.00554	0.0322***
	(1.18)	(3.39)			(1.07)	(3.45)	(1.01)	(3.35)	(0.98)	(3.40)	(0.98)	(3.28)	(0.92)	(3.01)	(0.68)	(2.88)
CAPITAL	0.00996	-0.00412			0.00933	-0.00368	0.00944	-0.00399	0.00919	-0.00407	0.0109	-0.00362	0.0120	0.00129	0.0123	0.00116
	(0.75)	(-0.37)			(0.71)	(-0.26)	(0.72)	(-0.30)	(0.69)	(-0.29)	(0.83)	(-0.25)	(0.92)	(0.09)	(0.92)	(0.08)
LIQUID	-0.00782**	-0.00570			-0.00443	0.00325	-0.00507	0.00278	-0.00460	0.00295	-0.00295	0.00579	-0.00325	0.00540	-0.00375	0.00499
	(-2.41)	(-1.48)			(-1.41)	(0.93)	(-1.63)	(0.79)	(-1.46)	(0.84)	(-0.90)	(1.50)	(-0.99)	(1.37)	(-1.16)	(1.24)
EMU			0.229	-0.416	0.0256	-0.528	0.109	-0.682	0.149	-0.395	-0.433	0.134	-0.475	0.0578	-0.299	0.155
			(0.64)	(-0.99)	(0.07)	(-1.21)	(0.27)	(-1.48)	(0.38)	(-0.89)	(-0.76)	(0.22)	(-0.82)	(0.09)	(-0.57)	(0.26)
IMGDP			-3.489*	3.666***	-3.517*	3.855***	-3.517*	3.457***	-4.064*	3.610***	-3.638*	4.916***	-4.322**	4.279***	-5.058**	4.153***
			(-1.72)	(4.13)	(-1.83)	(4.40)	(-1.90)	(4.05)	(-1.91)	(3.96)	(-1.78)	(3.56)	(-2.10)	(2.94)	(-2.27)	(2.84)
STKMCAP			-1.994***	-0.778	-2.280***	-1.110*	-1.874***	-1.212*	-2.387***	-1.245*	-1.980***	-1.052	-2.021***	-0.885	-1.417**	-0.937
			(-3.95)	(-1.51)	(-4.19)	(-1.83)	(-3.64)	(-1.88)	(-4.41)	(-1.94)	(-2.86)	(-1.36)	(-2.87)	(-1.22)	(-2.01)	(-1.17)
DBAGDP			-0.577	-1.262**	-0.693	-1.704***	-1.161**	-2.000***	-0.793*	-1.745***	-0.443	-1.702***	-0.276	-1.468**	-0.979*	-1.736***
			(-1.26)	(-2.48)	(-1.54)	(-3.42)	(-2.27)	(-4.01)	(-1.66)	(-3.50)	(-0.86)	(-2.68)	(-0.54)	(-2.26)	(-1.68)	(-2.63)
C3			-1.181	1.510	-0.943	1.326	-1.018	0.470	-0.505	1.376	-1.377	2.049*	-1.460	1.705	-1.183	1.138
			(-0.88)	(1.23)	(-0.72)	(1.17)	(-0.82)	(0.44)	(-0.38)	(1.23)	(-0.94)	(1.82)	(-1.00)	(1.53)	(-0.83)	(0.94)
INVFREE							0.0210	0.0348**							0.0223	0.0201
							(1.51)	(2.07)							(1.25)	(1.19)
FINFREE									0.00955	0.00890					0.0134	0.00564
									(0.81)	(0.87)					(0.95)	(0.40)
INDEPENDENCE											-0.327	0.552			-0.910	0.0803
											(-0.63)	(0.90)			(-1.17)	(0.13)
TRANSPARENCY													0.448	1.302**	1.232	1.135**
													(0.76)	(2.44)	(1.11)	(2.02)
Observations	5,815		5,815		5,815		5,815		5,815		4,537		4,537		4,537	
Pseudo R^2	0.064		0.141		0.196		0.203		0.197		0.204		0.208		0.214	
Log Likelihood	-749.8		-687.5		-643.5		-638.3		-642.8		-578.1		-575.2		-570.9	

Note: */**/*** indicates significance at the 10/5/1 %-level.

Table 10: Logit and Multinomial Logit Regression with Interaction Terms

Table 10 reports the results of logistic and multinomial logit regressions with interaction terms for TRANSPRENCY. The regression coefficients reported are to be interpreted as affecting the odds ratio with respect to the baseline case and not as marginal probability. Robust standard-errors clustered on bank-level are reported in parentheses. Time-dummies and the constant term are not reported. Standard errors are reported in parenthesis. The time-dummies and the constant term are not reported. To eliminate outliers, all bank-specific explanatory variables are winsorized at the 1- and 99-percent level. The sample includes 1097 commercial banks and 141 deals of which 72 were domestic and 69 cross-border. For a list of the variables used in the regression analysis see Table 3.

	Model 17	Model 20	
	Logit Regression	*Multinomial Logit Regression*	
	Domestic and Cross-Border M&A	Domestic M&A	Cross-Border M&A
SIZE	0.413***	0.363***	0.497***
	(6.05)	(4.20)	(4.74)
ROA	-0.188***	-0.180***	-0.195***
	(-3.86)	(-2.81)	(-2.96)
NIREV	0.0178***	0.00738	0.0317***
	(2.69)	(0.93)	(2.84)
CAPITAL	0.00648	0.0124	-0.000589
	(0.63)	(0.95)	(-0.04)
LIQUID	0.00117	-0.00342	0.00536
	(0.46)	(-1.04)	(1.33)
EMU	0.249	-0.461	0.0170
	(0.52)	(-0.78)	(0.03)
IMGDP	1.399	-4.453**	4.026***
	(1.15)	(-2.20)	(2.81)
STKMCAP	-1.184**	-2.037***	-0.858
	(-2.46)	(-2.87)	(-1.17)
DBAGDP	-1.211***	-0.288	-1.449**
	(-2.74)	(-0.56)	(-2.22)
C3	0.165	-1.406	1.628
	(0.18)	(-0.95)	(1.48)
TRANSPARENCY*SMALL	0.737	-0.254	1.299*
	(1.19)	(-0.29)	(1.78)
TRANSPARENCY*MEDIUM	1.029**	0.908	1.140*
	(2.22)	(1.28)	(1.93)
TRANSPARENCY*LARGE	2.431**	0.169	2.272**
	(2.56)	(0.06)	(2.31)
Observations	4,537	4,537	
Pseudo R^2	0.172	0.210	
Log Likelihood	-520.4	-573.8	

Note: */**/*** indicates significance at the 10/5/1 %-level.