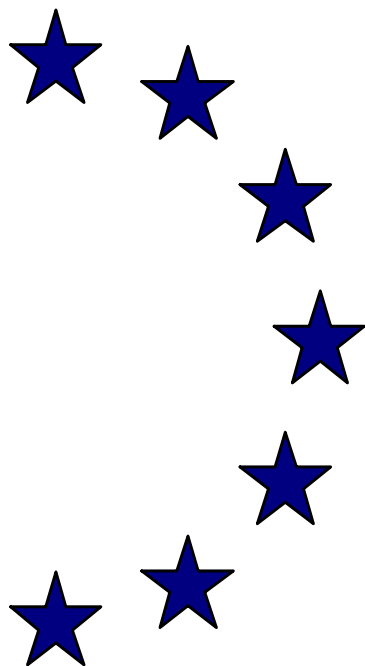


EUROPEAN ECONOMY

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ECONOMIC
AND FINANCIAL AFFAIRS

ECONOMIC PAPERS



ISSN 1725-3187

http://europa.eu.int/comm/economy_finance

N° 212

September 2004

**Determinants of European cross-border
mergers and acquisitions**

by

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I thank Joe Francois, Alexander Hijzen, Holger Gorg, Roderick Meiklejohn and Eric Strobl for commenting on previous versions of this study.

ECFIN/297/04-EN

ISBN 92-894-7879-9

KC-AI-04-212-EN-C

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Abstract

This paper investigates the determinants of European cross-border M&As using a large database. Specifically, we identify some of the different factors which contribute to the efficiency of the firms and divide these into two groups: those which can be changed through a merger or acquisition and those which cannot be altered and are more related to the environment where the acquired firm is established. Using a gravity model we find evidence for both of what have become to be known as the governance and outcome hypotheses. Additionally, we do not find any supporting evidence for more intense M&A activity between euro-zone countries.

Keywords: mergers and acquisitions,

JEL codes: F36, G28, G34

Executive Summary

This paper examines the main determinants of the cross-border mergers and acquisitions in the EU. In particular the paper intends to identify the main macroeconomic factors influencing cross-border mergers and acquisitions and the importance of the regulatory and legal environment for merger activities. Moreover, it also looks at the “euro-effects” on M&A, i.e. whether there has been a more intense merger and acquisition activity within euro-zone countries.

There has been a considerable increase in the intensity of merger and acquisition (M&A) activities during the 1990s - for example, over the 1990s the value of cross-border M&A increased fivefold. These developments warrant a better identification and understanding of the factors influencing M&A. While the empirical and theoretical literature thus far has explained important characteristics and trends of cross-border mergers and acquisitions, the results about why mergers occur remain in general limited.

Most empirical papers have found that certain macroeconomic factors (such as GDP, market capitalization, stock price) and some institutional aspects influence cross-border M&A activities. The legal and regulatory environment within a country might also influence firms’ M&A decisions. Differences in laws, regulations and enforcement between countries might increase transaction costs and asymmetries in information, which can explain certain characteristics of cross-border merger and acquisition activities. There are two main competing theories in the literature about the impact of the quality of legal and regulatory systems on M&A, the “outcome hypothesis” and the “governance hypothesis” (Rossi and Volpin (2001)).

The *outcome hypothesis* suggests that good domestic institutions are essential for a higher level of M&A activity. The hypothesis predicts that merger and acquisition activities are more intense in countries where the investor protection is better (Rossi & Volpin (2002)). This happens partly due to the better availability of funds (which is a result of good institutions) and because the willingness of the current owner to sell decreases when his private benefits of control are higher. Weaker domestic investor protection usually implies higher private benefits of control for the owner, therefore implying less intense merger and acquisition activities (Dyck and Zingales (2001)). Additionally, efficient, better functioning firms might be more attractive for acquirers than firms with lower levels of investor protection and efficiency. According to the *governance hypothesis*, mergers and acquisitions occur more between companies with different levels of investor protection. The hypothesis predicts that an active market for corporate control targets firms with poor governance. The intuition behind this argument is that an inefficiently managed firm becomes a target due to the expected increase in the firm's value after restructuring.

The paper distinguishes between factors influencing the efficiency of the firms which can be changed through mergers and acquisitions and those which cannot be altered and are more specific to the country where the acquired firm is established. We find evidence that supports both the governance and outcome hypotheses, where according to the governance hypothesis companies target firms with poor governance practices, whereas the outcome hypothesis argues that M&A activities are more intense between companies with better investor protection. More specifically, there are factors influencing corporate governance which can be changed through a merger and acquisition transaction. Target companies can adopt certain internal rules of the acquirer company, which might improve corporate governance, can gain access to better financing, and might increase their value through increased efficiency. Thus mergers and acquisitions can improve investor protection and the efficiency of companies located in countries with a lower level of investor protection. This implies that the acquirer might have incentives to

merge or acquire a less efficient company with weaker investor protection if there are expected gains due to adopting more efficient corporate governance practices in the target company. We found that, indeed, acquirer companies tend to originate from countries with relatively better legal environments and greater availability of finance than target companies. This evidence supports the governance hypothesis. However, there are certain factors which cannot be changed through mergers or acquisitions, but which also influence investor protection and the efficiency of the company. These factors are more inherent to the country where the company is located, such as the involvement of the government in the economy (tax rates, transfers and subsidies from the state) or the trade regime of the country. Our results suggest that acquirers prefer countries with better “quality” of these factors, thus supporting the outcome hypothesis.

The paper also investigates whether countries belonging to the euro-zone have experienced more intense M&A activities compared to other countries, but finds no supporting evidence that the euro had a significant impact on the intensity of M&A in the euro-zone. Since the examined period covered only a very limited period after the introduction of the euro, it is possible that positive effects will occur only over the long run. Furthermore, the introduction of the euro was followed by a period of recession which might have also limited the benefits of the euro for increased integration. It is also possible that while the introduction of the euro did not affect merger and acquisition activities at an aggregate level, it influenced activities in certain sectors (such as financial sectors). Thus further research looking at the developments of mergers and acquisitions in the euro-zone at a sectoral level would be useful in order to explore the possible effects of the euro on M&A activities.

Introduction

There has been a considerable increase in the intensity of merger and acquisition (M&A) activities during the 1990s - for example, over the 1990s the value of cross-border M&As increased fivefold. These developments warrant a better identification and understanding of the factors influencing M&As. While the empirical and theoretical literature thus far has explained important characteristics and trends of cross-border mergers and acquisitions, the results about why mergers occur remain in general limited.

Most of the previous work has concentrated on national merger and acquisition activities and only a few papers have examined cross-border M&A. Giovanni (2002) examines the main macroeconomic and financial variables which play a key role in FDI decisions of firms by using a large panel data set of cross-border M&A deals. Using a gravity model the author finds that financial variables (stock market capitalisation, credit provided to the private sector) and some other institutional factors (free trade agreements, common language, supply of skilled labour force) strongly influence the merger and acquisition decision. Furthermore, regional trade agreements are also significant driving factors. Vasconcellos and Kish (1998) use logit and multiple regression models to test the influence of macroeconomic factors (exchange rates, bond yields and stock prices) on the number and direction of cross-border acquisitions between the US and EU (only Germany, Italy, UK and France were included). They conclude, that while both stock prices and bond yields are major causal factors, exchange rates do not consistently influence M&A decisions. The results suggest that acquisitions occur more when bond yields in the acquirer's country are higher than in the target's country. Ali-Yrkko (2002) compares Finnish M&A activities with merger activities in other countries and finds that most of the cross-sectional and time-series variation of the M&A activity in different countries can be explained by GDP, the market capitalisation, and the number of listed firms on the stock market. The findings of these empirical papers show that certain macroeconomic factors (such as GDP, market capitalization, stock prices) and some other institutional factors have an impact on cross-border M&A activities.

The legal and regulatory environment within a country might also influence firms' M&A decisions. Differences in laws, regulations and enforcement between countries might increase transaction costs and asymmetries in information, which can explain certain characteristics of cross-border mergers and acquisition activities. There are two main competing theories about the

impact of the legal and regulatory quality on M&As in the literature, the “outcome hypothesis” and the “governance hypothesis” (Rossi and Volpin (2001)).

The outcome hypothesis suggests that good domestic institutions are essential for a higher level of M&A activity. The hypothesis predicts that merger and acquisition activities are more intense in countries where the investor protection is better (Rossi & Volpin (2002)). This happens partly due to the better availability of funds (which is a result of good institutions) and because the willingness of the current owner to sell is inversely related to his private benefits of control, which are higher the lesser is domestic investor protection (Dyck and Zingales (2001)). Additionally, efficient, better functioning firms might be more attractive for acquirers than firms with lower levels of investor protection and efficiency. Therefore good domestic institutions in the target country are crucial prerequisites for an active market for mergers and acquisitions (Rossi & Volpin (2002)). Bris and Cabolis (2002) examine the impact of the differences in corporate governance in cross-border mergers on the value of the industry (measured by Tobin’s Q). They find that a large part of mergers occurred between firms from countries with similar levels of shareholder protection. Rossi and Volpin (2002) find evidence for the outcome hypothesis at the national level and conclude that the intensity of M&A activity is higher in countries with better investor protection.

According to the governance hypothesis, mergers and acquisitions occur more between companies with different levels of investor protection. The hypothesis predicts that an active market for corporate control targets firms with poor governance contrary to the outcome hypothesis according to which target companies are more likely to be efficient, better functioning firms with high level of investor protection. The intuition behind this argument is that an inefficiently managed firm becomes a target due to the expected increase in the firm value after restructuring. Many studies have found empirical evidence for this at the national level¹. At the international level the argument implies that bidder companies originate from countries where investor protection is stronger than in the target company’s country. Another explanation than the efficiency argument is that companies face high costs of capital and limited access to external financing possibilities in countries where investor protection is weak. Therefore bidders from countries with better investor protection have an advantage over bidders from other countries. Rossi and Volpin (2002) find evidence for the outcome hypotheses at the national level, but at the

¹ See Shleifer and Vishny (1997) for a survey of literature.

international level they find evidence for the governance hypothesis. They conclude that in the case of cross-border mergers and acquisitions the targets are typically from countries with poorer investor protection than the acquirers, furthermore the acquirers tend to be from countries with better accounting standards and stronger rule of law than the targets. The paper also finds that cross-border M&A activity represents a larger fraction of the M&A activity in industries that are characterized by greater agency problems. The paper concludes that cross-border mergers and acquisitions can be a way for companies to improve their poor governance regime. Although Bris and Cabolis (2002) find that M&As occur more between firms from countries with similar levels of shareholder protection, they also find that the value of an industry increases when firms within that industry are acquired by foreign firms originating from countries with better shareholder protection and better accounting standards. The paper argues that there are certain factors which can be changed through a merger; while target firms usually adopt the corporate governance system of the acquiring firm by law, acquiring companies can adopt the governance practices of the target firm by private contracting. However there are certain factors such as creditor protection and corruption which are inherent to the country where the firm is located and these factors cannot be changed by the firms. Since these latter factors are inherent to the country where the target firm operates, target firms do not benefit from cross-border acquisitions from countries with less corrupt practices than their own. While the value of an industry can increase by adopting better corporate governance practices through mergers, the paper does not find evidence that corporate governance is a motive for cross-border M&As.

The objective of the current paper is twofold. First it creates an empirical framework in which both the governance and the outcome hypotheses can be examined in the case of cross-border mergers. To do so we identify some important factors which contribute to the efficiency of the firms and therefore are relevant for testing the governance and outcome hypotheses, and then divide these factors into two groups; those which can be changed through a merger or acquisition and those which cannot be altered and are more related to the environment where the acquired firm is established. This differentiation has a crucial importance when examining the outcome and governance hypotheses and allows us to set up a novel and coherent framework in which these hypotheses can be appropriately tested. The second objective of the paper is to examine whether countries belonging to the euro-zone have experienced more intense M&A activities than other countries, a topic that as yet remains unexplored. The adoption of the euro as common currency was an important step towards further integrating the economies of European countries and it was anticipated that there would be positive effects on financial market integration. One might

consequently expect that increased integration of financial markets may have made it easier for euro-zone companies to make mergers and acquisitions. This paper investigates the validity of this hypothesis empirically. The econometric analysis is conducted using the gravity model framework for the empirical assessment, a tool which has been widely used in the trade and FDI literature and more recently also in the M&A literature (see, for example, Giovanni (2002)).

The remainder of the paper is organized as follows. The next section explains the variables and the data used for the estimations. The methodology and the econometric model used for the estimation are discussed in the following section. The next part of the paper contains the results. The final section concludes.

1. Data²

Number and value of mergers and acquisitions

The data used for the empirical analysis are taken from the database of the European Commission Directorate General Economic and Financial Affairs and cover the period between 1991 and 2001. The database covers acquisitions of majority shareholdings with a value over US\$1 million or unknown. Both public and private mergers and acquisitions are included in the database. We use as target countries the EU member countries³, whereas the bidder countries include EU member countries, US, Canada, Norway and Switzerland⁴. Our primary variable of interest is the number and value of cross-border mergers and acquisitions, although we do not differentiate between mergers and acquisitions due to data restrictions. The value data in the database are incomplete since for many deals information on the value of the deal is not provided⁵; a total of 24% of the values were missing. However, the number of deals is complete. Therefore, we primarily use the number of M&As as the dependent variable for our regressions. However to test the robustness of our results we also use the values of M&A.

Graph 1 depicts the developments of M&A operations during the period 1991-2001 for the countries included in our database (target countries are EU Member States, bidder countries are EU Member States, USA, Canada, Norway and Switzerland). Merger activity exhibits a wave

² A list of all variables used in the empirical analysis and their exact definition is provided in Table 1.

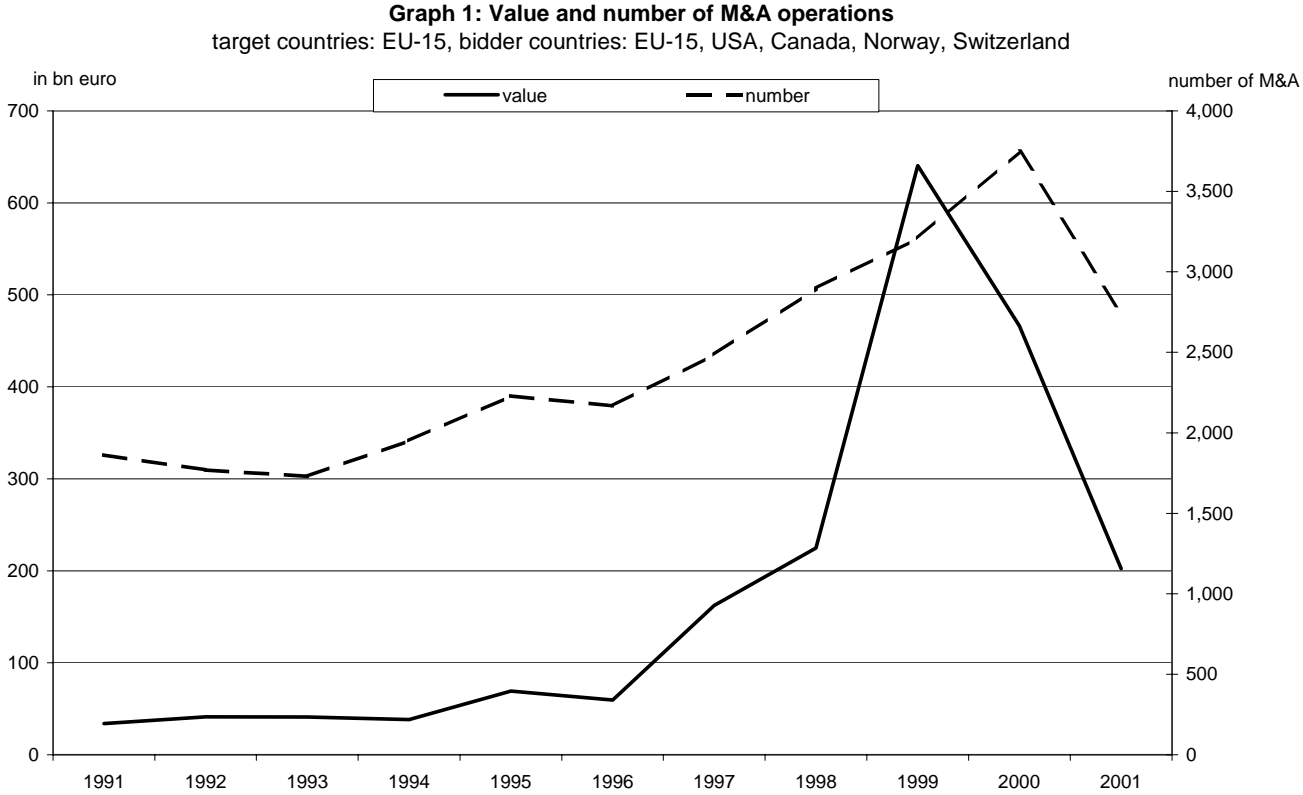
³ Belgium and Luxembourg aggregated as one country.

⁴ Our analysis is limited to these countries due to data restrictions.

⁵ Most of the deals with unknown values are probably small deals (Pryor (2001)).

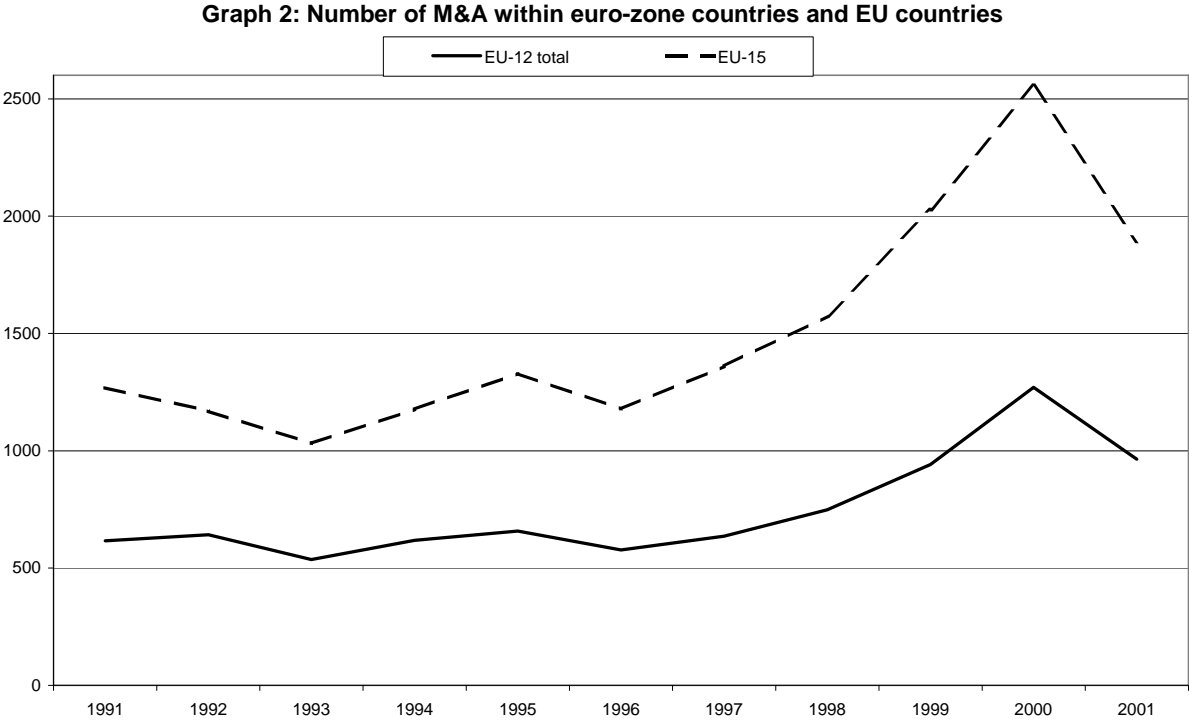
pattern. Several waves have been observed during the past with different characteristics. Some waves were characterized by diversifying acquisitions, some by hostile takeovers or by increasing concentration. The main characteristic of the last wave, which occurred during the 1990s, is that it involved deals with very high values and it was the “first-ever international” merger wave (Black (2000)). The value of cross-border M&As world-wide increased more than five-fold during the period 1990-99, from 153 billion dollars in 1990 to 792 billion dollars (OECD (2001)). The number of cross-border mergers and acquisitions followed the same trend; but on a smaller scale, i.e., during the same period the number of M&As increased from 2752 in 1990 to 7242 in 1999. During this recent wave the large-scale cross-border M&As contributed to the significant increase in the value of cross-border mergers and acquisitions. The average size of cross border M&As increased by almost two-fold during the period 1990-1999. Transactions with a value higher than 1 billion dollars accounted for more than 50% of cross-border M&As, while they represented only about 1% of the number of cross-border mergers and acquisitions (OECD (2001)).

In comparing the value and number series one should note that the increase in the value of M&A



was more pronounced than the increase in the number of M&As. While the number of M&A operations reached its highest value in 2000, in terms of value the peak was reached already in 1999.

In our analysis we also specifically focus on investigating the effects of the Economic and Monetary Union on M&A activity. Graph 2 shows the evolution of the M&As within EU member states (both target and bidder companies are located in the EU) and within euro-zone countries (both target and bidder companies are located in the euro-zone). The graph suggests that M&As followed the same trend both within EU-15 and EU-12 countries.



Legal system and regulatory environment

The degree of investor protection and corporate governance practices have important effects on the efficiency of the firms and thus have important consequences for M&A activities. Differences in the investor protection and corporate governance practices across countries are significant. In order to understand the effects of corporate governance quality on M&A it is important first to identify possible factors influencing corporate governance practices and investor protection.

Corporate governance quality is influenced by the rights of the shareholders and managers of the companies. However, these rights depend on the legal rules of the jurisdiction in which the

securities are issued. Therefore national jurisdictions influence corporate governance practices of companies, which results in important differences in investor protection between countries. However, it is not only the law which influences shareholder rights, but also other characteristics of the legal quality such as level of enforcement, stability, complexity of the legal framework etc. Since the legal system of the country where the company operates influences the internal rules of the company and the quality of the corporate governance, differences in legal systems between countries might have important effects on cross-border merger and acquisition decisions.

In a cross-border merger or acquisition the acquired company can adopt the governance practices of the acquiring firm by private contracting.⁶ In certain cases the nationality of the target firm can also change, which might implicate a change in the applicable Corporate Law, although this is rare. Nevertheless it is very likely that a target firm with weaker corporate governance would, after the merger, adopt the rules of the acquirer company. This implies that corporate governance practices can be strengthened through mergers and acquisitions.

Investor protection in a given country can be influenced not only by the quality and efficiency of the judicial system but also by the regulatory system of the country (such as credit market regulations, competition rules, trade regulations and other business regulations). The regulatory environment has an important impact not only on investment choices but also on the efficiency of the companies located in the country. Therefore when trying to test the outcome and governance hypotheses we take into account not only the legal environment of the target and acquirer's countries, but also regulatory quality and the level of government's involvement in the economy.

Most of the previous empirical studies used as proxies for the quality of legal systems and regulations the indices developed by La Porta, et al. (1998). For example Rossi and Volpin (2002) use proxies of the quality of accounting standards, rule of law, judicial efficiency and creditor rights taken from La Porta, et al. (1998). Bris and Cabolis (2002) also use indices of shareholder rights, creditor rights, efficiency of the legal system, corruption, and accounting standards from La Porta et al. (1998). These indices are mainly limited to legal aspects and provide limited proxies for the quality of the regulatory environment. Furthermore there are no time series available for these indices, and although some aspects are likely to remain stable, one might expect changes over time.

⁶ For a more detailed discussion on these issues see Bris and Cabolis (2003).

To avoid these shortcomings and to enable a more subtle examination of certain regulatory aspects which might have important effects on investor protection, we use a different set of indices.. More precisely, we employ six different time varying indices to proxy the quality of the legal system and regulatory environment of the target and bidder countries. These were taken from the Fraser Institute's "Economic Freedom Network Index", which ranks 123 countries over 38 variables, where the 38 variables are composed into five bigger groups. Each component and sub-component ranges from 0 to 10 reflecting the distribution of the underlying data. Unfortunately the data do not provide annual values for the indices in question, but only for the years 1990, 1995, 2000 and 2001. To overcome this problem we interpolated the data for the missing years; this seems reasonable since during our sample period closer inspection reveals that there were no substantial changes for any of the countries in our dataset.

It is convenient to group our six different proxies into two groups. The first group provides measures for factors which can be changed through a merger or acquisition, whereas the second group of indices proxies factors which cannot be altered and are more related to the country where the firm is active. Four indices were included in the first group. The first two proxy the extent to which countries rely on markets or individual choices rather than the political process to allocate resources. A greater involvement of the state in the economy might restrict the freedom of the companies and therefore influence their functioning and efficiency. The first *index measures government transfers and subsidies* (as a share of GDP), while the second *index measures the top marginal tax rate*. This second index is composed of two sub-indices: top marginal income tax rate (and income threshold at which it applies) and top marginal income and payroll tax rate (and income threshold at which it applies). The two sub-indices are averaged to calculate the index. The index is higher for higher marginal tax rates. Two further indices were included in the analysis to provide a proxy for freedom to exchange with foreign countries. In a country where important restrictions are applied to trade or capital flows, companies might have disadvantages due to restricted available resources. This would negatively effect the efficiency of the firms. The first *index measures the importance of tariff barriers*. The index is composed of the following sub-indices: revenue from taxes on international trade as a percentage of exports plus imports, mean tariff rate, standard deviation of tariff rates. The second index proxies the importance of international capital market controls and is composed of two sub-indices: access of citizens to foreign capital markets and foreign access to domestic capital markets, restrictions on the freedom of citizens to engage in capital market exchange with foreigners (index of capital controls among

13 IMF categories). While the above factors have an important impact on the “economic freedom” of the firms and therefore on investor protection, the importance of these factors for local firms cannot be significantly altered through a merger or acquisition.

For the second group the first index consists of a composite measure of the *regulatory quality of the credit market* and is composed of the following indicators: ownership of banks (percentage of deposits held in privately owned banks), competition (domestic banks face competition from foreign banks), extension of credit (percentage of credit extended to private sector), avoidance of interest rate controls and regulations that lead to negative real interest rates, interest rate controls (to the extent the interest rate controls on bank deposits and/or loans are freely determined by the market). The second index measures *the quality of the legal system* and takes into account judicial independence, impartiality of courts, protection of intellectual property, military interference in the rule of law and the political process and integrity of the legal system. Both the quality of the legal system and the quality of the credit market regulations can be “changed” through a merger and acquisition. While the applicable Corporate Law might change through a change of the nationality of the company, restrictions stemming from the low level of regulatory quality of the credit market can be avoided through access to credit markets in the acquirer company’s country.

Table 3 shows the average value of the index variables for each country over the time period covered by the analysis. While there are important differences between countries, differences in the value of the indices are important within countries as well. With the exception of the United Kingdom, all other countries in the sample have values both below and above the average values. Table 4 reports the average value of the indices for the bidder and target countries for each year. In capital market controls and in taxes on international trade there seems to be an improvement over the period both for target and bidder countries, however for the other indices it is not possible to determine a trend. For the indices of credit market regulations, marginal tax rates, transfers and subsidies, and legal systems for each year the bidder countries had on average higher values of these indices than the target countries. On the other hand in the case of taxes on international trade for all years the target countries had higher values than the bidders.

We also control for differences in the legal environment in our empirical analysis. Laws tend to vary a lot across countries, which can be partly explained by differences in legal origin. Civil laws give investors weaker legal rights than common laws do, independent of the level of capita income (Porta, Lopez-de-Silanes, Shleifer and Vishny (1998)). Common-law countries provide

both shareholders and creditors the strongest, while French-civil-law countries the weakest protection. German-civil-law and Scandinavian countries are in between the French – and common-law countries.⁷ While the legal rules are independent from the level of per capita income, the quality of enforcement tends to be higher in richer countries. Generally richer Scandinavian and German legal origin countries have better scores on the efficiency of the judicial system, while French legal origin countries have the worst quality of law enforcement of the four legal traditions even after controlling for per capita income (Porta, Lopez-de-Silanes, Shleifer and Vishny (2000)). To take into account similarities in the *legal systems* between countries dummy variables were included in the regression. Four different types of legal systems were identified, English-law countries, French civil-law, German and Scandinavian civil law countries (following the classification used by R L. Porta, F. Lopez-de-Silanes, A. Shleifer and R. W. Vishny (1998)) . The dummy takes the value of 1 if both target and bidder countries belong to the common law countries (and similarly for French, German and Scandinavian civil law countries). The four dummy variables capture whether having similar legal systems between bidders and targets influences merger and acquisition activities. In utilising this set of dummy variables in our econometric analysis we let the French legal system serve as the base category.

Macroeconomic variables

It is also important to control for differences in the macro environment across countries and we do so with a number of variables. Firstly we use data on *GDP and population* that originate from Eurostat, and where GDP is taken at current market prices and is given in US\$ million. In order to capture the importance of financial deepening a *market capitalisation* ratio was constructed, using data on stock market capitalisation obtained for each country from the World Federation of Exchanges for each year. More specifically, for each country a ratio of stock market capitalisation to GDP was calculated for each year and then the ratio between bidder and target countries' stock market capitalisation variable was created ($\frac{MarketCapitalisation_i}{GDP_i} / \frac{MarketCapitalisation_j}{GDP_j}$).⁸

This variable provides an approximation of the size of the financial market of the bidder country

⁷ Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) derived these conclusions after examining a data set covering legal rules pertaining to the rights of investors and to the quality of enforcement of these rules in 49 countries that have publicly traded companies. While for shareholders rules cover voting powers, ease of participation in corporate voting, and legal protections against expropriation by management, for creditors rules relate to security of the loan, the ability to grab assets in case of a loan default, inability of management to seek protection from creditors unilaterally.

⁸ A similar variable was used by Giovanni (2002) to measure the importance of financial deepening, however, instead of using a relative market capitalisation variable Giovanni (2002) uses the market capitalisation divided by GDP only

relative to the target. The size of the financial market influences the firms financing possibilities, larger financial markets tend to provide easier and cheaper funds to finance projects. High market capitalisation also helps the company to finance its acquisitions if it uses stocks as a method of payment. Among US-based firms in the 1990s about 70 percent of all deals involved stock compensation, with 58% being entirely stock financed (Andrade, Mitchell, Stafford (2001)).

2. The methodology

We use the gravity approach to model the different factors influencing merger and acquisition activities. This empirical framework has been widely used for trade, FDI flows and recently to examine mergers and acquisitions. The gravity model relates bilateral flows to GDP, distance and other factors influencing these bilateral flows. The intuition behind the model is that flows between two countries are positively influenced by their economic size and restrained by the frictions between them. More specifically, we estimate the following:

$$\ln X_{ijt} = \alpha + \beta_1 (\ln GDP / POP)_{ijt} + \beta_2 \ln POP_{ijt} + \beta_3 \ln D_{ij} + \beta_4 \ln MARCAP_{ijt} + \beta_5 Indices_{ijt} + \sum_{ijk} \gamma_{ijk} DUM_{ijkt} \quad (1)$$

where:

X_{ijt} is the number of mergers and acquisitions where the bidder country is i and target country is j ;
 $(GDP/POP)_{ijt}$ is the ratio between the bidder country's income per capita and the target country's income per capita;

POP_{ijt} is the ratio between the bidder country's population and the target country's population;

D_{ij} is the distance between the trading centres of the two countries;

$MARCAP_{ijt}$ is the natural logarithm of the ratio between the stock market capitalisation divided by GDP of bidder and target countries;

$Indices_{ijt}$ are different indices measuring the legal and regulatory environment of the bidder and target countries;

DUM is a set of dummies:

- Legalenglish, Legalgerman, Legalfrench, Legalscandinavian: a dummy for similar legal systems

for the acquirer country. The variable provides a proxy for the firms financing possibilities without taking into account other internal financing possibilities.

- EU: dummy if both countries are members of the EU⁹
- EURO: dummy if both countries are members of the EURO¹⁰
- Canada: dummy if the bidder is Canada
- US: dummy if the bidder is the United States

The dependent variable in our model is a count variable which takes on nonnegative integer values. The method used has to account for the predominance of zeros and small values and the discrete nature of the dependent variable. Therefore OLS estimation would be inappropriate. Instead the Poisson regression model has been widely used to study such data. More precisely, the Poisson regression model specifies that each y_i (dependent variable) is drawn from a Poisson distribution with parameter λ_i , which is related to the regressors x_i (Greene (2000)). The primary equation of the model is the following:

$$\text{Prob}(Y_i = y_i) = \frac{e^{-\lambda_i} \lambda_i^{y_i}}{y_i!}, \quad (2)$$

$$y_i = 0,1,2,\dots$$

where

$$\ln \lambda_i = \beta' X_j.$$

The Poisson distributional assumption imposes that the conditional variance has to equal the mean. We tested for this constraint and found overdispersion in our data. Proceeding with poisson regression would result in inefficient parameter estimates with biased variances. As hypothesis tests based on these estimates would be incorrect, we apply a negative binomial model. The negative binomial regression model relaxes the Poisson assumption that the mean equals the variance and allows overdispersion. The probability distribution of the negative binomial model is then the following:

$$\text{Prob}(Y = y_j) = \frac{e^{-\lambda_j} \lambda_j^{y_j}}{y_j!}, \quad (3)$$

$$y_j = 0,1,2,\dots$$

Our data are cross-sectional time series data covering a ten years time period. As the differences between the groups (target countries) are found to be significant, a fixed effect negative binomial panel regression (including time and country specific fixed effects) model was chosen to

⁹Austria, Finland and Sweden joined the EU in January 1996, the dummy is set accordingly.

¹⁰The EURO dummy takes values only after the introduction of the euro (from the year 1999).

undertake our analysis. Given our interest in some time invariant variables in our specification, we do not include country-partner fixed effects in the estimation.

In order to check the robustness of our results we also run the regressions on the values of the mergers and acquisitions. The main problem related to the value data is the important number of zeros and missing values (about one quarter of the value data is missing and one quarter of the values are zeros). Due to the large number of zeros we use a random effect tobit model for the specifications where the value of M&As serves as the dependent variable.

3. Results

Results from the regression using the number of M&As as dependent variable

Table 6 presents the results of three different equations, where we experiment with alternative sets of controls. One should first of all note that for the variables that are common across all the three estimated coefficients are of similar size and significance. More precisely, the coefficient of distance was significant and negative in all regressions. Thus, as the distance between the location of bidder and target increases, the merger activity between them decreases. The coefficients of the GDP/POP, Population and MARCAP variables all suggest that companies are more likely to be targeted by foreign buyers if located in countries which are relatively less “developed” compared to the acquirer’s country. The variable MARCAP captures the relative size of market capitalisation and provides a proxy for the size of the financial market of the bidder country relative to the target. Its positive and significant coefficient implies that a merger or acquisition is more likely to occur in cases where bidder countries have achieved relatively higher market capitalisation than target countries.

The Legalsystem variable reflects the relative quality of the legal system of the bidder compared to the target country. Thus, the positive and significant coefficient of the Legalsystem variable implies that a company tends to target a firm operating in a market with relatively less developed investor protection. The coefficient of the variable reinforces the governance hypothesis given that the probability of cross-border mergers and acquisitions increases with relative investor protection of the bidder compared to the target.

The regulatory quality of the credit market is measured by the Creditmarket variable. This variable is the ratio between the index of credit market regulation of bidder and target country. Similarly to the Legalsystem variable, the results suggests that cross-border mergers are more

likely between countries where the bidder country has a better quality of credit market regulation relative to the target countries (equations (1) and (2)).

As indicated by the correlation matrix given in the Appendix, a few index variables are highly correlated; therefore these explanatory variables are not included in the same equations. For example, the top marginal tax rate variable is highly correlated with government transfers and subsidies, and thus they both proxy the same factor, the importance of the state's involvement in the economy. Nevertheless, as a robustness test, we run two separate regressions, first including only the variable of government transfers and subsidies and next including only the variable of top marginal tax rate. The index measuring the importance of tariff barriers is highly correlated with the EU dummy and therefore it is not included in all the equations.

Indices of capital market control and tariffs were included separately both for target and bidder countries. Tariff barriers are not important in the case of bidder countries; however the coefficient for target countries is significant and positive (equation (2)). This result suggests that companies located in countries with more liberal trade regimes are more likely to be targets. It also shows that cross-border mergers and acquisitions are not motivated by "tariff jumping". Similarly the coefficient of the capital market controls variable is positive and significant for the target country, and not significant for the bidder (equations (1) and (3)).

Two indices were included in the regressions measuring the importance of the government's involvement in the economy. The coefficient of the index measuring government transfers and subsidies was significant and negative for the bidder countries, while positive and significant for the target countries (equations (1) and (2)). Similar results were obtained for the index measuring the top marginal tax rate (equation (3)). A more beneficial tax regime attracts companies, and gives higher probabilities for companies to be targets when located in countries with less burdensome taxation systems. The coefficient of these indices suggests that acquirer companies prefer firms located in countries where the state involvement in the economy is lower.

The findings above reinforce both the outcome hypothesis and the governance hypothesis. In countries where available financing possibilities are weaker, captured by the Creditmarket variable, companies are more likely to be targets. Through a cross-border merger in which the acquirer company is located in a country where the availability of financing is better, the target company may achieve efficiency improvements. Similarly, the bidders' better legal protection for

shareholders can be extended to some extent to the targets. The results show that for these factors it is indeed the quality of an acquirer's country which matters, and not that of the target. On the other hand, there are certain factors which cannot be changed through a merger, although they still influence investor protection and the quality of the corporate governance. For these factors the outcome hypothesis is supported by our results; companies located in countries with a higher quality of regulatory environment and higher “economic freedom” are more likely to be targets than countries with greater involvement of government in the economy (in the form of tax regime) and lower level of openness.

The second objective of the study was to examine whether countries which are members of the euro-zone have more intensive merger and acquisition activity between them than other member states of the EU. Table 7 shows the results of the regressions analysing a possible “euro-effect” using two sets of variables. The difference between these two sets of variables is that the first includes the variables measuring the significance of government transfers and subsidies, while the second set contains the variables measuring tax rates instead of transfers and subsidies. In the first equation an EU dummy is included, the coefficient of which is positive and implies that when both target and bidder countries are EU members the propensity of the occurrence of mergers and acquisitions between them is higher than between EU countries and non member states. The second equation includes a dummy for the euro-zone countries. When the EURO dummy is included the coefficient of the EU dummy becomes smaller as the coefficient of the EURO is positive and highly significant. However, the positive and significant coefficient of the EURO dummy is likely to reflect the general developments of mergers and acquisitions in the EU area rather than a positive impact of the euro on M&A activities. This result seems to capture the increased merger and acquisition activities which took place within the EU compared to countries outside the EU. Several merger waves have been observed during the past. Our period also includes a noticeable wave of merger and acquisition activities. Table 2 shows the number of mergers and acquisitions between different groups of countries during 1991-2001. The number of M&A reached a peak for EU countries in 2000, while for non-EU countries the number of M&A increased until 1998 and then started to decline (mainly due to the influence of the US and Canada). The wave followed the same trend in euro-zone member states as in other EU member states. Therefore we cannot conclude from our empirical analysis that there was increased merger and acquisition activity between euro-zone countries compared to other EU member states. In the third equation a EURO dummy was included together with two types of EU dummies. One of the EU dummies (EUy9901) only takes values for the same period as the EURO dummy (1999-

2001), the other EU dummy (EU) takes values for the whole period. While the EU dummy which is included for the same period as the EURO dummy is positive and significant, the EURO dummy becomes insignificant. These results imply that after the introduction of the euro, merger and acquisition activities were not more frequent between member countries of the euro-zone than between non euro-zone countries.

Results from the regression using the value of M&As

The results using the values are very similar to the previously obtained results using the numbers of mergers and acquisitions (Tables 8 and 9). The variable reflecting the quality of the legal system is positive and significant, confirming that the probability of cross-border mergers and acquisitions increases with higher relative investor protection of the bidder compared to the target. The index measuring the relative quality of the credit market regulations is also significant and positive. Additionally, the indices measuring the quality of the taxes and the tariff barriers have the same sign as in the previous regressions using the values as dependent variables and the coefficients are significant. These estimates show that the results obtained with the negative binomial regressions are robust.

The EU dummy is significant in the first equation similarly to the results obtained in the previous results. The EURO dummy is significant and positive in the second equation, but becomes insignificant in the third equation (in which the EU dummy is included for the same period as the EURO dummy) while the EU dummy becomes significant.

4. Conclusions

This paper aimed to identify the main macroeconomic factors influencing the European cross-border mergers and acquisitions. We do so by distinguishing between factors influencing the efficiency of the firms which can be changed through a merger and acquisition and those which cannot be altered and are more specific to the country where the acquired firm is established.

We find evidence that supports both the governance and outcome hypotheses, where according to the governance hypothesis companies target firms with poor governance practices whereas the outcome hypothesis argues that M&A activities are more intense between companies with better investor protection. More specifically, there are factors influencing corporate governance which can be changed through a merger and acquisition transaction. Target companies can adopt certain inside rules of the acquirer company, which might improve corporate governance, can have access

to better financing, and might increase the value of the firm through increased efficiency. Thus mergers and acquisitions can improve investor protection and the efficiency of companies located in countries with a lower level of investor protection. This implies that the acquirer might have incentives to merge or acquire a less efficient company with weaker investor protection if there are expected gains due to adopting more efficient corporate governance practices in the target company. We found that, indeed, acquirer companies tend to originate from countries with relatively better legal environments and greater availability of finance than target companies. This evidence supports the governance hypothesis. However, there are certain factors which cannot be changed through mergers or acquisitions, but which also influence investor protection and the efficiency of the company. These factors are more inherent to the country where the company is located, such as the involvement of the government in the economy (tax rates, transfers and subsidies from the state) or trade regime of the country. Our results suggest that acquirers prefer countries with better “quality” of these factors thus supporting the outcome hypothesis.

The paper also investigated whether countries belonging to the euro-zone have experienced more intense M&A activities than other countries, but found no supporting evidence that the euro had a significant impact on the intensity of M&As in the euro-zone. Since the examined period covered only a very limited period after the introduction of the euro, it is possible that positive effects will occur only over the long run. It is also possible that while the introduction of the euro did not affect merger and acquisition activities at an aggregate level, it influenced activities in certain sectors (such as financial sectors). Thus further research looking at the developments of mergers and acquisitions in the euro-zone at a sectoral level would be useful in order to explore the possible effects of the euro on M&A activities in the euro-zone.

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Table 1 Description of variables used in the regression

Variable		Obs	Mean	Std. Dev.	Min	Max
MergersA	Number of M&As	3025	9.642	22.890	0.000	467.00
LGDPpop	Log of GDP per population	3025	0.066	0.499	-1.262	1.437
LPOP	Log of population	3025	0.086	1.556	-3.127	4.311
LDistance	Log of distance	3025	7.230	0.803	5.620	9.078
LMARCAP	Log of stock market capitalization ratio	3025	0.103	0.908	-2.856	3.046
Btransfersandsubsidies	Index of government transfers and subsidies for bidder country	3025	4.396	1.469	0.800	9.000
Ttransfersandsubsidies	Index of government transfers and subsidies for target country	3025	4.051	1.433	0.800	9.000
Btopmarginaltaxrate	Index of top marginal tax rate for bidder country	3025	3.119	1.956	0.100	8.000
Ttopmarginaltaxrate	Index of top marginal tax rate for target country	3025	2.440	1.353	0.100	6.000
creditmarketreg	Relative index of credit market regulation	3025	1.025	0.179	0.579	1.728
Bcapitalmarket	Index of capital market control for bidder country	3025	8.233	1.342	2.532	9.919
Tcapitalmarket	Index of capital market control for target country	3025	8.142	1.489	2.532	9.919
Legalsystem	Relative index of the quality of legal systems	3025	1.029	0.165	0.593	1.687
Ttarrifs	Index of trade barriers for target country	3025	8.633	0.550	5.900	9.900
Btarrifs	Index of trade barriers for bidder country	3025	8.794	0.286	7.998	9.300
Canada	Dummy for Canada	3025	0.055	0.227	0.000	1.000
US	Dummy for US	3025	0.055	0.227	0.000	1.000
Legalenglish	Dummy for English legal system country pairs	3025	0.022	0.146	0.000	1.000
Legalgerman	Dummy for German legal system country pairs	3025	0.015	0.120	0.000	1.000
Legalscandinavian	Dummy for Scandinavian legal system country pairs	3025	0.033	0.178	0.000	1.000
EU	Dummy for EU country pairs	3025	0.646	0.478	0.000	1.000
EURO99	Dummy for euro-zone country pairs	3025	0.119	0.324	0.000	1.000
euy9901	Dummy for EU country pairs from year 1999	3025	0.213	0.410	0.000	1.000

Table 2 **Number of Mergers and acquisitions between different groups of countries**

	All countries	Euro-zone countries	EU countries	Non euro EU members	Non EU countries
1991	1855	867	1262	395	593
1992	1764	801	1164	363	600
1993	1724	696	1026	330	698
1994	1949	793	1175	382	774
1995	2229	864	1328	464	901
1996	2166	752	1177	425	989
1997	2486	851	1360	509	1126
1998	2888	995	1564	569	1324
1999	3197	1330	2015	685	1182
2000	3742	1778	2550	772	1192
2001	2743	1288	1890	602	853

Table 3 Average values of the indices by countries

	Credit market regulation	Top marginal tax rate	Transfers and subsidies	Taxes on international trade	Capital market controls	Legal system
Austria	7.392	2.000	3.467	8.733	7.65	8.897
Belg-Lux	8.53	1.848	3.298	8.844	9.485	8.344
Canada	8.583	3.808	5.868	7.255	8.399	8.928
Denmark	9.218	.6427	3.522	8.844	8.104	9.088
Finland	8.927	1.677	4.65	8.724	6.917	9.165
France	8.435	2.177	2.664	8.844	6.846	7.665
Germany	7.754	3.262	4.347	8.799	9.636	8.955
Greece	6.282	4.438	5.95	8.826	6.132	6.334
Ireland	8.289	2.979	4.82	8.57	7.833	8.752
Italy	6.699	1.649	3.169	8.871	7.575	7.105
Netherlands	9.118	1.534	2.461	8.799	9.262	9.114
Norway	8.353	3.197	4.039	7.97	8.196	8.865
Portugal	7.132	3.353	6.224	8.78	7.494	7.837
Spain	8.045	2.935	5.315	8.762	8.036	7.32
Sweden	8.491	.9926	1.847	8.935	8.642	8.786
Switzerland	8.118	7.908	5.401	8.76	9.489	8.983
UK	9.371	5.266	5.613	8.753	9.398	8.800
United States	9.153	6.908	6.498	8.254	8.254	8.803
Average	8.216	3.143	4.397	8.629	8.186	8.430

Table 4 Average values of the indices over time

	Credit market regulation		Top marginal tax rate		Transfers and subsidies		Taxes on international trade		Capital market controls		Legal system	
	target	bidder	target	bidder	target	bidder	target	bidder	target	bidder	target	bidder
1991	8.580	8.872	2.624	3.656	4.176	4.634	8.482	8.438	8.006	8.125	8.038	8.226
1992	8.393	8.762	2.598	3.845	4.035	4.606	8.517	8.434	7.922	8.190	8.076	8.295
1993	8.433	8.741	2.686	4.123	3.888	4.628	8.571	8.433	8.234	8.424	8.195	8.439
1994	8.359	8.667	2.625	4.192	3.638	4.588	8.627	8.426	8.453	8.632	8.294	8.584
1995	8.285	8.601	2.837	4.212	3.681	4.396	8.673	8.458	8.752	8.793	8.417	8.678
1996	8.298	8.675	2.802	4.467	3.727	4.646	8.767	8.498	8.797	8.708	8.522	8.768
1997	8.334	8.701	2.916	4.480	3.893	4.765	8.859	8.570	8.767	8.707	8.576	8.859
1998	8.389	8.701	3.026	4.511	4.008	4.873	8.953	8.630	8.761	8.656	8.623	8.910
1999	8.369	8.605	2.965	4.192	4.042	4.764	9.054	8.776	8.732	8.673	8.700	8.935
2000	8.405	8.564	3.165	4.053	4.197	4.725	9.149	8.912	8.728	8.665	8.767	8.946
2001	8.373	8.551	2.908	3.991	4.273	4.812	9.200	8.959	8.577	8.613	8.269	8.472

Table 5 Legal system of countries included in the analysis

Legal system	Target countries	Bidder countries
English	Ireland	Ireland
	UK	UK
		Canada
		US
French	Belgium-Luxembourg	Belgium-Luxembourg
	France	France
	Greece	Greece
	Italy	Italy
	Netherlands	Netherlands
	Portugal	Portugal
	Spain	Spain
German	Austria	Austria
	Germany	Germany
		Switzerland
Scandinavian	Denmark	Denmark
	Finland	Finland
	Sweden	Sweden
		Norway

Table 6 Regression results using the number of M&A as dependent variable

	(1)	(2)	(3)
LGDPpop	0.352 (0.068)**	0.270 (0.066)**	0.663 (0.064)**
LPOP	0.593 (0.016)**	0.634 (0.015)**	0.625 (0.016)**
LDistance	-0.774 (0.029)**	-0.815 (0.027)**	-0.761 (0.028)**
LMARCAP	0.377 (0.025)**	0.344 (0.022)**	0.441 (0.028)**
Btransfersandsubsidies	-0.081 (0.011)**	-0.108 (0.010)**	
Ttransfersandsubsidies	0.143 (0.019)**	0.094 (0.017)**	
creditmarketreg	0.792 (0.168)**	1.377 (0.160)**	0.618 (0.166)**
Bcapitalmarket	-0.013 (0.013)		-0.025 (0.014)
Tcapitalmarket	0.116 (0.013)**		0.084 (0.013)**
Legalsystem	1.391 (0.184)**	0.908 (0.155)**	0.982 (0.176)**
Canada	0.537 (0.101)**	0.426 (0.106)**	0.425 (0.100)**
US	1.293 (0.097)**	1.171 (0.092)**	1.067 (0.095)**
Legalenglish	1.557 (0.072)**	1.578 (0.070)**	1.593 (0.063)**
Legalgerman	1.311 (0.070)**	1.318 (0.064)**	1.275 (0.070)**
Legalscandinavian	1.419 (0.063)**	1.407 (0.056)**	1.416 (0.066)**
EU	0.280 (0.043)**	0.040 (0.042)	0.283 (0.045)**
Ttarrifs		1.033 (0.050)**	
Btarrifs		-0.034 (0.038)	
Btopmarginaltaxrate			-0.043

			(0.010)**
Ttopmarginalexrate			0.294
			(0.018)**
Constant	2.824	-4.126	3.350
	(0.341)**	(0.479)**	(0.327)**
Observations	3025	3025	3025
Number of group(target)	14	14	14

Standard errors in parentheses

* significant at 5%; ** significant at 1%

Table 7 Euro effects, using the number of M&A as dependent variable

	(1)	(2)	(3)	(1)	(2)	(3)
LGDPpop	0.352 (0.068)**	0.470 (0.068)**	0.455 (0.067)**	0.663 (0.064)**	0.686 (0.064)**	0.688 (0.064)**
LPOP	0.593 (0.016)**	0.616 (0.015)**	0.618 (0.015)**	0.625 (0.016)**	0.632 (0.015)**	0.634 (0.015)**
LDistance	-0.774 (0.029)**	-0.777 (0.028)**	-0.797 (0.028)**	-0.761 (0.028)**	-0.774 (0.028)**	-0.802 (0.028)**
LMARCAP	0.377 (0.025)**	0.382 (0.023)**	0.357 (0.023)**	0.441 (0.028)**	0.421 (0.026)**	0.401 (0.025)**
Btransfersandsubsidies	-0.081 (0.011)**	-0.060 (0.011)**	-0.092 (0.011)**			
Ttransfersandsubsidies	0.143 (0.019)**	0.123 (0.018)**	0.061 (0.018)**			
creditmarketreg	0.792 (0.168)**	1.186 (0.163)**	1.175 (0.160)**	0.618 (0.166)**	1.000 (0.164)**	0.997 (0.160)**
Bcapitalmarket	-0.013 (0.013)	-0.028 (0.013)*	-0.011 (0.013)	-0.025 (0.014)	-0.036 (0.013)**	-0.020 (0.013)
Tcapitalmarket	0.116 (0.013)**	0.109 (0.012)**	0.095 (0.012)**	0.084 (0.013)**	0.081 (0.013)**	0.078 (0.013)**
Legalsystem	1.391 (0.184)**	1.284 (0.175)**	0.977 (0.172)**	0.982 (0.176)**	1.012 (0.170)**	0.752 (0.168)**
Canada	0.537 (0.101)**	0.505 (0.099)**	0.589 (0.098)**	0.425 (0.100)**	0.448 (0.099)**	0.488 (0.097)**
US	1.293 (0.097)**	1.157 (0.095)**	1.296 (0.094)**	1.067 (0.095)**	1.028 (0.093)**	1.142 (0.092)**
Legalenglish	1.557 (0.072)**	1.530 (0.071)**	1.567 (0.069)**	1.593 (0.063)**	1.560 (0.064)**	1.569 (0.064)**
Legalgerman	1.311 (0.070)**	1.300 (0.066)**	1.327 (0.065)**	1.275 (0.070)**	1.270 (0.067)**	1.296 (0.066)**
Legalscandinavian	1.419 (0.063)**	1.451 (0.062)**	1.389 (0.059)**	1.416 (0.066)**	1.434 (0.065)**	1.374 (0.062)**
EU	0.280 (0.043)**	0.207 (0.042)**	0.051 (0.042)	0.283 (0.045)**	0.230 (0.045)**	0.072 (0.045)
EURO99		0.505 (0.035)**	0.009 (0.047)		0.433 (0.036)**	0.047 (0.046)

euy9901			0.583 (0.040)**			0.480 (0.039)**
Btopmarginalexrate				-0.043 (0.010)**	-0.029 (0.009)**	-0.044 (0.009)**
Ttopmarginalexrate				0.294 (0.018)**	0.237 (0.018)**	0.189 (0.018)**
Constant	2.824 (0.341)**	2.859 (0.331)**	3.797 (0.333)**	3.350 (0.327)**	3.311 (0.320)**	3.965 (0.319)**
Observations	3025	3025	3025	3025	3025	3025
Number of group(target)	14	14	14	14	14	14

Table 8 Regression results using the values as dependent variable

	(1)	(2)	(3)
LGDPpop	1.551 (0.232)**	1.251 (0.217)**	1.838 (0.202)**
LPOP	1.296 (0.062)**	1.481 (0.062)**	1.387 (0.065)**
LDistance	-1.802 (0.115)**	-1.653 (0.108)**	-1.836 (0.112)**
LMARCAP	0.892 (0.095)**	0.825 (0.086)**	0.834 (0.102)**
Btransfersandsubsidies	-0.128 (0.050)*	-0.236 (0.048)**	
Ttransfersandsubsidies	0.152 (0.053)**	-0.037 (0.049)	
creditmarketreg	0.576 (0.578)	1.584 (0.545)**	1.465 (0.599)*
Bcapitalmarket	0.082 (0.055)		0.026 (0.055)
Tcapitalmarket	0.346 (0.048)**		0.337 (0.049)**
Legalsystem	2.474 (0.589)**	1.398 (0.545)*	2.319 (0.585)**
Canada	1.796 (0.348)**	1.030 (0.393)**	1.532 (0.349)**
US	2.399 (0.413)**	1.251 (0.409)**	1.790 (0.419)**
Legalenglish	2.337 (0.346)**	2.139 (0.327)**	2.038 (0.352)**
Legalgerman	0.372 (0.458)	0.516 (0.432)	0.343 (0.458)
Legalscandinavian	2.481 (0.305)**	3.022 (0.297)**	2.234 (0.311)**
EU	0.754 (0.170)**	-0.167 (0.172)	0.589 (0.173)**
Ttarrifs		3.487 (0.241)**	
Btarrifs		-0.010 (0.154)	
Btopmarginaltaxrate			-0.024

			(0.039)
Topmarginaltaxrate			0.355
			(0.052)**
Constant	8.114	-15.752	7.427
	(1.262)**	(1.993)**	(1.274)**
Observations	2327	2327	2327
Number of group(target)	14	14	14

Table 9 Euro effects, using the value of M&A as dependent variable

	(1)	(2)	(3)	(1)	(2)	(3)
LGDPpop	1.551 (0.232)**	1.565 (0.227)**	1.657 (0.223)**	1.838 (0.202)**	1.917 (0.198)**	1.741 (0.192)**
LPOP	1.296 (0.062)**	1.314 (0.061)**	1.269 (0.060)**	1.387 (0.065)**	1.410 (0.063)**	1.326 (0.061)**
LDistance	-1.802 (0.115)**	-1.814 (0.113)**	-1.905 (0.111)**	-1.836 (0.112)**	-1.824 (0.110)**	-1.952 (0.108)**
LMARCAP	0.892 (0.095)**	0.907 (0.093)**	0.908 (0.091)**	0.834 (0.102)**	0.853 (0.099)**	0.984 (0.097)**
Btransfersandsubs idies	-0.128 (0.050)*	-0.123 (0.049)*	-0.157 (0.048)**			
Ttransfersandsubs idies	0.152 (0.053)**	0.157 (0.052)**	0.092 (0.051)			
creditmarketreg	0.576 (0.578)	0.644 (0.567)	0.671 (0.554)	1.465 (0.599)*	1.573 (0.579)**	0.318 (0.563)
Bcapitalmarket	0.082 (0.055)	0.041 (0.054)	0.002 (0.053)	0.026 (0.055)	-0.021 (0.054)	-0.003 (0.053)
Tcapitalmarket	0.346 (0.048)**	0.324 (0.048)**	0.286 (0.047)**	0.337 (0.049)**	0.316 (0.048)**	0.275 (0.047)**
Legalsystem	2.474 (0.589)**	2.498 (0.578)**	2.091 (0.566)**	2.319 (0.585)**	2.315 (0.574)**	2.139 (0.560)**
Canada	1.796 (0.348)**	1.766 (0.341)**	2.038 (0.335)**	1.532 (0.349)**	1.465 (0.342)**	1.832 (0.333)**
US	2.399 (0.413)**	2.304 (0.406)**	2.644 (0.399)**	1.790 (0.419)**	1.636 (0.408)**	2.401 (0.393)**
Legalenglish	2.337 (0.346)**	2.463 (0.340)**	2.445 (0.332)**	2.038 (0.352)**	2.269 (0.345)**	2.136 (0.336)**
Legalgerman	0.372 (0.458)	0.192 (0.449)	0.190 (0.439)	0.343 (0.458)	0.180 (0.448)	0.103 (0.437)
Legalscandinavian	2.481 (0.305)**	2.567 (0.300)**	2.143 (0.296)**	2.234 (0.311)**	2.283 (0.303)**	2.317 (0.301)**
EU	0.754 (0.170)**	0.461 (0.171)**	0.115 (0.171)	0.589 (0.173)**	0.284 (0.172)	0.050 (0.172)
EURO99		1.432 (0.172)**	-0.007 (0.227)		1.567 (0.173)**	0.003 (0.224)
euy9901			1.802			1.727

			(0.193)**			(0.191)**
Btopmarginaltaxrate				-0.024	-0.031	-0.064
				(0.039)	(0.038)	(0.037)
Ttopmarginaltaxrate				0.355	0.324	0.207
				(0.052)**	(0.051)**	(0.050)**
Constant	8.114	8.625	10.685	7.427	7.902	10.915
	(1.262)**	(1.241)**	(1.235)**	(1.274)**	(1.247)**	(1.224)**
Observations	2327	2327	2327	2327	2327	2327
Number of group(target)	14	14	14	14	14	14

Appendix: Pairwise correlation matrix of variables

	LGDPpop	LPOP	LDistance	LMarcap	Bidder transfers and subsidies	Target transfers and subsidies	Bidder top marginal tax rate	Target top marginal tax rate	credit market	Bidder capital market control	Target capital market control	Legal system	Target tarrifs	Bidder tarrifs
LGDPpop	1													
LPOP	-0.054	1												
LDistance	0.04*	0.276*	1											
LMARCAP	0.309*	0.119*	0.122*	1										
Btransfersandsubsidies	-0.306	0.16*	0.447*	0.087*	1									
Ttransfersandsubsidies	0.48*	-0.005	0.184*	0.071*	-0.034	1								
Btopmarginaltaxrate	0.039*	0.249*	0.271*	0.308*	0.663*	-0.013	1							
Ttopmarginaltaxrate	0.376*	-0.224*	0.071*	-0.025	-0.023	0.650*	-0.016	1						
acreditmarketreg	0.57*	-0.039*	0.156*	0.638*	-0.092*	0.210*	-0.024	0.230*	1					
Bcapitalmarketcontr	0.29*	0.067*	-0.197*	0.330*	-0.101*	0.018	0.150*	0.062*	0.241*	1				
Tcapitalmarketcontr	-0.246	-0.101*	-0.203*	-0.290*	0.021	-0.179*	0.048*	0.004	-0.352*	0.091*	1			
Legalsystem	0.670*	-0.233*	0.120*	0.297*	-0.100*	0.270*	0.007	0.257*	0.6347*	0.250*	-0.259*	1		
Ttarrifs	-0.074	-0.052*	-0.383*	-0.070*	-0.216*	0.071*	-0.146*	0.092*	-0.10*	0.158*	0.111*	-0.099*	1	
Btarrifs	-0.043	-0.057*	-0.014	-0.025	0.117*	-0.051*	0.118*	0.107*	-0.023	0.230*	0.400*	0.070*	0.407*	1
Canada	-0.017	0.085*	0.453*	0.092*	0.241*	-0.001	0.084*	0.000	0.060*	0.030	0.004	0.087*	-0.602*	0.001
US	0.13*	0.426*	0.478*	0.198*	0.344*	-0.001	0.460*	0.000	0.150*	0.004	0.004	0.065*	-0.166*	0.001
Legalenglish	0.022	0.107*	0.101*	-0.012	0.149*	0.121*	0.139*	0.186*	-0.014	0.021	0.047*	-0.020	-0.156*	-0.069*
Legalgerman	0.030	-0.057*	-0.131*	0.117*	0.021	-0.012	0.134*	0.017	0.009	0.075*	0.041*	-0.019	0.029	-0.012
Legalscandinavian	0.001	-0.024	-0.193*	-0.064*	-0.100*	-0.091*	-0.124*	-0.182*	-0.044*	-0.033	-0.031	-0.038*	-0.029	0.026
EU	-0.213*	-0.066*	-0.370*	-0.17*	-0.187*	0.098*	-0.372*	0.119*	-0.076*	0.039*	0.115*	-0.113*	0.5238*	0.251*
EURO99	-0.057*	-0.017	-0.099*	-0.053*	-0.049*	0.035	-0.046*	0.116*	-0.036*	0.084*	0.1009*	-0.028	0.338*	0.445*

	Canada	US	Legalenglish	Legalgerman	Legalscandinavian	EU
Canada	1					
US	-0.058*	1				
Legalenglish	0.183*	0.183*	1			
Legalgerman	-0.029	-0.029	-0.018	1		
Legalscandinavian	-0.040*	-0.040*	-0.028	-0.022	1	
EU	-0.325*	-0.325*	-0.098*	-0.095*	-0.109*	1
EURO99	-0.088*	-0.088*	-0.050*	0.006	-0.0677*	0.272*