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The Concurrent Impact of Cultural, Political, and Spatial Distances on International Mergers and Acquisitions

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Abstract

This article explores the concurrent effects of cultural, political, and spatial distances on M&A flows occurring between any two countries belonging to the whole European Union (27 States) or to the European Neighbours group (16 States) over the period 2000-2011. In the econometric analysis, based on zero-inflated models, we simultaneously estimate the probability of engaging in a cross-border M&A and the intensity of the deals. This allows us to adequately model the two different mechanisms which may result in the absence of deals in the cross-border bilateral M&A transactions. The absence of deals may be due to either the lack of any transactions or unsuccessful negotiations. Taking into account the effect of population, gross domestic product, technological capital, financial conditions and quality of the institutions, we find robust evidence that the multi-dimensional distance between two countries negatively affects both the probability and the intensity of M&A deals.

Keywords

Cross-border M&A, cultural and political distances, geographical distance, European Union, European Neighbouring Countries, Zero-inflated models

JEL: F23, G34, C31

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1. INTRODUCTION

The unprecedented rise of mergers and acquisitions (M&A) worldwide in the last two decades has seen European firms very active and brought nourishment and turmoil to the economy of the European area. Spurred by such factors as market globalization and hyper-competition, firms strategically use M&A to achieve economies of scale, gain market shares, establish a transnational bridgehead without excessive start-up costs, gain access to a foreign market, and circumvent government regulations. To cite some examples, the volume of M&A by European companies has grown similar to that of the US (Moschieri and Campa, 2013) and the M&A market value in Eastern Europe tripled between 2004 and 2006 (PricewaterhouseCoopers, 2006).

Opportunities notwithstanding, entering or expanding existing operations in foreign markets through M&A transactions presents a series of risks and challenges for both the bidder and target, which are systematically influenced by a wide array of factors and by various forms of distance between the two parties. Countries characteristics, economies of scale, transport costs, degree of competition, final consumer markets, financial conditions, technological opportunities are just few examples of factors widely studied by the literature as determinants of cross-border transactions.

Traditionally, the effects of such determinants have been investigated within the gravity model framework, with the economics literature emphasising the role played by geographical distance, building on the notion that international attractiveness decreases with distance. On the other hand, the international business literature has devoted less attention to how geographical distance influences the M&A decisions, but it has extensively investigated how distance, embodied in the cultural, institutional and political dimensions, can have an important effect on the M&A flow (Kogut and Singh, 1988; Morosini et al., 1998; Sleuwaegen, 1998; Brouthers, 2002, Delios and Henisz, 2003; Rossi and Volpin, 2004, Tihany et al., 2005). In this vein, while trade literature has only recently started to consider barriers related with cultural or institutional distance (de Groot et al. 2004, Portes and Rey, 2005; Guiso et al., 2009; Ahern et al., 2012), the most recent research in international business recognizes the need to study this subject in depth combining different approaches (Chakrabarti and Mitchell, 2013).

Our paper aims to contribute to this debate by considering the concurrent effect of different dimensions of distance - cultural, political and spatial - suggested by the literature. Different dimension of distance, in fact, are not only likely to affect M&A flows to a different extent, but may also have a different impact on the probability of observing cross-border M&A deals. As a matter of fact, researchers have emphasized how different distances may influence the success of the post-acquisition and integration process (Birkinshaw et al., 2000; Chakrabarti et al. 2009), but we know surprisingly little about how the same distances affect firms' decision on whether undertaking

acquisition activities. Moreover, by studying the influences of different distances within the same model we improve on previous studies, which in most cases have favoured one specific kind of distance over the others, because in this way we provide estimated effects not biased by the omission of relevant distance dimensions.

To analyse the simultaneous effect exerted by geographical, cultural and political-institutional distances we focus on the flows of M&A deals occurred over the period 2000-2011 in 43 countries encompassing the 27 member countries of the European Union (EU) and the 16 countries bordering the EU to the East or South, constituting the group of the European neighbouring countries (ENC). The size of the market and the broadly different characteristics of the EU and ENC countries give us a unique opportunity to inquire on the determinants of the size and direction of M&A flows.

By considering this sample of 43 countries we offer our second contribution to the empirical literature on M&A determinants. The existing literature has primarily examined the EU and North American markets (Moschieri and Campa, 2009; Coeurdacier et al. 2009), overlooking the ENC. Nowadays, though, the ENC are acquiring a growing importance for the EU. The latter, within the European Neighbourhood Policy (ENP), is pursuing a strong integration process in the wider Europe by establishing cross-border co-operation programmes with the neighbouring non-candidate countries. From a policy perspective, by enhancing our understanding of the determinants of M&A flows among EU and ENC countries this research has manifold implications. It provides useful insights to assess whether the ENP is becoming effective in offsetting tangible and intangible barriers between the two country groups. In fact, among the different ways in which valuable interactions between the EU and ENC are generated, capital transactions represent a key channel and M&A are one of the most effective ways for directing capital towards productive sites. Moreover, since we know from the literature that the integration process (Coeurdacier et al. 2009) favoured M&A flows inside the EU and that generally cross-border M&A allow firms to diversify their production abroad leading to increased economic integration across countries, this study might also help to explore how the same mechanism is involving the ENC.

Finally, our third contribution is related to the methodological approach adopted in performing the empirical analysis. An important - although often neglected - characteristic of the country-pair data in trade, FDI and other bilateral international exchanges is the high percentage of zeros. These may be either the result of the absence of bilateral transactions between any pair of countries or the unsuccessful outcome of a transaction. To deal with such a case we employ the zero-inflated model, which allows for the simultaneous modelling of the two different processes that generate the zero observations. Therefore, this approach has the advantage of allowing for the

joint estimation of the probability that any two countries engage in an M&A deal and of the rate of recurrence of M&A events, regardless of their monetary values. Indeed, for managers and policy makers the occurrence of frequent, small deals has different implications than occasional large transactions that involve the acquisition of, say, an oil company or a bank. Moreover, information on the value of the deals is often missing, even when the sample includes only developed countries. Razin and Sadka (2007a, 2007b) have shown that some Tobit estimators, usually applied to censored value data, are biased and inconsistent if the zero values cannot be entirely attributed to measurement errors, but are ‘pure’ zeros, resulting from the absence of any transaction. Therefore analyses based on count data models that account for the splitting mechanism are more robust with respect to those entirely focused on value data. To the best of our knowledge, this study is the first documented attempt to understand the simultaneous impact of cultural, political and spatial distances on M&A in a bilateral country-pair setting using a two-process model. By means of zero-inflated models, we explore how those distances affect the probability that two countries choose to be involved in bilateral deals and the rate of recurrence of the actual transactions. Such is the influence of cultural, political, and spatial distances that at its extremes, some country pairs could perceive each other to be so distant and dissimilar in terms of culture, institutions, rule of law, political stability, and democratic systems that they do not even consider engaging in M&A deals. A noteworthy example of the existence of historical and political barriers is given by Israel and the nearby Muslim countries. The costs of ‘becoming closer’ to begin the interaction process are substantially larger than the benefits of any possible deal that the countries end up having no relationships at all, regardless being close in space.

The paper proceeds as follows. In the next section, we provide a description of the features of the M&A count data included in our sample; we then present a selected review of the background literature related to our study to clarify the positioning of our contribution within the current academic debate on M&A transactions and to summarize the evidence on the role of geographical proximity and other measures of countries closeness. In the fourth section, we present how we operationalized these notions of distance for our sample of countries and discuss their main characteristics. The empirical setting and methodology are presented in the fifth section, along with the description of the explanatory variables. Next, we present the results of the econometric analysis, while the main implications of this study are discussed in the concluding section.

2. M&A FLOWS BETWEEN THE EU AND ITS NEIGHBORING COUNTRIES

As mentioned in the previous section, the main aim of this paper is to explore the impact of cultural, political and spatial distances on M&A deals in the 27 EU countries and the 16 ENC. Following the most recent enlargements in 2004 and 2007, the eastern borders of EU shifted drastically, reaching countries characterized by extremely diverse economic, cultural, social, and political conditions with respect to the EU. Similar differences are exhibited by the ENC on the Mediterranean sea, which have always produced concerns with respect to international relationships, given their political instability. As a consequence, the EU, as an alternative to further enlargements, has attempted to develop an integrated policy, the European Neighbourhood Policy (ENP), towards the non-candidate countries, which adjoin the EU's eastern and southern borders (Commission of the European Communities, COM 373, 2004; Dodini and Fantini, 2006).

The ENP was developed in 2004, with the aim of avoiding the emergence of new dividing lines between the enlarged EU and its neighbouring countries and with the aim of strengthening the economic prosperity, the political stability and the security of the whole area. Through the ENP, the EU offers its neighbours a privileged relationship, based on the values of democracy, rule of law, respect of human rights, good governance, market economy principles and sustainable development. The EU has recently reviewed the ENP in order to put even more emphasis on the promotion of deep and sustainable democracy and inclusive economic development. Deep and sustainable democracy includes free and fair elections, freedom of expression, assembly and association, judicial independence, fight against corruption and democratic control over the armed forces.

It is useful to distinguish between two strands of the broader ENP: the eastern regional program, which includes six countries on the eastern border (Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine) and the southern regional program concerning the ten countries on the southern border (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Syria, Tunisia, and the Palestinian Territories).¹ It is worth noting that Russia, although not formally associated with the ENP, has a specific policy instrument to guide strategic partnerships with the EU, which has goals and funding instruments that are similar to those of the ENP; for this reason, Russia is included in the ENC-East group of countries.

Data on M&A deals were retrieved from the SDC Platinum database, which is updated daily using over 200 English and foreign language sources. To obtain a representative sample for the full set of 43 countries, we consider a period of 12 years and thus select transactions between January 1,

¹ The Palestinian Territories are not considered in the empirical analysis since they do not register any M&A deal over the period.

2000 and December 31, 2011. The resulting full sample, which also comprises domestic deals, consists of 1,849 country pairs and includes a total of 111,035 completed transactions.

Domestic deals account for a substantial majority (an average of nearly 80%) of all completed deals. This information, although quite raw, is very revealing with respect to how various distances, which are narrower within the same country, are relevant factors affecting the number of cross-border deals, as transaction costs are an increasing function of the different types of distance. A thorough analysis of such effects is expected to provide novel and insightful evidence on the factors that shape international relationships among increasingly integrated economies. For this reason, our empirical investigation focuses on the cross-border sample, which comprises 1,806 country pairs with a total of 23,391 completed deals. We are interested in modelling the factors that affect both the probability of observing an M&A event and the rate of recurrence of the deals once the bilateral channel between two countries is operating. The analysis of the determinants of the actual number of transactions gives useful information on how intensively two countries are interacting and on how policies, such as the ENP, are effective in offsetting existing tangible and intangible barriers.

Table 1 presents a general picture of the aggregate number of M&A for the 2000-2011 period sorted by the four groups of countries included in our sample: the 15 old member states of the EU (EU15), the 12 new accession countries (EU12), ENC-East, and ENC-South. The first two columns report the number of M&A for the target and acquirer countries, respectively. In the subsequent columns, we report the corresponding data for the cross-border deals. The final columns refer to domestic deals, confirming, although with varying degrees, the relevance of national M&A for all subgroups of countries. Recent contributions (Rodríguez-Pose and Zademach, 2003; Chakrabarti and Mitchell, 2013; Ellwanger and Boschma, 2015; Boschma et al., 2015) have emphasized that domestic deals are highly dependent on country-specific factors and thus have to be modelled in a different manner than cross-border deals by focusing on subnational determinants.

If we focus on the ENC, the most active M&A markets are Russia and Ukraine in the east and Israel in the south. Excluding those countries, the number of deals involving the ENC is low, especially when the ENC act as acquirers. Among the ENC-East group, Ukraine is the ‘new star’ in attracting investments (PricewaterhouseCoopers, 2006) and represents the leading target country for cross-border M&A. Moreover, Ukraine, bordering both the EU and Russia, is characterized by a strong attitude towards cooperation, although with an asymmetric interdependence with respect to the EU (Melnikovska and Schweickert, 2008). Among the ENC-South group, Israel is the main target country in terms of the number of M&A. Despite its geographical location, Israel is part of

the Western economy and has a high gross domestic product (GDP) per capita, comparable to that of the wealthiest EU countries.

The relevance of historical, cultural, political, and geographical links in influencing cross-border M&A deals becomes evident if we look at the top acquirer/target nations for each country. France is the most important acquirer partner in Algeria, France and Spain in Morocco, the United Kingdom in Azerbaijan, Italy in Libya, and Arab Emirates in Egypt. An analogous pattern is exhibited by Russia and the other countries belonging to the former Union of Soviet Socialist Republics which show a high degree of interaction. Israel represents a peculiar case, as it is distanced from its neighbouring countries for historical and political reasons. The largest numbers of M&A deals for Israel are shared with spatially distant countries, such as the United States and UK, with which the existing bonds are more cultural and financial in nature due to the significant presence of Jewish residents in those countries, often holding leading positions in key economic and financial institutions.

As mentioned in the Introduction, the countries included in our sample exhibit substantial heterogeneity, as they are highly diverse along the cultural, political, and geographical dimensions. The existence of remarkable dissimilarities across countries can reasonably be considered the primary cause of the large number of observed zero values, which amount to 55.3% of all possible cross-border pairs. If we look at the percentage of zeros across groups of countries, it appears that the lowest value (3.3% of the total possible country interactions) is found for activities within the EU15. This low number of zero is revealing, as the EU15 can be considered the most homogenous among the groups of countries considered. This group is followed by the EU15–EU12 groups (17.8%) and the EU15–ENC-East groups (39.1%). At the other extreme, the highest number of zero observations is found for the EU12–ENC-South groups (97.2%). These figures suggest that the number of zeros is increasing in the sizes of the distances between groups of countries. In the empirical section, we specifically address this issue by adopting an estimation framework that allows us to properly account for the existence of excess of zeros in the data. Note that previous studies have overlooked this relevant aspect of cross-border transactions.

3. RELATED LITERATURE

Given the long history of research in the area of international exchanges, any claim of comprehensiveness in the literature review would be foolhardy. Thus, in this section, we consider only those contributions directly related to our research questions and that have analysed M&A transactions by specifically investigating the role of country distances, such as geography, culture,

institutional quality, and risk, between the home and target countries (see Table 2). First, it is beneficial for our review to distinguish between contributions that examine the M&A deals aggregated at the country (or regional) level and those based on firm-level data.

Green and Meyer (1997) propose an analysis conducted at the aggregate country level for the year 1993 to examine international M&A deals worldwide, distinguishing between high- and low-tech industry transactions. Using a Poisson model, they find that socioeconomic and risk conditions in both buyer and target countries are important in explaining cross-border M&A. Surprisingly, geographical distance is not included among the regressors, although the authors acknowledge its role in influencing international transactions.

Di Giovanni (2005) considers cross-border M&A value flows in the 1990-1999 period for a broad set of 193 countries and estimates a simple gravity model using a Tobit specification that controls for possible bias caused by censored data. The results indicate that geographical distance negatively affects the value of international deals, which are also influenced by GDP and financial variables. Firms also tend to invest more in countries with which they trade more and with which they share a common language. In a similar vein, Hyun and Kim (2010) analyse bilateral M&A in 101 Organisation for Economic Co-operation and Development (OECD) and developing countries worldwide over the 1989-2005 period. By estimating a Tobit model, they show that market size and a common language have positive and significant effects, while distance is negatively related to cross-border M&A. Moreover, high-quality institutions in the host country play a relevant role in attracting international M&A, thus confirming that low corruption and widely enforced laws generate a favourable environment for foreign investors. Interestingly, the level and variability of the real exchange rate are never significant determinants of international deals.

Coeurdacier et al. (2009) analyse how European integration has influenced cross-border M&A in the manufacturing and service sectors for a sample of 31 European and OECD countries for the 1985-2004 period. They include GDP, the degree of capitalization, the presence of a common language, and trade integration as controls for country characteristics. Geographical distance is found to have a non-significant impact on cross-border M&A, potentially because the sample consists primarily of developed countries, where the information costs measured by geographical distance are less important. Moreover, the quality of institutions, proxied by civil liberties in the host country is found to be an important determinant of foreign M&A only in the manufacturing sector. As far as the integration process is concerned, Coeurdacier et al. find that the European Monetary Union (EMU) helped the restructuring of capital within the manufacturing sector, particularly among euro area firms, and that both horizontal and vertical mergers were favoured. From a policy perspective their analysis implies that capital flows could be enhanced by a

reduction in the degree of product market regulation and by improvements in the country's financial system. Coeurdacier et al. (2009) argue that their results are relevant for countries which have recently joined the EU and EMU or might join in the near future. We think that their results are valuable also for the ENC since the ENP aims at enhancing the economic relationships between this group of countries and the EU by means of reducing the effects of institutional and cultural distances.

The role of institutional governance in the host country is specifically analysed by Hur et al. (2011) for 165 countries worldwide over the 1997-2006 period, controlling for the size of economies, openness to trade, technological advancement, and financial market development. They demonstrate that the low institutional quality in developing countries is one of the causes of their relatively poor ability to attract international M&A inflows. Note that the authors do not consider the bilateral flows between each possible pair of countries, and therefore, geographical distance cannot be included in their analysis.

The contribution by Ragozzino (2009) is based on firm-level data and focuses on 608 international deals made by US companies worldwide in the 1993-2004 period. Ragozzino demonstrates that acquirers prefer shared-ownership deals in remote locations and full ownership in proximate locations due to the presence of asymmetric information. Moreover, he finds that if cultural distance and political risk are high, firms seek higher ownership stakes in more distant locations than in closer ones.

The effect of cultural values on cross-border mergers and on the gains they create is thoroughly investigated by Ahern, Daminelli and Fracassi (2012). By analysing 20,893 cross-border mergers from 52 different countries over the period 1991-2008, they found that culture distance, measured in terms of trust, hierarchy, and individualism, has a significant and economically relevant effect on both the volume and the combined announcement returns of cross-border mergers. The negative effect exerted by cultural distance are robust to the inclusion of a wide set of country-level and country-pair controls, including shared legal origin, language, religion, geographic distance, and to alternative estimation methods employed to address possible sample selection and reverse causality issues. The evidence provided thus offer strong support to the hypothesis that cultural differences generate costly frictions between firms which lead to fewer mergers.

The role of spatial proximity between acquirer and target firms in domestic M&A deals is the key issue in country-specific contributions, as cultural and political differences are clearly less relevant within a particular country. More specifically, Rodriguez-Pose and Zademach (2003) examine domestic M&A in Germany over the 1990-1999 period, and find that the spatial clustering

of M&A transactions depends on the regional level of agglomeration (measured by GDP and population), as well as on the concentration of political power in the region. The geographical distance between the acquirer and target firms appears to play a distinctive role only when it is estimated in conjunction with agglomeration, while it is insignificant when considered on its own. Other features of the local economy, such as R&D investment, human capital, and unemployment, play a negligible role in determining M&A flows.

Chakrabarti and Mitchell (2013) consider the case of domestic transactions in the US chemical industry for the 1980-2003 period. They model the M&A data as a binary process taking the value of one if any potential pair of firms actually announces a deal in a given year and zero otherwise. Using weighted exogenous sampling maximum likelihood estimation and controlling for several individual characteristics, they demonstrate that firms tend to prefer geographically proximate targets, particularly when implementing technologically related acquisitions. The results also demonstrate the persistent effect of geographical proximity on organizational search processes due to firms' past experience.

A similar approach was followed by Ellwanger and Boschma (2015) to model domestic M&A deals in the Netherlands over the 2002-2008 period. Following a logistic approach, they demonstrate that the likelihood of concluding an M&A deal is higher for firms that are very close on both the geographical and technological dimensions. Interestingly, the effect of industrial relatedness is found to be much stronger than the effect of geographical proximity. The prominent effect of technological similarity is confirmed by Boschma et al. (2015) for the case of Italian domestic M&A deals.

Overall, the literature has highlighted that spatial distance is important in influencing M&A transactions, but it has also emphasized the key role played by cultural and national institutional settings, which may make countries relatively more distant or proximate. Therefore, our analysis is informed by many different dimensions of distance, which are likely to jointly shape opportunities in foreign markets. In the next section, we present how we operationalized the different notions of cultural, political, and spatial distance for the sample of 43 countries analysed.

4. POLITICAL INDICATORS AND DISTANCE DIMENSIONS FOR COUNTRY PAIRS

There is growing evidence on the positive effect of political stability and high quality institutions on firms' investment decisions and on post-deal outcomes (see, among many others, Guiso et al. 2009, Hyun and Kim, 2010). Democracy, civil liberties, law enforcement, government effectiveness, control of corruption create a favourable environment for investment, thus facilitating

capital reallocation, because they tend to reduce the degree of uncertainty and risk usually faced by investors in foreign countries.

Moreover, the literature has highlighted the roles of various types of distance in influencing foreign market exchanges as trade, FDI and M&A. The probability that a firm engages in cross-border transactions and their recurrence rate may depend on the degree of similarity between the cultural, political, and spatial characteristics of its home country and that of the potential target. The degree of proximity between countries based on their legal, economic, administrative, political, and cultural institutions are important factors that affect M&A strategy. The underlying assumption is that firms have a greater opportunity to benefit from forms of institution-based capital (e.g., political connections, cultural familiarity, and financial standards) when the cross-national institutional distance between the home and host countries is small because it decreases the overall transaction costs.

To assess the effects of different proximity measures on international deals, we collected country-level data on the following six indicators: geographical location, cultural features, democracy score, governance quality and effectiveness, corruption, financial and economic risk.

Following previous contributions, we assume that for firms willing to conduct cross-border acquisitions key determinants are the level of institutional quality in the host country and the extent to which the characteristics of the target country differ from those of its own country. Therefore, starting from the available indicators at the country level, we compute various measures of the distance for each pair of countries. Operationally, for each of our five dimensions (except for the geographical one), we first standardized the country values with respect to the distribution average set equal to one; then, we computed six distance matrices based on the absolute difference of the standardized values between any two countries. In what follows we provide a brief description of each indicator, its specific content and how it is constructed. More detailed information on underlying data sources, weighting schemes and aggregation methodology can be found in the dedicated websites, as reported in the Appendix.

Geography. The recent literature has emphasized that geographical distance helps to explain how perceptions of foreign countries may systematically influence decisions regarding firms' international activities (Egger, 2008; Lankhuizen et al., 2011). The geographical distance (GEO) between countries has been computed as the distance in kilometres between the countries' capital cities, where the concentration of economic activity is typically highest.

Culture. Cultural differences have been often indicated as one of the main drivers of economic relationships between countries, as the closer two economies are in terms of social behaviour, the lower the transaction costs and, in turn, the higher the probability of observing

movements of people and the exchange of capital and goods. However, several contributions have proxied for cultural closeness by simply including a dummy for sharing a common language. Recently, Ragozzino, (2009) for M&A deals and Lankhuizen et al. (2011) for trade and FDI have employed the well-known cultural index originally proposed by Hofstede. Following the literature, our analysis is based on the most widely-used concept of Hofstede (1980), which argues that the main cultural differences can be captured by four dimensions: power distance, uncertainty avoidance, individualism versus collectivism, and masculinity versus femininity. Two other dimensions were subsequently added, long-term orientation and indulgence versus restraint, to define the cultural profile of a nation. Due to the lack of data for some developing countries it is not possible for us to use directly the Hofstede database. Therefore, we employ the composite cultural index proposed by Kaasa (2013) and Kaasa et al. (2013), which is computed by applying the principal component analysis to items provided by the World and European Value Surveys and related to the four original dimensions of the Hofstede index. When considering the overlapping set of countries, the single index components derived by Kaasa et al. (2013) exhibit correlations as high as 0.80 with respect to the corresponding Hofstede components. As for the countries included in our sample, Egypt, Jordan, and Morocco take the lowest positions in the composite index ranking, whereas Denmark, the Netherlands and Finland take the highest ones. Finally, as explained above, we computed the full matrix of cultural distance (CULT) for each pair of countries.

Democracy. Another important feature of a country that may influence the decision to conduct M&A deals is the degree of democracy, which being not directly observable, poses several measurement challenges. Notwithstanding the measurement difficulties, a number of different democracy scales have been proposed by scholars (Munck and Verkuilen in their 2002 survey identify nine well-known measures of democracy). Recently, Pemstein et al. (2010) have proposed a composed index, Unified Democracy Scores (UDS), constructed by applying the Bayesian latent variable approach to ten different extant scales. The new synthetic index, being obtained by following a cumulative approach, has the advantage of accounting for the measurement efforts of different researchers. Therefore, practitioners can avoid selecting one existing democracy scale over another. This synthetic index, recently used by Safaei (2012), is based on a variety of elements, such as participation, inclusiveness, competitiveness, coerciveness, political and civil liberties, competitive elections, party competition, civilian supremacy, national sovereignty, freedom of organization, freedom of expression, and pluralism in the media. Focusing on the countries included in our sample, Libya, Syria, and Belarus exhibit the worst performance on the democracy score, while the best performance is found in Finland and Sweden. The full democracy (DEM) matrix presents bilateral distances between countries in terms of democracy scores.

Governance. As far back as Dunning (1973), the role played by political and institutional factors in influencing firms' decisions to invest abroad has been recognized in several studies (see, among others, the recent contributions by Coeurdacier et al., 2009; Bénassy-Quéré et al., 2007; Hyun and Kim, 2010; Hur et al. 2011). Firms are influenced by the degree of governance efficiency in the countries where the acquirer and target companies are located. These institutional elements have been investigated in depth by the World Bank, which has proposed a general synthetic indicator of governance worldwide. Given its characteristics and reliability, this indicator has been largely used in empirical studies (Dollar and Kraay, 2003; Andres, 2006; Das and Andriamananjara, 2006; Jung, 2006; Naude, 2004). The World Bank index summarizes six broad dimensions of governance: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. Elementary data are collected from a large number of survey institutes, think tanks, non-governmental organizations, international organizations, private sector firms, and expert survey respondents worldwide on governance quality and effectiveness. Individual source data are preliminary rescaled to take values between 0 and 1. The Unobserved Component Model is then used to obtain a weighted average of the data from each source in each country. The composite index of Governance follows a standard normal distribution and ranges from approximately -2.5 to 2.5, with higher values corresponding to better governance outcomes. More details on the underlying data sources, the aggregation method and interpretation of the indicators can be found in Kaufmann et al. (2010). The standardized synthetic index ranks Belarus, Libya, Syria, Azerbaijan, and Russia as having the poorest governance quality, while Austria, Sweden, Denmark, and Finland occupy the top positions. As before, we computed a governance distance matrix (GOV).

Corruption. Following previous studies (Asiedu and Freeman, 2009; Malhotra et al. 2011), we consider the perceived degree of corruption in the public sector. More precisely, we employ the Corruption Perception Index (CPI) collected by Transparency International, which is an aggregate indicator that combines data on corruption from 13 independent and prominent institutions worldwide. To be included in the CPI, a country must be assessed in at least three different sources. Data sources are then standardized to a scale of 0-100, where 0 equals the highest level of perceived corruption and 100 equals the lowest level of perceived corruption. A country's CPI score is then calculated as the average of all standardized scores available for that country. Countries with highly corrupt public sectors include Libya, Syria, Ukraine, and Azerbaijan, while Sweden, Denmark, and Finland exhibit very low levels of perceived corruption. We computed a corruption distance matrix containing the relative distance for each pair of countries (COR).

Risk. The degree of risk associated with each country is computed by Euromoney, which considers worldwide expert assessments of the economic, political, and structural conditions in the countries, their debt indicators, credit ratings, and access to capital. The Euromoney country risk (ECR) score is obtained by combining the consensus expert scores with data from the International Monetary Fund and the World Bank (debt indicators), a survey of debt syndicate managers at international banks (access to capital) and Moody's and Fitch (credit ratings). To obtain the overall ECR country risk score, Euromoney assigns weights to six different categories. The three qualitative expert opinions are political risk (30% weighting), economic performance (30%), and structural assessment (10%). The three quantitative items are debt indicators (10%), credit ratings (10%), access to bank, finance or capital markets (10%). In this study, we consider the overall ECR index, recently used by Săvoiu et al. (2013) and Deseatnicov and Akiba (2013). Among the EU neighbouring countries, the most risky are Syria and Libya on the southern border and Belarus and Moldova on the eastern border. Unsurprisingly, the current situation in Greece also appears very uncertain, and the country occupies the fifth-worst position in the index ranking. Conversely, according to the index, the safest environment for doing business is in Luxembourg and Nordic countries, such as Sweden, Finland, and Denmark. Using the synthetic standardized index, we computed a matrix, the entries of which are the relative distance for each country pair in terms of riskiness (RISK).

In Table 3, we report the correlation matrix computed for the six distances considered. As expected, measures related to governance and corruption exhibit high correlation (0.80); governance also appears to be strongly associated with the measures of risk and democracy. The cultural dimension, although positively associated with other indexes, does not yield correlation coefficients above 0.51. Finally, geographical distance is barely associated with the other dimensions. In order to avoid multicollinearity problems, in the econometric estimation we include the indexes broadly related to a country's institutional and political environments (governance, risk, democracy, and corruption) individually, while the geographical and cultural distances are included in all specifications.

5. EMPIRICAL MODEL

5.1 Modeling M&A counts

The empirical analysis is based on a traditional gravity model framework, specified as follows:

$$M\&A_{at} = f(pop_a, gdppc_a, domcred_a, mktcap_a, pop_t, gdppc_t, gdppc_gr_t, tech_t, pol_t, geo_{at}, cult_{at}, pol_{at}) \quad (1)$$

where the dependent variable ($M\&A_{at}$) is represented by the cross-border M&A counts for each possible pair (a is the acquirer country and t is the target) of the 43 countries included in our sample over the 2000-2011 period. The estimation sample comprises 1,806 country-pair observations.

It is worth noting that the observations are pooled over the entire period in order to obtain the largest possible number of positive counts. Thus our model, by exploiting the cross-section variation provides evidence on the long run determinants of international M&A activity. As emphasized in Portes and Rey (2005), the between variation is the most relevant one when the focus of the analysis is on the effect of distance, because it can be either completely time invariant, as it is the case for the geographical distance, or exhibit a certain degree of persistence as it occurs in the case of cultural or institutional distances. The same approach is adopted by di Giovanni (2005) and Hyun and Kim (2010).

Turning to the explanatory variables², following a well-established stream of literature, we include the population (pop) and GDP per capita ($gdppc$) for both the acquirer and target countries. As is standard in gravity specifications, population is intended to capture the relative notion of mass, while GDP per capita is expected to represent the country's economic wealth and development level; the higher the level of population or of GDP per capita, the higher the number of expected deals. Both population and GDP per capita are considered at their year-2000 values.

Following di Giovanni (2005) and Hyun and Kim (2010), for the acquirer countries we also consider two indicators of financial deepening. Favourable domestic financial conditions and the availability of external funds are expected to facilitate investment activity abroad. As financial indicators, we consider domestic credit ($domcred$) and stock market capitalization ($mktcap$). The first indicator is the amount of financial resources provided to the private sector by banks or other financial institutions as percentage of GDP. The second indicator is measured as the size of the stock market (share price times shares outstanding) as percentage of GDP. For both indicators the observations refer to the year 2000.

We also consider three additional M&A determinants specific to the target country, represented by the growth rate of GDP per capita ($gdppc_gr$), the technological level ($tech$) and the level of the institutional-political indicator. The GDP per capita growth rate, computed as the annual average over the 2000-2011 period, is expected to capture the general economic conditions outlook

² The sources and definitions of the variables are reported in the Appendix.

of the country where the target firm is located. If the outlook is positive, the deal is expected to be more profitable, which increases the number of additional deals.

The technological level in the host country is expected to enhance the probability of M&A motivated by technological reasons; accordingly, acquiring a firm is one of the most effective ways to ease the transmission of knowledge and technological competencies. The technological level is measured by the stock of patents computed as the sum of patent applications submitted to the European Patent office by resident inventors per million inhabitants over the 2000-2010 period.

Following previous studies, for the target country we also include the level of one of the political indicators (democracy, governance, corruption, risk), described in the previous section, in order to account for the effects of the quality of institutions and government effectiveness on foreign M&A investments.

Finally, a crucial aspect determining firms' M&A is the distance between the two countries involved in the deal. As previously noted, the broad empirical literature on international exchanges, and in particular on M&A, has emphasized, not only the relevance of geographical distance, but also the degree to which cultural, political, and institutional distances may act as intangible barriers that prevent firms located in certain countries from even considering engaging in deals with firms in certain other countries. Therefore, in our analysis we take into account the concurrent effects of geographical, cultural, and political distances by augmenting the traditional gravity model with the inclusion of the different distance measure presented in the previous section.

5.2 Estimation issues and model selection

As the M&A counts are used as the dependent variable, the natural starting point is to consider the Poisson regression model. This entails specifying the mean (μ_i) of the response variable (y_i from now, with $i=1,2, \dots N=1,806$ possible deals) as a function of a set of explanatory variables, $E(y_i|X_i)=\mu_i$. The standard parameterization of the mean is $\mu_i=\exp(X_i\beta)$ to ensure that the non-negativity constraints are not violated. Since the Poisson distribution is characterized by the equidispersion property, the variance is equal to the mean, so that the Poisson model is intrinsically heteroskedastic.

In empirical applications, the equidispersion property of the Poisson model has often been found to be excessively restrictive, as the data are usually overdispersed. Our sample data is no exception: the dependent variable has a mean value of 13 and a standard deviation 51, thus exhibiting significant overdispersion. One of the most common causes of overdispersion (Cameron and Trivedi, 2005) is neglected unobserved heterogeneity, which yields an excessive number of zero observations. Such heterogeneity can be modelled as a continuous mixture of the Poisson

distribution by modifying the specification of the mean as $E(y_i|X_i)=\mu_i\eta_i$, with μ_i defined as before and η_i a random term with $E(\eta_i)=1$. In this case, the Poisson mixture has the same mean as the original Poisson. When η_i follows the gamma distribution with variance α , the Negative binomial model results; the first two moments are $E(y_i|X_i)=\mu_i$ and $Var(y_i|X_i)=\mu_i+\alpha\mu_i^2$, and α is the overdispersion parameter to be estimated.³

Although the Negative binomial model is generally adequate to capture overdispersion, in some instances, zero observations may not be compatible with such a model, leading to the problem of excess zeros. This situation occurs because the mechanism generating the zero observations may differ from that generating the positive observations. A zero observation can occur in two ways: it can be the realization of either a binary process or a count process when the binary variable takes a value of one. The resulting model is the zero-inflated model, in which the count density, $f_2(\cdot)$ is supplemented with a binary process with density $f_1(\cdot)$. If the binary process takes a value of zero with probability $f_1(0)$, then $y_i=0$, while if the binary process takes a value of one with probability $f_1(1)$, then y_i can take the count values 0, 1, 2, 3... from the count density $f_2(\cdot)$. The latter can be specified as either a Poisson or a Negative binomial density. Formally, the overall density of the y_i process is formalized as

$$f(y_i|X_{1i}, X_{2i}) = \begin{cases} f_1(0|X_{1i}) + \{1 - f_1(0|X_{1i})\}f_2(0|X_{2i}) & \text{if } y_i = 0 \\ \{1 - f_1(0|X_{1i})\}f_2(y_i|X_{2i}) & \text{if } y_i \geq 1 \end{cases} \quad (2)$$

Note that the set of conditioning variables, X_{1i} and X_{2i} , may differ between the binary function $f_1(\cdot)$ and count function $f_2(\cdot)$ because the two sets are selected on the basis of substantive grounds and typically depend on the phenomenon being analysed.⁴

For the analysis of the determinants of M&A, the zero-inflated model is expected to be more appropriate than the Poisson or Negative binomial models, as it is more reasonable to assume that the zero realizations are the result of distinct mechanisms. It may be the case that certain country pairs perceive each other as being so distant and dissimilar in terms of culture, institutions, rule of law, political stability, and democratic systems that firms from these pairs do not even contemplate

³ Note that this specification is referred to as negative binomial 2 (the negative binomial 1 entails a linear variance function). It is generally preferred because the quadratic form has been proven to provide a very good approximation to more general variance functions. This is a remarkable advantage because the maximum likelihood estimators for negative binomial models are not consistent when the variance specification is incorrect.

⁴ Moreover, Jones et al. (2013) suggest that different sets of covariates should be included in the two parts of the model to avoid lack of convergence in the maximizing the likelihood function.

engaging in M&A deals. The costs of becoming closer to begin the interaction process are substantially larger than the benefits of any possible deal.

In our sample, a striking example is presented by country pairs including Israel and one of the southern EU neighbouring countries, i.e., Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Syria, or Tunisia. In these cases, the observed zero values are more likely to be the result of the well-known historical, political, and religious ‘distances’ that have prevented, or significantly limited, the occurrence of stable and trustful economic and political relationships between Israel and most of the other southern Mediterranean countries.

A relevant advantage of the empirical approach based on zero-inflated models is that it makes possible to simultaneously estimate both the probability of observing an M&A deal and the number of deals accomplished. Therefore this approach outperforms those in which the two interrelated processes are analysed separately. Moreover, the specification of the splitting process for the zero observations would also be required if value rather than count data on M&A were used, but this process has largely been overlooked in the previous literature.⁵ Therefore, we believe that our analysis may provide original and sound indications with respect to the main factors that shape the relationships among countries and that form the essential common base for business interactions between cross-border firms to occur.

6. ECONOMETRIC RESULTS

6.1 Baseline specification

As stated in the previous section, economic and behavioural considerations lead us to believe that zero-inflated models are the most appropriate for modelling M&A deals. However, we test whether such a hypothesis is also empirically supported by rigorous testing procedures. Thus, our estimation strategy entails first considering the Poisson and Negative binomial models and testing for evidence of overdispersion and then comparing these models to the more flexible zero-inflation model by applying the Vuong specification tests.

The estimation of the Poisson model is reported in the first column of Table 4; we include population and per capita GDP for both the acquirer and target countries; financial indicators are included for the source country, while the GDP growth rate, the stock of patents and the level of the political-institutional indicator are included for the host country. As for the country pairs’ variables, we include an array of distance indicators, which are expected to capture the concurrent effects of

⁵ Some studies (see for instance di Giovanni, 2005) account for censored or truncated data but do not model explicitly the zero values determinants.

geographical, cultural, and institutional differences. The political-institutional dimension is captured by including one of the four political measures described in the fourth section and by a dummy variable for the country pairs formed by Israel and one of the southern ENC. Given the emphasis assigned to democracy, stability and security by the ENP, in the baseline specification we include the political-institutional distance computed on the basis of the Unified Democracy Scores index, as well as its level for the target country. In performing the robustness analysis we also consider the World Bank Governance quality and effectiveness indicator, and the two more specific indicators represented by the perceived level of corruption in the public sector and the degree of financial and economic risk.

Because population, per capita GDP, the stock of patents, geographical and cultural distance are log-transformed, the estimated parameters measure elasticities, while the coefficients associated with the other covariates have a semi-elasticity interpretation.

All estimated coefficients exhibit the expected signs and are significant at conventional levels,⁶ with the only exceptions being the target country's GDP per capita and the political distance term. The non significant coefficient for the target country GDP per capita may be due to the high correlation (0.77) shared with the institutional indicator. As extensively shown by the economic growth literature (see among others, Durlauf et al., 2009), high quality institutions are generally found in wealthiest countries and systematically associated to positive economic outcomes.⁷ In general, the level of economic development in the acquirer country is a very important determinant of M&A deals, whereas population is effective for both the source and the host country, with the latter exhibiting a higher coefficient.

Both domestic credit and the market capitalization indicators exhibit positive and significant coefficients, supporting the hypothesis that financial conditions in the acquirer country have a positive effect on the number of completed deals. This confirms previous evidence provided by Hyun and Kim (2010) and di Giovanni (2005). It is worth highlighting that the analysis of M&A counts, rather than of their monetary value, is more adequate to rigorously assess the effect of the stock market capitalization variable because in the case of value data its positive coefficient may be driven by an increase in equity prices. As a matter of fact, to address this issue di Giovanni (2005) also estimated a Negative binomial model.

⁶ Note that the standard errors of the coefficients if the Poisson model presented in Table 4 are computed using the Variance-Covariance matrix robust with respect to overdispersion.

⁷ It is worth noting that if the model is estimated without including the political-institutional indicator, the GDP per capita for the target country is highly significant. Notwithstanding this result, in the subsequent analysis, we prefer to maintain the most general specification that includes both the GDP per capita and the political-institutional indicator for the host country.

Other things being equal, also the host country GDP growth rate and technological level act as relevant and attractive features for potential acquirers.

The geographical and the cultural distance, along with the 'Israel dummy', exhibit significant and negative coefficients, indicating the detrimental effects that spatial remoteness and cultural dissimilarities have on M&A deals. On the contrary, the political distance is not significant at conventional levels. This result may be due to the fact that in the Poisson model the zero observations are constrained to be entirely assigned to the count process, whereas they could be generated by two different processes. This point is addressed in depth in the subsequent discussion of the results.

Given the overdispersion feature of the M&A data considered here, the adequacy of the Poisson model has to be assessed in terms of predicted probabilities. These are reported in Table 5, along with the actual probabilities up to count 25, which accounts for 90% of the total number of events. It is evident that the Poisson model substantially underpredicts the proportion of zeros (actual 55%, predicted 33%) and overpredicts positive values. This result is due to the restrictive assumption of equidispersion imposed on the data, which exhibit significant conditional overdispersion.

Thus, we proceed by considering the alternative specification provided by the Negative binomial model, which does not constrain the variance of the process to be equal to the mean. The results are reported in the second column of Table 4; as far as the mean of the process is concerned, the findings are qualitatively very similar to those discussed for the Poisson model. However, in terms of the maximized likelihood function, the Negative binomial model is remarkably superior to the Poisson model. The gains are mainly produced by the more appropriate specification of the variance function; the variance parameter is highly significant, as indicated by the LR test reported at the bottom of column 2 for the hypothesis $\alpha=0$, where α is the overdispersion parameter. This, in turn, allows for a sizeable improvement in the predicted probabilities (see Table 5) at the expense of having to estimate just an additional parameter. The proportion of predicted zeros is now much closer (53.1%) to the observed value. The positives are still overpredicted, although less severely than it was the case for the Poisson model.

Notwithstanding the gains provided by the Negative binomial model, we further investigate whether the differences between the actual and predicted probabilities are due to an excessive number of zero observations with respect to the number consistent with a pure count process by estimating zero-inflated models.

In column 3 of Table 4, we report the estimation results for the Zero-Inflated Negative Binomial (ZINB) model.⁸ As discussed in the previous section, in both cases, we have to simultaneously model the splitting mechanism and the count processes. Given the substantial flexibility provided by the zero-inflated models in the specification stage, it is possible to distinguish the set of covariates that enter the binary process (X_1 in equation 2) from the set of covariates that pertain to the count process (X_2 in equation 2). As for the latter process, we maintain the same mean specification already presented for the Poisson and the Negative binomial models, except for the Israel dummy, which now enters only the process for the probability that any two countries engage in a M&A deal. As a matter of fact we believe that cultural, institutional and political differences not only affect the intensity of the deals, but are crucial in determining whether firms are willing to initiate economic interactions. If countries share common and recognized characteristics along those ‘intangible’ dimensions, engaging in business deals is greatly favoured; otherwise, the costs induced by ‘dissimilarity’ are excessively high and exceed any potential benefit arising from the deals. Therefore, in our models, the binary process is a function of the complete set of distances (geographical, cultural, institutional, and the ‘Israel dummy’), as well as of pure socioeconomic indicators, such as population, GDP per capita, financial indicators for the source country and the level of political-institutional quality for the host one. The binary process is specified as a logit model for the probability of observing a zero value, and the results are reported in the column labelled ‘Inflate’.⁹

Before discussing in detail the effects of the explanatory variables, it is relevant to underline the adequacy of the ZINB specification, as confirmed by the Vuong test result, reported at the bottom of column 3 of Table 4. The test compares the ZINB specification with its non-zero inflated counterpart, the Negative binomial model. The test follows a standard normal distribution, with large positive values favouring the ZINB model and large negative values favouring the negative binomial model. The high positive value of the test (4.09) thus indicates that a significant proportion of the zero values are ‘pure’ zeros due to the complete lack of relationships and not simply the result of unsuccessful interactions between cross-border firms that resulted in failed deals. This is also confirmed by the predicted probabilities, as shown in Table 5. In predicting the lowest counts the ZINB specification outperforms, not only the Poisson model but also the Negative binomial one.

⁸ Given the existence of overdispersion we prefer to model the count process by means of the negative binomial specification (as before negative binomial 2) rather than the Poisson one. In a preliminary analysis we tested the Zero inflated Poisson (ZIP) specification against the ZINB one: the former was overwhelmingly outperformed by the latter, which exhibited a highly significant overdispersion parameter and a much higher log-likelihood value (-10,109.8 vs. -3,335.1).

⁹ Similar results are obtained when the Probit specification is chosen instead of the logit one.

Focusing on the results reported in column 3 of Table 4, it is evident that the higher the relative masses (population) of the acquirer and target countries, the lower the probability of observing no M&A deals. The level of economic development, proxied by the GDP per capita, exhibits the expected negative coefficient for both countries involved in a potential deal, but it is significant only for the acquirer country. Developed financial markets in the source country and high level of institutional quality in the host country, proxied by the democracy indicator, also contribute to significantly reduce the probability of observing no bilateral deals.

Turning to the distance terms, they are all significant and exhibit the expected positive sign. Thus, the higher the distance along the three dimensions considered - geographical, cultural, and institutional - the higher the probability of observing a zero value. This result supports our hypothesis that country-pair distances tend to discourage business relations as they induce higher uncertainty, increase information asymmetries and make the economic environment less transparent and, thus more risky for foreign investors.

In the count part of the model, the results previously discussed for the Poisson and Negative Binomial specifications are largely confirmed as far as the expected sign and the significance is concerned. However, it is worth noting that the ZINB count coefficients are smaller in magnitude with respect to those estimated by the non-inflate models. This indicates that by ignoring the splitting mechanism the latter models tend to provide biased estimates of the explanatory variables' coefficients.

According to the ZINB results, the number of deals, and thus the intensity of the M&A activity, is positively influenced by the relative size of the countries, as well as their economic, financial and technological development. Geographical and cultural distances are highly significant and results confirm their negative effects on the recurrence of the deals. On the contrary, institutional features are relevant only when considered as a proxy for the level of institutional quality in the target country, but not when they are considered in relative terms for the country pair.

Following Ahern et al. (2012), we compute the effect on both the probability and the number of deals for a change from the 25th to the 75th percentile in each of the three different distances included in the model and in the level of the institutional quality in the target country. The change in the geographical distance determines a reduction in the number of deals equal to 7.3 and an increase of nearly 10 percentage points in the probability of no-occurrence. The corresponding effects due to an analogous change in cultural distance amount to a decrease of 5 deals and an increase in the no-occurrence probability of 4 percentage point. The increase in the institutional distance has a very limited effect on the number of deals (-0.5) but a large effect, estimated in 20

percentage points, on the probability of observing no deals.¹⁰ On the contrary, the increase in the level of institutional quality in the target country makes the deals rise by 10.3 and reduces the probability of no-occurrence by 6.6 percentage points. Considering that the mean of observed M&A is 12.9 (28.9 for the positive values) and that the unconditional probability of observing a deal is 44.7% (80% of the country-pairs have less than 7 deals), the effects on both the counts and the no-occurrence probability can be considered large effects with relevant economic consequences. Thus, our results confirm that large multi-dimension distance between two countries imposes high costs on cross-border M&A activity, reducing the likelihood and the number of acquisitions.

According to the evidence discussed above, political-institutional differences play a crucial role in determining the probability of engaging in a deal, but they are not determining factors for enhancing the intensity of the M&A activity. We think that this is an interesting result, because it highlights the complexity of the role played by the different distance dimensions, which might be overlooked if the analysis is not performed within an adequate econometric framework, like the one provided by the ZINB model. The latter outperforms alternative approaches because it allows us to simultaneously estimate the probability and the count processes and, at the same time, it accounts for two important features of the data, overdispersion and excess of zeros. The latter very often characterize not only M&A data, as in our study, but in general data referring to cross-border economic exchanges, such as trade, foreign direct investments, joint ventures or strategic alliances.

6.2 Robustness analysis

To test the strength of the results discussed thus far, we subject the ZINB model to an extensive robustness analysis. The main results are reported in Table 6. In the first three estimated models, we consider alternative measures of the countries' political-institutional indicators. The Democracy indicator is thus replaced, in turn, by the indicator for Governance, Perceived Corruption in the public sector (Corruption) and Economic and Financial Risk (Risk). It is worth recalling that the Perceived Corruption indicator takes low values for highly corrupted countries and high values for less corrupted countries. All other variables are unchanged with respect to the third specification reported in Table 4.

The main finding is that most of the coefficients for both the binary and count part of the model are remarkably stable with respect to the inclusion of different political-institutional dimensions. The only notable exception is the model that includes the Risk dimension variables, in this case the distance term is significant only in the count part of the model, whereas the target

¹⁰ The effect of the "Israel" dummy is estimated in a sizeable reduction, 34 percentage points, of the deals likelihood.

country level of the indicator is significant in the inflate part. In general, we find evidence that the effects exerted by the ‘intangible’ characteristics of the countries are robust in determining both the probability and the intensity of cross-border M&A.

In the model reported in column 4, we replaced the acquirer country’s GDP per capita with the stock of patents; its positive and significant coefficient indicates that the acquirers’ technological level increases the expected number of M&A deals. However, the baseline model outperforms this latter specification, because the level of GDP per capita is a more comprehensive economic indicator of a country’s acquiring potential abroad.

Finally, to determine whether the main findings were driven by M&A occurring between the EU15 country pairs, we re-estimate the baseline specification on the subsample that excludes such cases. The results, reported in the last column of Table 6, are in line with those discussed for the entire sample. A notable exception is represented by the fact that the target country’s stock of patents is no longer significant. This result, however, can be explained by M&A deals that are motivated by technological reasons being more likely to involve countries of the EU15 group. Conversely, the growth rate of GDP per capita is now significant also in the inflate part of the model. It is also worth emphasizing that the coefficients associated with the political-institutional indicator for the target country and those of the geographical, cultural and political distance terms are larger in magnitude with respect to the baseline case. Therefore, this result supports the hypothesis that the less similar the countries the less likely it is that they engage in M&A activity. As a further robustness check, we also estimated the baseline model on the subsample that includes only the EU27 country pairs (702 observations).¹¹ In this case, although the Vuong test result (2.49) still confirms the adequacy of the ZINB specification, in the inflate part of the model the only variables that turned out to be significant were the source country market capitalization, the target country population and the geographical distance. The finding that both cultural and political-institutional distances, as well as the target country institutional indicator, were not significant confirms our main result that the role played by ‘intangible’ factors is more relevant the greater the multi-dimension distance between any two countries. Moreover, our result is line with evidence provided in Couerdacier et al. (2009) on the beneficial effect brought about by the EU integration process, which by reducing institutional barriers and thus uncertainty and risk, has enhanced capital flows in the form of cross-border M&A among the European countries.

Overall, the analysis presented in this paper provides robust findings on the newly investigated issue of M&A activities conducted by the EU countries and the 16 States involved in

¹¹ The results are not reported in order to save space, but are available from the authors upon request.

the ENP. There is still plenty of unfulfilled potential for the ENP in order to increase economic prosperity, political stability and security in the Neighbouring countries. If the ENP will be successful in supporting an inclusive political and economic development process, it is reasonable to expect that the ENC will attract more foreign capital flows, which in turn could enhance prosperity and, in a self-reinforcing process, make even stronger the need for high quality institutions.

7. CONCLUSIONS

In this article, we assess the impact of cultural, political, and spatial distances, in addition to conventional economic determinants, on cross-border M&A. We focus our analysis on the cross-border M&A deals involving 1,806 country pairs belonging to the set of 43 countries, formed by the 27 EU States and the group of the 16 European Neighbouring Countries, over the years 2000-2011. The choice of this highly differentiated set of countries - advanced and basic economies, EU founders and new member states, Continental Europe and Mediterranean Africa - provides the basis for an original contribution to the current debate on the drivers involved in cross-border M&A. Once controlling for economic, financial and institutional characteristics at country level, we hypothesise that the multi-dimensional distance between country pairs determines both the probability that firms located in these countries consider engaging in international M&A deals and the intensity of such transactions. Focusing on count data, we rigorously tested this hypothesis by estimating gravity models formulated according to the zero-inflated specification. We find robust evidence that the absence of completed deals for a considerable number of country pairs (excess of zeros) is the result of two distinct mechanisms: a binary process and a count process for the rate of recurrence of M&A deals.

Our results show that geographical, cultural, and political-institutional distances have a significant and economically relevant negative effect on the likelihood of observing M&A deals, as they tend to discourage business relations by inducing higher uncertainty and thus higher risks for foreign investors. Our findings confirm that the intensity of cross-border M&A activity is positively influenced by the relative size of the countries, their economic, financial and technological development, whereas spatial and cultural distances exert highly significant negative effects. In contrast, institutional features are relevant only when considered as a proxy for the level of institutional quality in the target country, but not when they are considered in relative terms for the country pair. On the whole the results illustrate how complex the interactions among the various distances are in relation to our hypothesis and confirm the need to assess the concurrent effects of

different types of distance within a unified econometric framework in order to provide a comprehensive picture of the phenomenon. To the best of our knowledge, this work is the first attempt to undertake such an approach.

Finally, by focusing on the EU and ENC, this research explores a sample of countries largely neglected by previous literature and specifically provides an insight on the relationships between the EU and its adjacent countries as a key to understand how valuable interactions could be generated. In view of the EU's efforts to develop inclusive policies as an alternative to further enlargements, understanding capital transactions such as those related to M&A, might contribute to strengthen the integration process in order to establish close, peaceful, and cooperative relationships with bordering countries.

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Appendix. Data sources and definitions for variables and distance matrices

Variable		Definition	Included as	Primary Source
M&A	Merger & Acquisition	Completed deals, 2000-2011	level	SDC Platinum database
POP	Population	Million of resident individuals, 2000	level	World bank
GDP	Gross domestic product	Billion international \$, constant at 2005 prices, in PPP, 2000	level	World bank
GDPgr	GDP growth	GDP annual average growth rate 2000-2011, %	level	World bank
Domcred	Domestic credit	Domestic credit to private sector (% of GDP), 2000	level	World bank
Mktcap	Market capitalization	Market capitalization (% of GDP), 2000	level	World bank
PAT	Patent	Patent applications at EPO by inventor residence and priority year, per million population, 2000-2010	level	OECD-REGPAT
GEO	Geography	Euclidian distance between country capital cities, km	distance	Own calculation
CULT	Culture	Composite index of cultural features	distance	Kaasa et al. (2013) and Kaasa (2013) based on World Value Survey and European Value Survey
DEM	Democracy	Unified Democracy Scores Index (UDS)	level and distance	Unified Democracy Scores unified-democracy-scores.org
GOV	Governance	Worldwide Governance Indicators (WGI)	level and distance	World bank, info.worldbank.org/governance/wgi/
COR	Corruption	Corruption Perception Index (CPI)	level and distance	Transparency International transparency.org
RISK	Risk	Financial and Economic Risk (ECR)	level and distance	euromoneycountryrisk.com

Table 1. M&A completed deals per group of countries

Country	Total		Cross-Border				Domestic
	Acquirer	Target	Acquirer	Target	Share on tot acquirer %	Share on tot target %	
EU15	92199	88790	20596	17187	22.3	19.4	71603
EU12	6231	7961	1854	3584	29.8	45.0	4377
ENC-East	11297	12916	674	2293	6.0	17.8	10623
ENC-South	1305	1365	267	327	20.5	24.0	1038
Total	111032	111032	23391	23391	21.1	21.1	87641

Table 2. Related econometric studies on spatial and institutional determinants of M&A deals

Paper	Period	Coverage	Unit of analysis	Method	Data source	Dependent variable	Geography	Culture	Governance	Risk	Other territorial variables	Firm variables
Ahern, Daminelli, Fracassi (2012)	1991-2008	World	country-pair-years	Tobit, GMM	SDC	MA volume, synergy gains	√	Trust, hierarchy, individualism			shared legal systems, religion, language, tax and investment treaties and currency exchange ratios	
Chakrabarti, Mitchell (2012)	1980-2003	USA	2070 firms	Logit, weighted exogenous	SDC	domestic MA, chemical sector	√					prior MA, subsidiaries, age, size, product, public
Coeurdacier, De Santis, Aviat (2009)	1985-2004	Europe (mostly)	32 countries	Poisson	SDC	cross-border MA	√		√		GDP, common language, trade, capitalisation	
di Giovanni (2005)	1990-1999	World	193 countries	Tobit	SDC	cross-border MA deal values	√				GDP, financial vbl, trade, language, telephon traffic, exchange rate	
Ellwanger, Boschma (2015)	2002-2008	Netherlands	1855 firms	Logistic	BVD	domestic MA	√					public, subsidiary, diversification
Green, Meyer (1997)	1993	World	countries	Poisson	Securities Data Publishing	cross-border MA			√	√	GDP, trade, tourism, patents	
Hur, Parinduri, Riyanto (2011)	1997-2006	World	165 countries	OLS	UNCTAD	cross-border M&A inflows			√		GDP, trade, technology, financial market	
Hyun, Kim (2010)	1989-2005	World	101 countries	Tobit/ probit	Thomson One Banker	cross-border MA deal values	√		√		GDP, financial vbl, trade, language, exchange rate	
Ragozzino (2009)	1993-2004	USA	608 firms	Tobit	SDC	cross-border MA % ownership	√	√		√		high tech, public, knowledge distance
Rodriguez-Pose, Zademach (2003)	1990-1999	Germany	40 regions	OLS	M&A Review	domestic MA regional flows	√		√		population, GDP, human capital, R&D, industry structure	

Table 3. Correlations among country distance indicators

(Cross border sample: 1806 obs.)

		GEO	CULT	DEM	GOV	COR	RISK
GEO	Geography	1					
CULT	Culture	0.22	1				
DEM	Democracy	0.25	0.48	1			
GOV	Governance	0.31	0.47	0.76	1		
COR	Corruption	0.21	0.51	0.54	0.80	1	
RISK	Risk	0.13	0.48	0.53	0.71	0.73	1

All coefficients are significant at the 1% level

Table 4. Model specification for cross-border M&A count data

	1	2	3	
	Poisson	Negative Binomial	Zero Inflated Inflate	Negative Binomial Count
<i>Acquirer country</i>				
Population	0.487 *** (0.066)	0.657 *** (0.044)	-0.714 *** (0.103)	0.526 *** (0.030)
GDP per capita	0.975 *** (0.240)	1.014 *** (0.095)	-0.933 *** (0.224)	0.684 *** (0.111)
Domestic credit	0.010 ** (0.005)	0.012 *** (0.002)	-0.011 *** (0.003)	0.010 *** (0.001)
Market capitalization	0.006 *** (0.001)	0.006 *** (0.001)	-0.013 *** (0.004)	0.007 *** (0.001)
<i>Target country</i>				
Population	0.667 *** (0.049)	0.668 *** (0.053)	-0.637 *** (0.107)	0.598 *** (0.031)
GDP per capita	0.149 (0.257)	0.182 (0.193)	-0.263 (0.224)	0.251 * (0.139)
GDP per capita growth rate	0.072 *** (0.018)	0.086 *** (0.020)		0.143 *** (0.028)
Patents per capita	0.095 * (0.055)	0.061 (0.081)		0.076 * (0.046)
Democracy	0.410 *** (0.154)	0.587 *** (0.189)	-0.369 * (0.216)	0.627 *** (0.100)
<i>A-T countries distances</i>				
Geography	-0.715 *** (0.059)	-1.250 *** (0.089)	0.972 *** (0.215)	-1.081 *** (0.072)
Culture	-0.242 *** (0.052)	-0.355 *** (0.069)	0.215 * (0.134)	-0.273 *** (0.047)
Democracy	-0.088 (0.129)	-0.192 (0.133)	1.156 *** (0.191)	0.066 (0.072)
Israel dummy	-2.430 *** (0.566)	-2.995 *** (0.596)	3.017 *** (0.986)	
Shape parameter $\ln(\alpha)$		0.506 *** (0.121)		0.197 *** (0.063)
Log-likelihood	-11051.97	-3393.31		-3335.07
LR test: $H_0 \alpha=0$		15000 ***		
Vuong test: ZINB vs. Negative Binomial				4.09 ***

Observation number: 1806

M&A deals are counted over the period 2000-2011

All regressions include a constant

The 'Israel' dummy takes value 1 for all country pairs involving Israel and one of the South neighbouring countries

Population, GDP per capita, patents per capita, geographical and cultural distances are log-transformed

Robust standard errors in parenthesis. Level of significance: *** 1%, ** 5%, * 10%

Table 5. Actual and predicted probabilities of M&A counts

Predicted probabilities are obtained from models reported in Table 4

Count	Actual	Poisson	Neg Bin	ZINB
0	0.553	0.325	0.531	0.559
1	0.097	0.159	0.126	0.080
2	0.055	0.091	0.061	0.051
3	0.034	0.059	0.038	0.036
4	0.022	0.043	0.027	0.028
5	0.024	0.034	0.020	0.022
6	0.017	0.027	0.016	0.018
7	0.011	0.022	0.013	0.015
8	0.012	0.019	0.011	0.013
9	0.007	0.015	0.009	0.011
10	0.008	0.013	0.008	0.010
11	0.005	0.011	0.007	0.008
12	0.006	0.010	0.006	0.008
13	0.007	0.009	0.006	0.007
14	0.004	0.008	0.005	0.006
15	0.007	0.007	0.005	0.006
16	0.004	0.006	0.004	0.005
17	0.005	0.006	0.004	0.005
18	0.008	0.006	0.003	0.004
19	0.003	0.005	0.003	0.004
20	0.003	0.005	0.003	0.004
21	0.002	0.005	0.003	0.003
22	0.004	0.004	0.003	0.003
23	0.002	0.004	0.002	0.003
24	0.003	0.004	0.002	0.003
25	0.002	0.004	0.002	0.003
Sum	0.905	0.901	0.916	0.913

Table 6. Robustness analysis on determinants of cross-border M&A deals

Zero inflated negative binomial models

	1		2		3		4		5	
	Inflate	Count	Inflate	Count	Inflate	Count	Inflate	Count	Inflate	Count
	Governance		Corruption		Risk		Acquirer Patents		excluding intra EU15 cases	
<i>Acquirer country</i>										
Population	-0.640 *** (0.102)	0.540 *** (0.031)	-0.585 *** (0.109)	0.545 *** (0.032)	-0.550 *** (0.104)	0.521 *** (0.031)	-0.780 *** (0.100)	0.502 *** (0.030)	-0.703 *** (0.116)	0.547 *** (0.041)
GDP per capita	-0.975 *** (0.246)	0.745 *** (0.119)	-0.821 *** (0.259)	0.774 *** (0.125)	-0.730 *** (0.250)	0.832 *** (0.124)			-1.116 *** (0.260)	0.625 *** (0.135)
Domestic credit	-0.009 ** (0.004)	0.010 *** (0.001)	-0.009 * (0.005)	0.010 *** (0.001)	-0.008 ** (0.004)	0.009 *** (0.001)	-0.013 *** (0.003)	0.012 *** (0.001)	-0.010 *** (0.004)	0.012 *** (0.001)
Market capitalization	-0.015 *** (0.004)	0.006 *** (0.001)	-0.021 *** (0.007)	0.006 *** (0.001)	-0.020 *** (0.006)	0.006 *** (0.001)	-0.009 ** (0.004)	0.007 *** (0.001)	-0.014 *** (0.004)	0.005 *** (0.001)
Patents per capita							-0.379 *** (0.077)	0.172 *** (0.031)		
<i>Target country</i>										
Population	-0.745 *** (0.112)	0.589 *** (0.039)	-0.723 *** (0.116)	0.555 *** (0.035)	-0.616 *** (0.104)	0.524 *** (0.031)	-0.631 *** (0.101)	0.592 *** (0.031)	-0.694 *** (0.123)	0.563 *** (0.041)
GDP per capita	0.162 (0.267)	0.258 * (0.146)	-0.067 (0.251)	0.239 * (0.150)	-0.312 (0.212)	0.088 (0.141)	-0.294 (0.215)	0.241 * (0.139)	-0.457 * (0.264)	0.328 * (0.167)
GDP pc growth rate		0.133 *** (0.031)		0.116 *** (0.031)		0.078 *** (0.029)		0.139 *** (0.028)		0.181 *** (0.035)
Patents per capita		0.099 * (0.056)		0.161 *** (0.054)		0.199 *** (0.053)		0.069 (0.046)		0.013 (0.057)
Democracy							-0.370 * (0.210)	0.650 *** (0.100)	-0.428 * (0.238)	0.694 *** (0.120)
Governance	-0.492 *** (0.138)	0.225 *** (0.078)								
Corruption [†]			-2.001 *** (0.708)	0.540 ** (0.274)						
Risk					-1.519 ** (0.760)	0.118 (0.327)				
<i>A-T countries distances</i>										
Geography	1.046 *** (0.256)	-1.112 *** (0.082)	1.280 *** (0.292)	-1.117 *** (0.086)	1.376 *** (0.290)	-0.999 *** (0.081)	0.988 *** (0.202)	-1.047 *** (0.071)	1.067 *** (0.247)	-1.052 *** (0.095)
Culture	0.401 ** (0.165)	-0.326 *** (0.055)	0.429 ** (0.180)	-0.338 *** (0.059)	0.368 ** (0.163)	-0.243 *** (0.057)	0.228 * (0.127)	-0.287 *** (0.047)	0.325 ** (0.161)	-0.211 *** (0.067)
Democracy							1.008 *** (0.180)	0.080 (0.073)	1.321 *** (0.242)	0.105 (0.083)
Governance	0.438 *** (0.117)	0.069 * (0.041)								
Corruption			1.383 *** (0.545)	0.278 (0.188)						
Risk					0.683 (0.630)	-1.075 *** (0.250)				
Israel dummy	3.587 *** (1.074)		4.289 *** (1.152)		4.273 *** (1.159)		3.482 *** (1.007)		3.262 *** (1.050)	
Shape parameter ln(α)	0.262 *** (0.065)		0.281 *** (0.066)		0.236 *** (0.066)		0.181 *** (0.063)		0.468 *** (0.073)	
Log-likelihood	-3368.71		-3380.65		-3371.87		-3335.13		-2341.74	
Vuong test	4.54 ***		4.57 ***		4.24 ***		4.44 ***		3.15 ***	

Observations: 1806 for models 1-4; 1596 for model 5. M&A deals are counted over the period 2000-2011. All regressions include a constant

The 'Israel' dummy takes value 1 for all country pairs involving Israel and one of the South neighbouring countries

Population, GDP per capita, patents per capita, geographical and cultural distances are log-transformed

Standard errors in parenthesis. Level of significance: *** 1%, ** 5%, * 10%

[†] Note that for the Corruption Perceived Index higher values are associated to less corrupted countries