Title (updated): *Who to choose? – Culture, Country or Kilometers in Acquisition Target Selection*

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Abstract:

The drivers of decision making in acquisition target selection has not been much investigated. Previous work shows that geographic distance proves to have an impact on the final choice of the acquirer, especially in related industries. And so does industry relatedness effects the choice between public vs. private targets – with a preference to the private sector. In this paper we investigate the effect of cultural distance as a driver for acquisition target selection. Culture has been much investigated in the M&A literature, mostly on the national level. We use linguistic micro-data – dialects amongst other cultural proxies – to identify and measure deep and persistent cultural ties and test in our logistic regression models for the hypothesized effects within and across national boundaries. We argue that dialect distance – as proxy for culture – determines the selection process of acquirers, which goes beyond traditional measures of culture and institutional differences. Our study shows that dialects in fact impact the likelihood of an acquisition beyond national borders while controlling for spatial distance, relatedness of the firms and formal institutional differences.

Key Words: culture, M&As, distance, language, target selection, cross-border, sub-national

INTRODUCTION

When Daimler bought Chrysler in 1998 for $38bn it was the largest international merger in history. By 1999 *Automotive News Europe* reported signs of trouble: "Germans were irked by the Americans' unstructured ways, while Americans thought the Germans were too rigid and formal."[1] The "merger of equals" charade faded quickly. By the end of year two all the top American executives either retired, left or were fired. The joke in Detroit was: "How do you pronounce Daimler-Chrysler in German? Daimler—the Chrysler is silent." American employees morale plummeted, dragging productivity along with it. Chrysler began piling up losses. By 2007 Daimler paid Cerberus Capital Management $650mn to take Chrysler and its liabilities off its hands. For many, Daimler-Chrysler epitomizes the myriad cultural pitfalls in global mergers and acquisitions (M&As) (Badrtalei & Bates, 2007; Blaško, Netter, & Sinkey, 2000). Even so, many disagree about exactly which cultural disparities mattered most, and how much of the clash was due to idiosyncratic organizational differences versus systematic societal ones (Darling, Seristo, & Gabrielsson, 2005).

The sheer size of the academic literature on mergers, acquisitions and culture testifies both to the perceived importance of culture's role in M&As and the lack of consensus surrounding its effect (G. Stahl & Voigt, 2008). One reason that so much disagreement exists around the role of national culture (let alone corporate culture) in M&As is that "culture" agglomerates so many separate societal ideologies, behaviors and norms, each of which matter to different degrees and operate in divergent ways. Furthermore, because the standard unit of cultural variation in the academic literature is the nation, the effects of culture are ubiquitously comingled with those stemming from different formal institutions, legal regimes, geography, amongst others, which although clearly important, are distinct from culture. In this paper, we disentangle the effects of several cultural dimensions on M&As from each other and from non-cultural elements that covary with culture. More precisely, we measure the distinct effects of linguistic, religious, political, geographic, industrial, provincial and national distance between headquarter locations of acquirers and potential targets on the probability that a merger occurs.

Our study of culture's role in M&As differs from most in two key ways: (1) rather than asking how cultural distance influences the financial performance of completed M&As, we ask how it influences whether an

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[1] https://europe.autonews.com/article/19991122/ANE/911220842/the-culture-clash-at-daimlerchrysler-was-worse-than-expected

acquisition occurs at all, and (2) rather than examining discrete cultural differences between countries, we examine dimensions of culture that vary continuously *within* a country and smoothly across its national borders. First, we focus on merger completion, since the presence of cultural ties in a completed merger is endogenous to the partnership decision, and its effect on performance cannot be reliably computed without a source of exogenous variation in partner selection. Second, by focusing on elements of culture that vary continuously across Germany and its southern neighbor Austria, we isolate culture's effects from those of geographic distance and different formal institutions in the two countries.

Critically, we estimate the effects of each cultural and non-cultural factor *holding the others constant*. Estimating the effects simultaneously matters, since these differences covary strongly and exhibit considerable biases when estimated alone. Our empirical findings reaffirm the literature's broad consensus that 'culture matters' but additionally show that distinct aspects of culture matter to different degrees. Estimated individually, a one standard deviation increase in linguistic, religious or political distance reduces the probability of a merger by between 30 and 50 %, roughly the same as a one standard deviation increase in geographic distance measured in isolation. However, due to their positive correlations these magnitudes grossly overstate the distinct effects of those cultural elements. Still, a one standard deviation increase in linguistic distance, *holding all else constant,* remains associated with a 25% lower probability of a merger, the negative effect of one standard deviation of religious distance falls to just less than 20%, while political distance has no robust effect.

When culture is measured at the national level (i.e. culture perfectly covaries with country), as M&A studies typically do, the effects of formal institutions cannot be separated from culture. Consider hypothetical firms located in Vancouver, British Columbia and Seattle. While the formal institutions—laws, regulations and taxes governing corporate operation—vary significantly between the US and Canada, it is likely that employees in the two cities are more culturally similar than Vancouverites are to Montrealers, or Seattleites are to Houstonians. In our setting of Germany and Austria, dialects, religious traditions, political affiliations, Cold-War era Eastern or Western Bloc membership and the subcultures they proxy for, evolved in localities before present national boundaries were drawn. Geographic distance obviously covaries with cultural and national differences, but more subtly, it could also covary with differences in industrial composition, because firms in similar industries tend to collocate, even form regional clusters. Thus, by measuring the effect of all these differences simultaneously and exploiting historically developed variation in culture that is distinct from present national and provincial borders as

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well as geographic distance, we can disentangle their independent relationships to merger formation. Although when measured alone, a standard deviation in geographic distance is associated with a greater than 50% drop in merger probability, it can be completely explained by cultural distance in our setting. The same does not hold for formal institutions—crossing a national or state border reduces the probability of a merger by 60% and 50% respectively, even after accounting for the comparably sized effects of culture.

Contributions

Our paper contributes to the ongoing discussion of criticism about culture that emphasizes to a large extent the assumption of homogeneity within countries (Shenkar, 2001) – that is the assumption that a single culture for each country exists, with no variations within national borders. Secondly, our paper is able to disentangle cultural effects from formal institutional effects and therefor contributes to the challenges in the economics-of-culture literature (Falck, Lameli, & Ruhose, 2018). Our findings also show a separation of culture from geographic distance and contributes to language in management by applying a finer level of linguistic differences, namely dialects. Further, by studying target selection and cultural influences on such a pre-deal stage, we contribute to the significantly smaller literature on target selection in M&A research, which is of importance for any consideration of deal performance ex ante (Claussen, Köhler, & Kretschmer, 2018).

LITERATURE REVIEW

To the best of our knowledge, ours is the only paper examining culture as a driver of matches in M&As; however, it relates to neighboring literatures examining (1) culture as a driver of M&A performance (rather than match), and (2) drivers (other than culture) of M&A matches.

Culture as a Driver of M&A Performance

The literature on M&A performance is enormous—a Google Scholar search of the terms *mergers* and *performance* returns nearly half a million results. It is little wonder why: according to the Institute for Mergers, Acquisitions and Alliances the value of global M&A deals exceeded $4 Trillion in 2018. At the same time, '70%–90% of acquisitions are abysmal failures' (Martin 2016, HBR). Early studies focused on strategic compatibility—e.g. business and technology relatedness of target and acquirer—and financial

factors, like how the target was paid for and the partners' cash reserves (King, Dalton, Daily, & Covin, 2004). While some insights emerged, most failure remains unexplained (Björkman, Stahl, & Vaara, 2007). Hence, recent focus has shifted toward the role of soft factors, like culture, on post-merger integration (Susan Cartwright & Schoenberg, 2006).

The literature explains M&A performance in terms of organizational cultural differences (Ahammad & Glaister, 2011), national cultural distances (Morosini, Shane, & Singh, 1998), cultural convergence (Birkinshaw, Bresman, & Hakanson, 2000) and compatibility (Sue Cartwright & Cooper, 2012), and management style similarity (Deepak K. Datta, Grant, & Rajagopalan, 1991) and acculturation (Larsson & Lubatkin, 2001). Most research derives from the *cultural distance hypothesis*—the larger the cultural differences between organizations, groups or individuals, the more obstacles to integration will arise and the greater the cost of overcoming them (Hofstede, 1980). However, empirical evidence does not uniformly support such theory (G. Stahl & Voigt, 2008). The observed relationship between cultural distance and M&A performance varies from the (1) predicted negative association (e.g.: Datta & Puia, 1995), (2) to the opposite positive one (Morosini et al., 1998), (3) or just none at all (Susan Cartwright & Schoenberg, 2006).

Several reasons for this inconsistency have been put forward. Often studies, just like our opening Daimler-Chrysler anecdote, muddle organizational and national culture. And also performance metrics vary from study to study (Zollo & Meier, 2008). In their meta-analysis, Stahl & Voigt (2008) find that national and corporate culture distinctly affect different performance measures in different ways. What the literature does agree on, is that findings are inconsistent and more empirical and theoretical research on the role of culture in M&As is needed (Richard, 2000; Schweiger & Goulet, 2005; G. K. Stahl & Voigt, 2005; Teerikangas & Very, 2006). Nevertheless, one limitation remains, culture – other than corporate culture – is bounded on the national level and thus is difficult to separate the real culture effect in M&A performance and behavior from other institutional effects, such as political, administrative, regulations, border effects and jurisdiction differences.

Culture is Mostly Nationally Bounded
Scholars have long claimed that culture is a complex and multidimensional framework (Tung, 2008), and that it is often used in a simplified way. Criticism on the traditional measurement of culture – mostly the cultural distance concept (Kogut & Singh, 1988) found their voice through Shenkar's (2001) publication in which eight so-called illusions of the current (national) culture matrix are presented. One of the critics

points out that intra-variations of countries are at least as crucial to account for than inter-country ones (Shenkar, 2001) and that research tends to ignore the former.

Disentangling Culture

Falck et. al (2018) point out that the crucial point for culture studies is to separate cultural effects from formal institutional effects in order to capture the true effect of culture. And while in theory this seems reasonable, it has been proven to be more difficult empirically.

Culture as it has been treated on the national level co-varies perfectly with formal institutional differences, which change abruptly by crossing a national border. Thus, national culture can be a starting point, however other measures are needed to fully understand diversity within- and across national borders (Beugelsdijk & Mudambi, 2013; Tung, 2009; Tung & Verbeke, 2010).

Scholars suggest for example language and religion as more effective concepts to capture cultural differences on finer levels (Zaheer, Schomaker, & Nachum, 2012) – because religion and language are the two most distinct features of culture (Gomez-Mejia & Palich, 1997). Few studies have picked-up on this empirically.

One study that investigates linguistic distance and the use of lingua franca in cross-border acquisitions (Cuypers, Ertug, & Hennart, 2015) shows a significant negative relationship between linguistic distance and the level of ownership in international acquisitions. Further, the paper shows that higher levels of fluency in English – the lingua franca – increases the level of ownership. Although the paper contributes to language in International Business and provides more insights into M&A decision-making and transactions, one limitation remains. Namely, the use of national boundaries as unit of analysis for culture.

In a study by Schomaker & Zaheer (2014), language relatedness has been investigated as influential factor of information flow in geographically dispersed countries. The scholars compare the relatedness of languages and the proficiency of a foreign language is crucial for knowledge flows (Schomaker & Zaheer, 2014). Once and again language is been treated on a national level and thus, effects between formal and informal institutions are difficult to distinguish.

Just as language, religion has also gained more attention in the past years as determined factor for M&A transactions (Elnahas, Kabir Hassan, & Ismail, 2017) and scholars begin to explicitly control for religious

differences due to potential effects on contracting costs (Ahern, Daminelli, & Fracassi, 2015; Erel, Liao, & Weisbach, 2012). Reviewing the studies one limitations arises – religion is treated on the country level. For example in their (2009) study about trust , religion and culture, Guiso, Sapienza and Zingales testes the similarity of religious affiliation between their country set, but neglected different religions within the countries.

In a following paper, Dow et al. (2016) applied linguistic and religious distance both to predict the percentage of acquiror's ownership in the target firm. The results show support for a negative relationship between linguistic and religious distance and diversity and the level of ownership. Without doubt does the study contribute to the literature in the sense that it considers specific items of culture – language and religion – and takes heterogeneity and diversity within countries into consideration. Nevertheless, the unit of analysis remains to be on the country level, which indicates similar problems than we discussed earlier: culture remains entangled with formal institutions.

Chakrabarti et al. (2009) also apply language and religion as additional culture proxies in their study of cross-border M&A performance, and how significant better outcomes when target and acquirer are from cultural distant countries. Clearly their study contributes to the M&A literature showing positive effects of culture, but nevertheless one limitation remains – language and religion are treated on the country level only.

Strategic management also turned to sub-national regions in the past and studies employ local administrative regions of China as sub-national regions, and investigates the subsidiary performance (ROAs) of multinational companies in China based on the subnational region of location (Chan, Makino, & Isobe, 2010; Cheng & Kwan, 2000; Ma, Tong, & Fitza, 2012). Again, the authors make a significant contribution to the discussion of heterogeneity within countries for IB, but are not able to separate the different effects of culture from formal institutions, as their level of sub-national regions are purely based on administrative borders.

Our study is going beyond language diversity, by measuring dialect diversity of one language (Falck, Heblich, Lameli, & Suedekum, 2012) – as a concept of culture rather than multiple languages. Dialect differences and as a result, dialect distances do not display actual communication barriers between parties, but rather show persistent cultural differences across regions of a country or several countries (Bauernschuster, Falck, Heblich, Suedekum, & Lameli, 2014; Falck et al., 2012). Such measurement of

culture allows us to identify sub-national regions of cultures within countries but also across countries beyond the national border and the implied border effects.

Acquisition Target Selection

Within the vast scholarly discussion on M&As—drivers of performance dominate (Zollo & Meier, 2008). And yet most of the reasons M&As create or destroy value remain hidden (Ellis, Reus, & Lamont, 2009). Studies show, that between 70 and 90 per cent of acquisitions fails to add value (Christensen, Alton, Rising, & Waldeck, 2011; Evans, 2004; King, Slotegraaf, & Kesner, 2008). But neither scholars nor investors can predict post-acquisition performance (Harrison, Hitt, Hoskisson, & Ireland, 1991; Hitt, Hoskisson, Johnson, & Moesel, 1996).

Considerably less studies have been focusing on pre-acquisition target selection, although scholars claim such stage to be predetermined for post-deal performance of the firms (Claussen et al., 2018).

Target selection literature focuses on efficiency and the firm level mainly – poorly management assets are moved to better management and thereby the buyer can leverage their own capabilities and resources to increase profits (Claussen et al., 2018). Under this assumption target and buyers' characteristics on the firm level were studied (Caiazza, Clare, & Pozzolo, 2012; Hannan & Pilloff, 2009; Hannan & Rhoades, Stephen, 1987; Hernando, Nieto, & Wall, 2009; Moore, 1997; Wheelock & Wilson, 2000). Similar portfolios are however not always the reason for target choices, as studies show. Pharmaceutical firms in the US proof to choose complementary firms as target (Yu, Umashankar, & Rao, 2016).

A few exceptions have studied other determinants of acquisitions target selection. Chakrabarti and Mitchell (2013) show that geographic distance reduces the odds that an acquisition in the US pharmaceutical industry occurs. Another study (Erel et al., 2012) shows that geography, quality of accounting disclosure and bilateral trade increase the likelihood of acquisitions across borders. However in such samples, culture in particular has not been investigated – and thus, we do not know how cultural differences impact the selection stage. Consequently, performance studies left out this pre-deal phase which potentially leads to the high levels of uncertainty in the field.

THEORY

Distance between individuals, teams, organizations and regions/ countries have been viewed as a crucial factor in International Business studies (Zaheer et al., 2012). It can be measured in many ways besides the familiar Euclidean one, but the concept generally carries through—each firm's own characteristics in a particular dimension of interest constitute its own position (in a metric space), and distance measures the difference between two positions. More similar firms are closer; more different ones are further away.

Cultural distance measures the differences between the general values, norms, communication styles rooted in the cultures of the regions where the two firms are located (Kogut & Singh, 1988) . In our study, we choose several salient distances as proxies for *cultural distances* that are likely to affect the formation of acquisitions: dialect, religious, political, historical border.

(1) Dialect Distance

Dialects as our linguistic proxy for culture do not reflect actual communication barriers that hinder the information flow between parties. Studies prove that the use of dialects has been decreasing over time, especially with the introduction of standard German (Falck et al., 2012). Although communication across the German speaking regions are easier today, dialect differences remain a reflection of persistent cultural differences that were developed over centuries across regions (Falck et al., 2018). Contrary to classical linguistic studies in which linguistic differences and distances are investigated on the national language level (e.g.: Dow et al., 2016), our measurement of distance takes place between the same language. Where in the former case, learning a new language to the extent of understanding nuances and culturally embedded concepts is a great challenge (Chiswick, Miller, & Chiswick, 2005), learning a new dialect seems highly unlikely. One can learn over time certain expressions or dialect specific words – for example, the word for bread roll is significantly different in the North of Germany (Brötchen) and the South as well as in Austria (Semmel). Nevertheless, the described distance will remain.

H1: The probability of a merger is negatively related to dialect distance, controlling for all other covarying distances.

(2) Religious Distance

Religion is often referred to as one of the key elements of culture (Zaheer et al., 2012). Different religions reflect different value systems and different forms of verbal and non-verbal communication (Carlson, 1974). Several studies show how religion influences and shape daily work and life practices (Norris & Ingelhart, 2011). This holds for different religions as much as different sub-groups of one religion, as in our case, Christianity. The Protestant and Catholic faith can be categorized into individualistic and collectivistic cultural groups respectively. Protestant individualism mainly emphasizes personal control and goals as well as uniqueness. Whereas Catholic collectivism is characterized by group affiliations and social connections (Cohen & Hill, 2007). Further, a distinction can be made between the Christian groups in regard to work ethics (Arslan, 2001). Difficulties regarding cross-religion activities mostly arise in situation where a certain norm or value, that is not formally stated, is of high importance in one religion but not in the other (Dow et al., 2016). And finally, on a more practical note, celebrations and holidays differ between the two religious streams, which leads to difficulties in integrating parties from both groups. Given such described differences, we conclude that:

H2: The probability of an acquisition is negatively related to religious distance, controlling for all other covarying distances.

(3) Political Distance

Political ideologies differ significantly between parties, ranging from the liberal left-side to the more conservatives and nationalistic right. Key aspect of political ideologies is the foundation of morality and cultures value such concept differently (Haidt & Graham, 2007). Research shows there exists a basic left versus right view on morality – political liberals have a stronger emphasis on justice and fairness whereas conservatives value loyalty, respect and authority equally strong than individual justice and fairness (Haidt & Graham, 2007). This can lead to a large gap between the groups of understanding, where conservatives have many moral concerns, liberal parties fail to recognize such. These potential tensions can lead to obstacles to overcome for organizations, especially by integrating firms from regions with differences in their political ideologies. Therefor we conclude that:

H3: The probability of an acquisition is negatively related to the Political distance, controlling for all other covarying distances.

(4) Inner German Border

The former East-West border of Germany imposes two aspects of cultural differences. The first is closely related to the previous aspect of political ideology and the fact that the two regions of Germany have been developed different political traditions in the time of separation – democratic and communist (Dalton & Weldon, 2010). Secondly, the political culture within the country has developed differently and as a consequence national identities differed (Dalton & Weldon, 2010). The political culture in the Federal Republic (FRG) regarded emotionalism and nationalism as clear weaknesses, based on the history, whereas the German Democratic Republic (GDR) highly valued such aspects (Dalton & Weldon, 2010). The citizens of the FRG were more hesitant towards national pride and the expressions of nationalistic values and beliefs (Conradt, 2003). Despite reunification, a clear distinction between the East and West can be made nowadays – investigations show that communication between the regions faces many obstacles (Klein, 2001) and so for example East Germans keep perceiving West Germans as arrogant and patronizing (Rau, 2002). The devaluation of the GDR past proves to impact day to day life in Germany (Rau, 2002) and thus we can conclude that the historical border and related stereotypes and differences in political culture will impact the acquisition target selection process.

H 4: The probability of an acquisition match is negatively related to the former Inner German Border, controlling for all other covarying distances.

Actual Separation of Culture from Formal Institutions

A strength of our analysis lies in measuring these cultural distances simultaneously. This matters, because they theoretically all impact the dependent variable (negatively) and could plausibly be correlated with one another. As our summary statistics reveal, in accord with natural intuition, cultural and national distance both strongly and positively correlate to geographic distance (though surprisingly and conveniently not to each other). Hence, any estimate of the effect these three distances, omitting the other two, will overestimate the size of the negative effect of the focal distance. By measuring their effects simultaneously, we can disentangle one from the other.

Secondly, by having different cultural proxies – dialects, religion, political ideologies and historical borders – we are able to test culture on different levels simultaneously. For example, not only are many words for everyday objects and pronunciations completely different in Bavaria and Prussia, but the natives of former region tend to be Catholic, talkative, and politically conservative while those of the latter are more likely

to be Protestant, reserved, and liberal, not to mention that the two regions were still at war with each other more recently than the Union and Confederates of the US. Hence, while we can distinguish the effect of cultural distance from national distance (which is blurred in virtually all extant international business studies) and from geographic distance (Chakrabarti and Mitchell's (2013) object of attention), we cannot causally identify the exact mechanism by which cultural distance reduces the probability of a merger's occurrence.

EMPIRICAL SPECIFICATION AND SAMPLE

Empirical Specification

We estimate the change in our distance metrics of interest on the change in the probability that a given acquiror, A, and target, T, merge ($\Pr\{y_{A,T} = 1\}$). We code realized and unrealized matches in our data as follows:

$$y_{A,T} = \begin{cases} 1 & if \quad Acquirer\ and\ Target\ merge \\ 0 & Otherwise \end{cases}$$

We detail the sample construction in the next section. For our baseline we estimate the following probit model:

$$\begin{aligned} \Pr\{y_{A,T} = 1\} = \ & \beta_0 + \beta_1 Linguistic\ Distance_{A,T} + \beta_2\ Religious\ Distance_{A,T} \\ & + \beta_3\ Political\ Distance_{A,T} + \beta_4\ Inner\ German\ Border\ (East/West)_{A,T} \\ & + \beta_5\ Different\ Federal\ State_{A,T} + \beta_6\ International\ Deal_{A,T} \\ & + \beta_7 Geographic\ Distance_{A,T} + \beta_8\ Indutry\ Distance_{A,T} + \varepsilon. \end{aligned}$$

Sample

We identified all deals listed in the Thomson Reuters Security Data Company (SDC) M&A Database completed between January 1, 1996 and December 31, 2016. We only include deals by publicly listed acquirers and involving both targets and acquirers based in Germany and/or Austria. Doing so, we create an initial sample 4,855 realized deals. Due to missing data in the city and zip code information, primarily

for privately held targets within SDC, our sample was reduced to 1,992 actual deals. We controlled for reoccurring partial acquisitions. In other words, we only considered deals that led to a majority stake in the target company. In a second stage we created all possible combinations between our set of acquirors and targets – 1,174,463 deals in Germany and 1,465,764 in Austria and Germany combined.

Historical Language Data: German Dialects

Our main proxy for culture is based on Lameli's (2013) dialect similarity matrix. Using data from a linguistic atlas of the German Empire (Deutscher Sprachatlas), compiled between 1879 and 1888 by Georg Wenker, Lameli decomposed German pronunciation and grammar into 66 dimensions that vary by geographic location. Falck et al. (2012) map these locations to modern Germany's 439 NUTS 3 level administrative districts (counties), and compute a similarity measure for each pair of districts.[2]

Because the dialect similarity matrix (Lameli, 2013) in its output is limited to German national boundaries, we required a way to impute similar distances associated with Austria. For doing so, we identified in an initial stage the German dialects spoken in Austria and distinguished the dialects between three groups – namely Alemannic, middle Bavarian and south Bavarian on the basis of Lameli's (2006) description. We then, and again following Lameli's (2006) description, identified all regions in Germany that are classified under the same dialect groups than in Austria and used the associated data to impute distances for Austria as well as between Austria and Germany:

Step 1: following Lameli (206) we grouped Austrian counties (NUTS 3 level) into three dialect groups: (1) Alemannic, (2) Middle Bavarian and (3) South Bavarian and allocated the appropriate level of aggregation from German regions on either NUTS2 or NUTS1 level. Table A in the Appendix provides a detailed overview of allocations.

Step 2: Middle Bavarian and Alemannic: again, based on Lameli (2006) we identified and grouped all counties and pairwise scores of the dialect similarity matrix (Lameli, 2013) of Germany for middle Bavarian and Alemannic. We then calculated the average and median similarity scores for both groups (Alemannic

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[2] For more details see (Falck et al., 2012; Lameli, 2013)

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and middle Bavarian) to all other counties in Germany (on NUTS3 level). We then treated such values as proxy for Austrian regions.

Step 3: the third dialect group – South Bavarian – is only existing in the southern part of Austria, but not within German boundaries (Lameli, 2006; Wiesinger, 1987). This implies, that we do not have a comparable group on a finer level (such as NUTS3 or NUTS2) in our similarity matrix for Germany, such as for Alemannic and Middle Bavaria. In order to calculate an aggregated score for this region, we needed to group all counties in Germany on the broader level of Bavarian (NUTS1 level). This grouping takes all Bavarian sub-groups of the dialects into account (in fact, that is all Bavarian districts except Swabia) and leads to an aggregated score of the Bavarian dialect as a whole. Following the same procedure than before, we calculated the average and median for the group of Bavaria to all other counties (NUTS3 level) in Germany for a proxy of those regions, which are categorized as South Bavarian in Austria.

Step 4: Based on the average scores we calculated, we developed a matrix for Austria based on the medians for the three sub-groups of dialects (see above). We additionally calculated the medians between the newly imputed groups: (1) Median of Alemannic and middle Bavarian, and (2) Median of Alemannic and Bavarian.

Variables

Dependent variable

The acquisition match – dummy of 1-0 that indicates whether any potential pair or target and acquire announced and closed a deal in our sample. We restricted our sample to only those deals that were actually closed and disregarded all announced and not closed deals for our analysis.

Explanatory Variables

Dialect distance: We measure linguistic distance based on the dialect similarity matrix by Lameli (2013) for Germany, and a modified version for Austria described above. We converted similarities to distances for means of comparisons by subtracting the similarity score of each combination of two counties in our datasets from the maximum of 66 points.

Religious distance. Data was collected from the statistic departments of federation and federal states of Germany and Statistics Austria. We control for religious distance, because research shows the significant impact of distance between religions on decision-making, trust and communication in IB (Blomkvist & Drogendijk, 2013; Castellani, Jimenez, & Zanfei, 2013; Dow & Karunaratna, 2006) Malhotra & Gaur, 2014). We measure the different proportions of Catholics and Protestant between regions (NUTS3 level) and the according distance by means of the Euclidian distance formula.

Political distance. Data was collected from the federal returning offices of Germany and Ministry of the Interior of Austria. We calculated the weighted distances of political ideologies represented by the five largest parties voted in Germany and Austria on NUTS2 level. Therefor we weighted the percentages of votes for each party by their according ideological score (left-right-scheme) (Neundorf, 2011) and then calculated the distance between the regions on basis of such weighting.

Inner German Border. A dummy, coded 1 if target and acquirer are not headquartered in either West of Germany (former Federal Republic of Germany) or East (former Germany Democratic Republic). Although our sample does not include deals before the country's reunification (in 1990), it is crucial to take potential historical led differences into account. East Germany was treated for 40 years in communism and thus the political culture differs from the one in West Germany.

Controls

We wish to measure the effect of cultural distance between potential target and acquirer headquarter regions on the probability that the two merge. One may reasonably worry that an unobserved factor (a) correlated with this cultural distance could also (b) drive the probability of a match, introducing so-called omitted variable bias (OVB) into our estimates of interest. Introducing additional explanatory variables or control variables can restore the so called *conditional mean independence* assumption (Stock & Watson, 2014), ensuring our estimates are free of OVB. It is not required (or useful) to include every proxies for plausible driver of mergers or correlate of culture, only those which satisfy *both* (a) and (b). Given that our sample only includes firms which eventually merger, it is also not necessary (or useful) to attempt to control for predictors of being involved in a merger—they all are. Hence, all the independent variables in our regressions measure a *relationship* between the two potential partners.

Because culture correlates with so many things OVB is a significant risk in our case. Our various dimensions of culture—dialect, religion, political leanings and the inner German border—are all correlated, and drive

match probability. So, the only reasonable way to estimate their individual effects is to include them all in the model together. Similarly, geographic distance and different formal institutions are likewise correlated to culture and could drive match probability. So, we include geographic distance, and dummy variables indicating whether or not the potential partners are in different administrative districts (Federal States) and countries (National).

(1) Geographic Distance

Geographic distance is likely to negatively affect synergies in two ways. First, in some instances there is direct effect on the magnitude of the potential synergies. For example, merging two rivals serving the same market increases their joint market power. So, to the extent that markets are regional, geographic distance diminishes the potential gains in market power. The second, and probably more prevalent, way that geographic distance negatively impacts synergies is by impeding integration. Transport, communication and other transaction costs are higher over greater physical distances. Previous research shows that geographic location matters in the search for resources and decision making processes and proves to impact target selection (A. Chakrabarti & Mitchell, 2013) -- the further away the potential target, the more hurdles have to be overcome such as communication and coordination and as a result, the less likely the target will be acquired (A. Chakrabarti & Mitchell, 2013).

Geographic distance. We identified the target and acquirer firms' addresses and cities using Thomson SDC first. Then, we determined each firm's GPS coordinates using GPS Visualizer[3] and calculated the distance between the coordinates by means of the Haversine formula.

(2) Federal States Differences

On the level of federal states in our country set of Germany and Austria, formal institutions differ from each other in terms of income taxes, church taxes and other administrative regulations and impact M&A behavior and performance (Dikova, Sahib, & van Witteloostuijn, 2010).

Different Federal State. Similar to other controls, we set a dummy coding 1 if firms are not headquartered in the same federal state for both countries. This is important, because although major formal institutions do not vary within counties, federal states in Germany and Austria show several diversity in administrative and legal aspects.

(3) National Distance

Encompasses the formal differences in official state institutions—legal regimes, regulation, product standards, taxes, tariffs, visa requirements and so on—that arise when the potential partners are located in different countries (Berry, Guillén, & Zhou, 2010). Formal institutional distances – political, administrative and economic distance – prove to impact cross-border M&A behavior and performance (Dikova et al., 2010) and thus we conclude:

International Deal. Is a 1-0 variable indicating a cross-border deal, where 1 indicates acquirer and target are not in the same country and 0 otherwise. Crossing a national border introduces significant differences in institutions—legal regimes, regulation, product standards, taxes, tariffs, visa requirements and so on— that arise when the potential partners are located in different countries (Porter, 1990; Rodriguez, Uhlenbruck, & Eden, 2005). Differences in formal institutions, like differences in informal ones associated with culture, increase obstacles for integration, and can even cap the achievable level of integration at any cost.

Furthermore, it is well-known that relatedness of firm's technology and business will influence whether or not they merge. It is also well-known that firms in similar industries tend to collocate, which plausibly introduces a spurious correlation between culture and merge probability that arises due to industrial relatedness. To rule this out we control for industrial distance between firms.

(4) Industry Distance

On the matching level we control for Industry distance because it shows how different the goods and/or services sold by the two companies are from one another and refers to the correspondence level between the firm (Chatterjee, Lubatkin, Schweiger, & Weber, 1992; Haleblian & Finkelstein, 1999). And thus, firms are less likely to select industrially distance targets.

Industry Distance: First, we identified the industry categorization of each firm and the according Standard Industrial Classification (SIC) codes[3]. We then calculated a distance for each pair of target and acquirer based on the four-digit code between 0-4: 0 = same industry sector, that means all four digits are identical; 1= same industry group, that means the first three digits are identical, 2 = same major group, that means

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[3] (https://www.osha.gov/pls/imis/sic_manual.html)

the first two digits are identical and 3-4 = no overlap in the industry grouping, that means only the very first digit or none is identical. A list with the description of industry sectors can be found in APPENDIX B.

Normalized Distance Measures

Due to the differences in measurement units for distances in our study, we standardized these by:

$$z_i = \frac{x_i - \mu}{\sigma}$$

Where: x_i is any distance data point, μ is the sample mean and σ is the standard deviation of the sample. Variables included are: (1) geographic, (2) linguistic, (3) religious and (4) political distance. Output units in the results are thus in relation to a change in standard deviations rather than the original distance metrices.

Table 1: Descriptive Statistics (Germany and Austria)

Variable	Observations	Mean	Std. Dev.	Min	Max
Actual Deal	1465764	0.0014	0.0368	0.0000	1.0000
Geographic Distance	1465764	350.9792	193.2132	0.0000	970.6783
Linguistic Distance	1465764	32.2596	12.3052	0.0000	55.0000
Religious Distance	1465764	35.3181	20.6022	0.0000	116.9022
Political Distance	1465764	2.0985	1.6978	0.0000	8.5892
East-West (dummy)	1465764	0.1936	0.3951	0.0000	1.0000
Industry Distance	1465764	3.7908	0.7879	0.0000	4.0000
Different Federal State (dummy)	1465764	0.8835	0.3208	0.0000	1.0000
German Deals (dummy)	1465764	0.8013	0.3990	0.0000	1.0000
International Deal (dummy)	1465764	0.1877	0.3905	0.0000	1.0000

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Table 2: Pearson Correlations (Germany and Austria)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Actual Deal	1.0000									
(2) Geographic Distance	-0.0188	1.0000								
(3) Linguistic Distance	-0.0207	0.5395	1.0000							
(4) Religious Distance	-0.0168	0.3921	0.2278	1.0000						
(5) Political Distance	-0.0108	0.4646	0.2248	0.2765	1.0000					
(6) Inner German Border	-0.0062	0.1842	0.0500	0.3105	0.1030	1.0000				
(7) Industry Distance	-0.0573	0.0132	0.0077	0.0328	0.0063	-0.0015	1.0000			
(8) Different Federal State	-0.0232	0.5167	0.5165	0.3060	0.4412	0.1779	0.0068	1.0000		
(9) German Deals	0.0050	-0.4429	0.1301	-0.2524	-0.1764	0.0997	-0.0256	-0.1309	1.0000	
(10) International Deal	-0.0098	0.4814	-0.0780	0.2755	0.1749	-0.0881	0.0242	0.1656	-0.9653	1.0000

RESULTS

Table 3: *AMEs of Probit coefficients and conditional probabilities – Cultural Distances*

	(1)	(2)	(3)	(4)	(5)
Dialect Distance	-0.000700***				-0.000588***
	(0.0000344)				(0.0000380)
	[-48.34%]				[-40.55%]
Religious Distance		-0.000678***			-0.000381***
		(0.0000447)			(0.0000475)
		[-46.96%]			[-26.28%]
Political Distance			-0.000453***		0.0000694
			(0.0000422)		(0.0000439)
			[-31.38%]		[4.79%]
Inner German Border				-0.000690***	-0.000242*
				(0.0000985)	(0.000103)
				[47.59%]	[-16.68%]
N	1,174,463	1,174,463	1,174,463	1,174,463	1,174,463
Baseline Probability	0.15%	0.15%	0.15%	0.15%	0.15%

Standard Errors in paranthese, conditional probabilities in square brakets [%]
* $p<0.05$, ** $p>0.01$, *** $p<0.001$

Table 3 reports the average marginal effects (AMEs) based on the probit coefficients of the regressions and the corresponding conditional probabilities. Model 1 throughout 4 display the separate regressions the cultural dimensions: (1) dialect distance, (2) religious distance, (3) political distance and (4) historical border of East and West Germany (Inner German Border). This enables us to first test each cultural element isolated and identify their effects, thus disentangle the effects from one another. When tested separately, all variables show significant impacts on the probability of an acquisition match and support our claim, that each individual aspect of culture is important to consider.

Column 1 reports that the AME of a one standard deviation increase in dialect distance decreases the probability of a merger by 0.07 percentage points. At first blush, this appears low; however, the unconditional probability of a match in our constructed sample is 0.15% (that is the baseline of occurrence of a match) , which implies that an additional standard deviation of dialect distance is associated with a 48% lower probability of a match—an economically significant effect. Each model reports statistical significant effects ($p< 0.01$) for the according variable. Similar interpretations are made for our other variables of interest: (2) religious distance is associated with a 46.34% decrease in probability, (3) political distance with 31.38% and (4) 47.59% east-west historical border of Germany. Same interpretations apply -- each element shows an economically significant effect.

Model (5) in a next step tests all elements combined, without further controls. Results show that taken together, only Political Distance loses its statistical significance. The Inner German Border shows a drop in significance from $p<0.001$ to $p<0.1$ and thus loses some strength. Our cultural proxies of dialect and religious distance show the strongest results. Whereas religion loses half of its magnitude, dialects continue to show the largest magnitude and effect.

Table 4: *AMEs of Probit coefficients and conditional probabilities – full models*

	(1)	(2)
Dialect Distance	-0.000379***	-0.000365***
	(0.0000522)	(0.0000435)
	[-26.14%]	[-26.86%]
Religious Distance	-0.000269***	-0.000231***
	(0.0000472)	(0.0000393)
	[-18.55%]	[-17 %]
Political Distance	0.000140**	0.0000612
	(0.0000480)	(0.0000392)
	[9.66%]	[4.50%]
Inner German Border	-0.000188	-0.000273**
	(0.000109)	(0.0000973)
	[-12.96%]	[-20.08%]
Industry Distance	-0.00101***	-0.000967***
	(0.0000310)	(0.0000270)
	[-69.95%]	[-71.15%]
Different Federal State	-0.000608***	-0.000702***
	(0.000125)	(0.000108)
	[-41.93%]	[-51.65%]
Geographic Distance	-0.000107	0.0000108
	(0.0000676)	(0.0000563)
	[-7.38%]	[-0.79%]
National Border		-0.000911***
		(0.000130)
		[-67.03%]
N	1,174,463	1,465,764
Baseline Probability	0.15%	0.14%

Standard Errors in paranthese, conditional probabilities in square brakets [%]
* $p<0.05$, ** $p>0.01$, *** $p<0.001$

Table 4, Model (1) and (2) report on our full model for (1) Germany and (2) Germany and Austria. In model (1) we add Industry Distance, Geographic Distance and Different Federal State as controls for the German sample.

Dialect and Religious Distance remain robust throughout the tests and continue to report statistical and economical significant effects. The conditional probability of Dialect Distance remains stable between the domestic and international sample in M (1) and M (2). However compared to our previous tests of cultural proxies separately and together, AMEs and probabilities drop almost by half. However, with a probability of 26%, one can say that it remains strong enough. Similar interpretations can be made for Religious Distance – stand alone, the AMEs are larger than when controls are taken into account, however the effect remain robust and equally large between the domestic and international sample. Therefore our H1 and H2 are supported in both analyses, Table 3 and 4. Political Distance reports on the most surprising findings – namely a positive rather than negative effect throughout the models. However, in our full international sample, our third dimension of culture loses statistical significance. Compared to our analysis in Table 3, stand-alone Political Distance reports our H3 and shows the expected negative relationship, but when tested together the effect is lost – H3 is thus only partially supported.

Industry Distance shows strong and significant AMEs and a related probability of almost 70% (69.96%). The unconditional probability for Model (1) remains the same than in Table 3, namely 0.15% and thus the referring decrease in probability caused by Industry Distance is economically significant. In other words, for each step in separation between target and acquirer's industry classification ranging from industry sector to industry group to major group to no overlap at all, the probability of a match is reduced by almost 70%. Crossing a federal state within Germany also shows statistical as well as economic significance in our analysis, namely by crossing the border, chances of being selected as a target is reduced by slightly more than 40% (41.9%). Geographic Distance on the contrary shows non-significant AMEs. In the international sample, Industry Distance remains robust with a slight increase (around 2%) in AMEs and probability as well as crossing federal state borders (almost 10%). Geographic Distance in the full international sample remains not only insignificant, but the AMEs and conditional probability is almost diminished, leading to the assumption that Geographic Distance in the end merely serves as proxy for culture and formal institutional distances. In other words, we can argue that Geographic distance does not actually proxy for travel time/costs but rather for culture. Although previous studies proof the effect

significant (A. Chakrabarti & Mitchell, 2013), our study shows measure beyond and the direct effects on geographic distance to be not the crucial point.

DISCUSSION & CONCLUSION

First and foremost, our study was able to distinguish between various cultural distances separately as well as individually. Our analysis shows that each cultural distance itself – dialect, religion, political ideology and historical inner German border—has a strong and significant impact on the probability of an acquisition happening. Further, we did not confirmed prior evidence that geographic distance between potential acquirer and target makes acquisition less likely. But instead we confirm that dialect distance together with religious distance make acquisitions less likely, when holding each of the other distances (controls) constant. Hence, we disentangle the often-confounded effects of formal institutions, which change at political boundaries, and culture, which vary fluidly over them. The effects in the context of Germany and Austria are significant—both statistically and economically.

Our study contributes thus to several conversations. First, we were able to make a novel contribution by truly isolating culture from other aspects. Secondly, we contribute to the International Business discussion about sub-national cultures and regions, by using a unique data set of dialects, which goes beyond traditional language differences and linguistic distance matrices.

The results show that a one standard deviation increase of linguistic distance (dialect) is associated with a -26% change in the probability of an acquisition within Germany as well as internationally. Further we show that industry groups are of significance when it comes to target selection, being separated just by a different sub-group already lowers the probability of an acquisition by almost 70%. This is with 67% almost the same effect than crossing a national border in itself. We therefor also have evidence for the known importance of industry relatedness in M&A research. And although challenging the concept of culture, our paper also supports International Business literature in its stance to emphasize the importance of international borders, even nowadays in times of globalization.

Limitations

Of course our paper also brings a list of limitations which are important to mention. Firstly, as pointed out in the beginning we are not able to test the actual mechanisms of our cultural and institutional proxies. In other words we can only speak about the effects in terms of their relationship and their magnitude, but were not able to develop a causal relationship in testing. Secondly, based on our linguistic data set, our sample is limited to the German speaking regions (in fact only Germany and Austria), and thus general conclusions are harder to make. We can therefor only draw conclusions for the whole population to some extent but need to acknowledge that the concept of dialects might be rather unique in itself and thus harder to generalize to other language regions.

Lessons for Management

For management and practice, our study provides more insights into country-diversity and the multilayered concept of culture. Although our data is limited to the German-language area, more specific Germany and Austria, it can be applied to other country settings as well, where language are crossing national borders. In the very specific context of Germany, we can definitely suggest that managers be more careful about cultural differences within German borders.

To put these numbers in practical terms, consider a hypothetical acquiror headquartered in Munich, Germany and potential targets of the same industry in the German capital of Berlin versus the Austrian capital of Vienna. The odds that domestic target is chosen over the foreign one are 0.7 to 1. Even if the fact that Vienna is physically closer to Munich than Berlin were ignored, the odds of the domestic target being chosen would only increase to 0.8 to 1. While the result that the cultural divide between Munich and Berlin trumps the national one between Germany and Austria, may come as no surprise to natives of those German cities (where rivalry has brewed for centuries), it does stand out in the academic international business literature (where cultural and national differences blur). Managers should (and evidently, they do) carefully consider cultural differences inside their own countries, as they may outweigh the more famously advertised liabilities of going abroad.

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APPENDIX A

Table A: Grouping of the German Dialects spoken in Austria according to (Lameli 2006)

State	NUTS3	Dialect Group	Aggregation Level
Burgenland	AT111 – AT113	*South Bavarian*	*NUTS1 Germany/ Bavaria*
Lower Austria	AT121 – AT127	*Middle Bavarian*	*NUTS 2 Germany / Middle Bavaria*
Vienna	AT130	*Middle Bavarian*	*NUTS 2 Germany / Middle Bavaria*
Carinthia	AT211 – AT213	*South Bavarian*	*NUTS1 Germany/ Bavaria*
Styria	AT221 – AT226	*South Bavarian*	*NUTS1 Germany/ Bavaria*
Upper Austria	AT311 – AT315	*Middle Bavarian*	*NUTS 2 Germany / Middle Bavaria*
Salzburg	AT321 – AT323	*South Bavarian*	*NUTS1 Germany/ Bavaria*
Tyrol	AT331 – AT 335	*South Bavarian*	*NUTS1 Germany/ Bavaria*
Vorarlberg	AT341 – AT342	*Alemannic*	*NUTS2 Germany / Alemannic*

APPENDIX B

Code range	Industry Grouping
0100-0999	Agriculture, Forestry and Fishing
1000-1499	Mining
1500-1799	Construction
1800-1999	not used
2000-3999	Manufacturing
4000-4999	Transportation, Communications, Electric, Gas and Sanitary service
5000-5199	Wholesale Trade
5200-5999	Retail Trade
6000-6799	Finance, Insurance and Real Estate
7000-8999	Services
9100-9729	Public Administration
9900-9999	Non-classifiable