

# The Influence of Regional Culture on U.S. Domestic Mergers

M.Sc. Thesis – Financial Economics

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**August 29, 2018**

## **Abstract**

This paper attempts to contribute to the financial economics M&A literature by providing empirical evidence concerning the effect of regional culture on the volume and gains of mergers. For a sample of U.S. domestic mergers ranging from 1985 through 2017, I find evidence which suggests that interregional cultural distance negatively affects merger volume between region-pairs, measured both in number and aggregated deal value. I do not find a significant effect of cultural distance on cross-regional merger gains. Regressions include year, acquirer, and target region fixed effects and standard errors are robustly calculated. Tobit or Heckman corrected OLS regressions are employed to control for selection bias.

*Keywords:* mergers, culture, regional, cross-border / *JEL classification:* G14, G34, M14, Z10

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<sup>1</sup> I thank M.A. de Graaff, M.A. Reijm, K.S. Bruggeman, L. Croes, R.J.A. de Goede, M.J. Kornet, and H.T. Haanappel.

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## **1 Introduction**

Measures of cultural values and beliefs have only recently found their way into the (international) finance literature, despite the explanatory values of cultural measures in various fields of economics and business administration. As Hofstede (2001, p. 385), author of the most used measures of culture<sup>2</sup>, mentions: “The finance function has been the last stronghold in business administration to escape cross-cultural analysis”. However, the last decade has been fruitful, particularly in the field of international finance.

The aim of this paper is to investigate the effect of cultural differences on the volume and gains of mergers in different U.S. regions. A significant effect of culture shows that cultural differences do not only exist on the international level, but that cultural differences within a country can have economically significant consequences for mergers (and possibly for economic phenomena in general). Furthermore, it stresses the importance of culture in the merging process for managers and investors.

This paper extends previous research on cultural effects on mergers, i.a. in an international context (Ahern, Daminelli, and Fracassi, 2015), with additional evidence on the regional level for cross-regional domestic mergers. The domestic setting has the advantage of shared national institutions; a problem that international research must address using a range of control variables. Conform the previous research, I theorize that culture erodes merger gains through its negative effect on post-merger integration of the merging companies.

I extent a sample of mergers from 1985 through 2017 from ThomsonONE with measures of cultural values from the World Values Survey on the U.S. Census Region level, stock and market index prices from CRSP, and a range of control variables from various sources based on previous literature. To test for a culture effect on volume I use a gravity model on data aggregated on the region-pair-year level. I calculate the average acquirer- and target announcement CAR weighed by market capitalization two days prior to announcement as a measure for merger gains, which I test using a gravity model with observations on the deal level. I find that a one percent increase in

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<sup>2</sup> Karolyi (2016) found that Hofstede’s work has been cited over 5.000 times in the period of 1980 – 2015, and over 90.000 articles use the vernacular that Hofstede has pioneered.

cultural distance decreases merger volume by 2 – 7%. I find no significant effect of culture on merger gains.

The paper is structured as follows: in Section 2 and 3, I review the relevant literature on (cross-border) mergers and culture, respectively, to establish a theoretical framework. Section 4, 5, and 6 concern the empirical part of this paper: in Section 4, I clarify the source of my data and how I manipulated the data to arrive at my final sample; in Section 5, I describe the testing methodology; in Section 6, I discuss my results and reject or do not reject my hypotheses. In Section 7, I address the limitations of and possible extensions to this research, and in Section 8 I conclude. All tables and figures can be found in the Appendix.

## **2 Literature of Mergers**

### **2.1 Introduction: *The Wavy Nature of Mergers***

Mergers are not standalone events. Rather, they are clustered by industry and in time, characterized by the peaks of merger activity of e.g. the sixties, eighties, nineties, and zeroes. The industry clustering is caused by technological, regulatory, or economic shocks in the companies' environment (e.g. Nelson, 1959; Gort, 1969; or Andrade and Stafford, 1999). These positive or negative shocks change the industry's organizational structure (i.e. the number and size of firms in the industry) and force industry participants to restructure. They can do this internally through expansion or contraction, or externally through mergers. The relative cost effectiveness of mergers over internal restructurings is why we observe external restructuring more often (Mitchel and Mulherin, 1996). In addition to the occurrence of an industry shock, sufficient capital liquidity must be available to companies to finance the large investments that mergers are. Given the cyclical nature of this variable, merger waves are also clustered in time (Harford, 2005).

Contrary to this neoclassical shock theory of mergers, the correlation of merger waves with bull markets can also be theorized to be explained by behavioral (economic) theory. Information asymmetry between the market and managers enables the latter to time the market, and issue stock when the company's share price is overvalued, e.g. to pay for a merger (Shleifer and Vishny, 2003, Rhodes-Kropf, and Viswanathan, 2004). However, the evidence for market timing theory is ambiguous. Rhodes-Kropf, Robinson and Viswanathan (2005) break down the market-to-book ratio to derive short-run company and industry mispricing, and long-run market-to-book, but find evidence in line with both market timing and the neoclassical theory. Additionally, Harford (2005) finds that market timing variables have little explanatory power when controlling for variables capturing capital liquidity.

Neoclassical or behavioral economic theory aside – merger waves are not identical. Past merger waves differ in the industries affected and, more importantly, in the type of mergers that occurred. The merger wave of the 1960s can be characterized by the large amount of conglomerate (i.e. unrelated industry) mergers, as managerial expertise was assumed to be universally applicable across industries (Berk and DeMarzo, 2017). The 1980s wave was notorious for hostile takeovers. Although the share of unsolicited takeovers was relatively high in this wave compared to the share in other waves: 'only' 14.3% of U.S. publicly listed firms (NYSE, AMEX, and Nasdaq) received

a hostile bid at the time. Hostile activity diminished in the 1990s, with 4.0% of firms receiving a hostile bid (Andrade, Mitchell, and Stafford, 2001). The 1990s saw more intra-industry consolidation, as did the 2000s, where private equity also played a larger role than it had before (Berk and DeMarzo, 2017).

From 1980 onwards, cross-border mergers have become more prevalent in the M&A landscape. Although domestic mergers have always been the most common and accounted for most of the total value (see **Figure I.A** and **I.B**), cross-border merger volume and total value growth have far exceeded domestic merger growth, as shown by the indexed data figures **I.C** and **I.D**. Furthermore, cross-border merger value, both absolute and indexed, seem to follow different patterns in some periods than domestic mergers do, suggesting that these mergers are subject to additional factors.

## **2.2 Motives: *Why Merge, and Why Merge Abroad***

Generally, a company decides to undertake a merger or takeover transaction if the company's management believes economic value can be created (i.e. it's a positive net present value (NPV) investment). The economic value added (i.e. synergies) can originate from various sources: economies of scale or scope, vertical integration, expertise, monopoly gains, efficiency gains, tax savings from operating losses, or diversification (Berk and DeMarzo, 2017). Mergers can also be undertaken if no or little synergy is likely: biases in managerial behavior such as empire building (Jensen, 1986), or managerial hubris (overconfidence) (Roll, 1986) may lead managers to irrational merger or takeover decisions. Furthermore, mergers or takeovers can serve as a method of takeover protection (Gorton, Kahl, and Rosen, 2009).

Another motive for cross-border mergers is that it can be a mode of entry into foreign markets. A company can build foreign presence through either (a) exports, (b) Greenfield investment (i.e. starting from scratch), or (c) cross-border mergers or takeovers. The latter form of foreign direct investment (FDI) is sometimes preferred over Greenfield investments due to the need for intangible assets such as trade names, customer relationships and human capital (Kang and Johanson, 2000). Cross-border mergers account for roughly half of global FDI flows, with \$869 billion out of a total \$1,746 billion<sup>3</sup>.

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<sup>3</sup> UNCTAD World Investment Report 2017.

The inherent global nature of cross-border mergers means acquiring companies must consider additional (risk) factors that could influence synergies or their realization, including target legal regime and governance, regulatory environment, legal regime, tax system, and differences in social factors such as culture (Erel, Liao, and Weisbach, 2009, Ellis, Moeller, Schlingemann, and Stulz, 2011). The international setting of cross-border mergers also creates opportunities: companies from economically more developed countries can take advantage of their relatively cheap cost of capital, and currency or relative stock market fluctuations may result in cheap targets compared to domestic alternatives (Erel, Liao, and Weisbach, 2009). I will further discuss the influence of aforementioned and additional factors on profitability in the next sections.

### **2.3 Profitability: *Who Wins and Why***

Some studies suggest that most mergers fail to be profitable, especially for the acquirer. In other words, they are a zero or negative NPV investment. This view is hardly reconcilable with the vast amounts of (cross-border) mergers that have taken place in the past century; if mergers were in fact a loser's game, no one would play. The popular view is based on a limited sample of studies, according to Bruner (2004). Furthermore, measuring profitability depends on perspective (who wins) and circumstances.

Studies that evaluate merger profitability can be categorized in the following: surveys of executives (e.g. Mukherjee, Kiyamaz, and Baker, 2005), case studies (e.g. DaimlerChrysler), accounting studies (e.g. Duso, Gugler, Yurtoglu, 2010), and event studies (e.g. Ahern, Daminelli, Fracassi, 2015). However, surveys can be rather subjective, case studies are hard to generalize, and accounting studies are usually based on performance relative to peers. Thus, only event studies allow for an objective analysis of economic returns to shareholders.

Event studies rely on the assumption that stock markets are forward looking, i.e. that the current market price is the NPV of cash flows forecasted using all available data. In an event study, a company's historical returns are extrapolated into the future using an asset pricing model (e.g. CAPM or a multi-factor model). The extrapolated returns are then subtracted from actual performance and tested for statistical significance. Event studies are inaccurate when the event period is too long (other events might occur in the same period), or too short (the event's effect isn't fully captured), and are dependent on correct estimation of normal performance.



In a literature review of U.S. domestic merger event studies, Bruner (2004) finds that target shareholders tend to have positive abnormal returns following a merger announcement. The case for acquirer shareholders is not so clear: studies show mixed results. When considering distorting factors such as size, acquirers in a merger generally earn their required rate of return – they break even. Thus, on aggregate, returns are positive, and mergers add economic value. Furthermore, “cross-border M&A pays in a fashion consistent with the findings for U.S. domestic M&A” (Bruner, 2004, p. 71).

#### **2.4 Factors Influencing Profitability**

*Payment Type* – Mergers or takeovers can be financed with cash, common stock, or a mix of both. Travlos (1987) examines whether there is a relationship between payment type and the bidding company’s returns. Consistent with the market timing hypothesis, he finds negative abnormal returns for stock-based deals on the day of announcement, whereas cash-based deals are not significantly related to announcement returns. Bruner (2004) finds that targets experience positive abnormal announcement returns in both cases. However, abnormal announcement returns are higher for deals financed with cash.

*Deal Attitude* – Another deal-level characteristic of importance is deal attitude. Acquirers can either negotiate with the target’s management, or circumvent them and approach shareholders directly. The latter is also known as a hostile bid. Although an initial bid can be hostile, management can also be involved in subsequent bids. Schwert (2000) tests various measures of hostility to determine whether deals with a hostile attitude have distinguishable characteristics over friendly ones. He finds that hostile takeovers are associated with higher bid premiums and lower deal success rates, consistent with more aggressive bargaining by target managers. Schwert (2000) finds no strong relation between bidder returns and deal attitude as measured by abnormal returns (henceforth CARs) in the event window (-63, 126).

*Tender offer* – Bidders can collaborate with the target management, or tender them directly to the target’s shareholders. Dodd and Ruback (1977) research the stock market reaction to successful and unsuccessful tender offers and find that target shareholders experience positive abnormal returns in both cases. Bidders only earn positive abnormal returns in the case of success.

*(Relative) Size* – Moeller, Schlingemann, and Stulz (2004) find that acquirer size is significantly negatively related to acquirer abnormal returns, and that this negative size effect persists over time.

Furthermore, size can also impact profitability in a relative sense: target size as a percentage of acquirer size is positively related to acquirer merger gains (Asquith, Bruner, Mullins, 1983).

*Diversification* – To assess the economic impact of diversifying mergers, Berger and Ofek (1995) calculate the implied values of a business' segments using industry multiples, and compare the sum of these implied segment values to a firm's total market value. A higher total market value then indicates a diversification premium, a lower one a diversification discount. They find that total market values are 13-15% lower than the implied segment sums on average, providing evidence for the existence of a diversification discount.

*Product Market* – Another factor to consider is the product market a firm operates in. Hoberg and Phillips (2009) analyse companies' product descriptions published in the SEC 10k form and find that standard industry measures do not capture all firm similarity. For example, although in different industries, petroleum companies and pipeline manufacturers are related in the product market. Using measures based on 10k analyses, Hoberg and Phillips (2010) find that product market synergies significantly influence merger likelihood and a range of return measures, including stock market return. Furthermore, Ahern and Harford (2014) find that customer-supplier relations and industry interconnectedness significantly influence merger patterns, further stressing the important role of the product market in merger decisions.

*Termination Fee* – Companies can employ termination fees, which are provisions paid from target to bidder or vice versa if the bidding process fails. Bates and Lemmon (2003) find that termination fees that must be paid by the target are related to higher rates of completion and higher takeover premiums. Target-payable fees are higher for more complex deals or deals that entail higher information asymmetry. These findings support the hypothesis that targets employ these fees to increase deal efficiency, rather than to deter any other bidders. Similarly, Officer (2003) finds higher completion rates and premiums paid in case of target payable termination fees.

*Misvaluation* – In theory, managers of overvalued firms can capitalize on misvaluations of their company's stock through stock-based acquisitions (Shleifer and Vishny, 2003). In practice, however, paying with overvalued stock does not translate into shareholder wealth, as managers tend to overpay. The incidence of overpaying is higher for firms with worse governance (Fu, Lin, and Officer, 2013), suggesting managerial rather than shareholder interest is pursued.

*Defenses Employed* – Anti-takeover provisions (ATPs) such as poison pills and golden parachutes are defense mechanisms a company can employ to avoid being taken over. The provisions make the takeover process costlier for the acquirer, and ceteris paribus lower the likelihood of being acquired. However, the threat of being acquired is an important corporate governance mechanism to discipline incompetent managers, also known as the market of corporate control. Masulis, Wang, and Xie (2007) find that acquirers with more ATPs have lower abnormal announcement returns than less protected counterparts, supporting the hypothesis that managers of high ATP firms are subject to weaker governance and are more likely to engage in value destructing transactions.

*Geographical Distance* – Cross-border merger likelihood and profitability are subject to additional factors, compared to their domestic counterparts. Frank and Romer (1999) find that geographical factors such as proximity to a densely populated country significantly affect trade flows between those countries. Ragozzino (2009) examines the effect of geographical distance and the cross-border acquisition behavior of U.S. firms and finds that higher stakes are acquired in firms of countries that are more proximate to the United States. Furthermore, as cultural distance and political risk increase, firms prefer full ownership over shared ownership of their preferred target. Summarizing, mergers are clustered in waves, and their occurrence can be explained behaviorally or rationally. Within rational theory, mergers are undertaken if it is an investment with a positive NPV. Various methods have been employed in the literature to assess merger profitability, most notably the event study, and several important factors have been shown in the literature to influence the gains from mergers. Mergers that cross (national) borders are subject to additional factors. One such factor is culture, which I will extensively discuss in the following section.

### **3 Literature of Culture**

#### **3.1 Introduction**

Historically, economists have been reluctant to use national cultural factors as explanatory variables for economic phenomena. There are at least three reasons for this: data on cultural values were scarce, the definition of culture was too ambiguous, and (consequently) the channels through which culture would make its way into economic decision-making were unknown (Guiso, Sapienza, and Zingales, 2006). More recently, a richness of cultural data (e.g. through the work done by Hofstede (1980, 2001), Schwartz (1994)) has made it possible to systematically distinguish cultural values and preferences of individuals, leading Guiso, Sapienza and Zingales (2006, p. 23) to the following (economical) definition of culture: “those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation”.

Cultural values and beliefs then fit in economic utility theory through their influence on (non-standard) preferences. For example, Guiso, Sapienza, and Zingales (2009) use religion as instrumental variable for culture and assess its effect on preferences for wealth distribution on the national level. The model explanatory power as measured by  $R^2$  increased with 5.5 percentage points. Other examples of cultural values affecting economic phenomena (implicitly) through preferences include: (a) egalitarianism to explain self-selection into competition (Bartling, Fehr, Marechal, and Schunk, 2009), (b) respect rather than material compensation to explain productivity (Ellingsen and Johannesson, 2007), (c) trust and stock market participation (Guiso, Sapienza, Zingales, 2008), and (d), relating to this research, trust, hierarchy and individualism on the volume and profitability of cross-border mergers (Ahern, Daminelli, and Fracassi, 2015).

Experimental research provides additional evidence for the importance of culture on economic outcomes. Henrich et al. (2005) argue that the typical demography in (game theoretical) behavioral experiments – students – is not culturally diverse enough to judge whether the behavioral biases are part of a uniform universal pattern or caused by cultural factors. To overcome this ‘student bias’, they summarize the findings of fifteen similar experiments (i.a. dictator and ultimatum games) performed on varying groups of people across the world and find that their data “reveal substantially more behavioral variability across social groups than has been found in previous research” (Henrich et al., 2005, p. 797). Hoff and Pandey (2005) (strikingly called “Opportunity

isn't everything") provide poignant evidence of cultural biases affecting beliefs and decision-making. In their research, Indian children were asked to solve a maze twice: initially without knowing each other's caste, and later with caste knowledge. They found that low caste children performed worse the second time, both in absolute and relative terms.

### **3.2 Culture and International Finance**

Although measures of culture have only entered finance recently, the past decades have been fruitful. Guiso, Sapienza, and Zingales (2009) investigate the effect of trust on stock market participation across countries, using Dutch and Italian microdata. They find a positive relationship between more trusting individuals and various types of stock market participation (stock market trade, portfolio investments, and direct investments), after controlling for country level characteristics. Guiso, Sapienza, and Zingales (2009) take their previous research a step further and find a negative relationship between bilateral trust and cross-border stock market participation. Similarly, Botazzi, Da Rin, and Hellman (2010) find a significant positive relationship between bilateral trust and cross-border venture capital flows.

Additionally, Hwang (2011) finds a positive relation between the sentiment Americans have towards certain countries and the U.S. demand for securities of that country. Sentiment is negatively and significantly correlated with cultural distance measured using the Hofstede (1980) index. Siegel, Licht, and Schwartz (2011) find a direct negative effect of bilateral distance in egalitarianism between countries and cross-border flows of issuances debt and stock, syndicated loans, and M&A. Gianetti and Yafeh (2012) find that professional decision makers charge lower interest, give higher loans, and are less likely to require a third party when the counterparty shares cultural values. Karolyi (2016) employs various aggregate measures of culture to explain the foreign bias, i.e. why investors are over- or underweighted in foreign countries, and finds a significantly positive or insignificant relationship (depending on the measure).

### **3.3 Cultural Mechanisms in Cross-Border Mergers**

Cross-border mergers differ from other types of international investments, because their profitability crucially depends on realizing the synergies projected, which, in turn, is contingent on the successful integration of the two (or more) culturally distinct companies. Any inefficiencies resulting from cultural dissimilarity erode synergy value, and consequently lead to lower market valuations and stock returns.

Cultural distance may affect integration costs through multiple channels. Firstly, there might be an intergroup bias: managers, and workers in general, can have inefficient preferences for cultural peers that share their cultural values and beliefs (Hewstone, Rubin, and Willis, 2002). Secondly, there might be reduced coordination: experimental research shows that greater social distance adversely affects coordination among participants. This idea is further supported by the theoretical models of Akerlof (1997), where social distance based on one's initial inherited social position negatively relates to social interaction between individuals (cf. Ahern, Daminelli, and Fracassi, 2015).

If integration costs are higher for mergers in culturally distant countries, cross-border mergers must be more profitable for firms than domestic alternatives to compensate for these cost differences. Companies only undertake cross-border mergers if domestic opportunities are depleted or if the profitability of the cross-border alternative is sufficiently high to compensate for the risk posed by potential integration costs. If this risk proportionally increases with cultural distance, it is likely to negatively relate to merger volume.

On the contrary, increased diversity may have positive or at least mixed effects on firm efficiency. However, Stahl et al. (2010) test the effects of cultural diversity in teams, using both cross-national and intra-national differences. They find a positive effect on creativity and satisfaction, but a negative effect of social integration and task conflict. Furthermore, previous research by Ahern, Daminelli, and Fracassi (2015) shows significantly negative effects of distance in cultural values on merger gains and merger volume.

### **3.4 International vs. Interregional Culture**

The linkage between cultural factors and international finance has grown considerably over the past decade, as we have seen in the previous section. However, the national focus of the cultural factors of interest may lead to biased results: conflicting intra-national cultural differences would make national aggregates inaccurate, and, consequently, any causal inferences from them ambiguous (Lenartowicz and Roth, 1999). Conversely, collectives have also been shown to behave harmoniously despite the cultural heterogeneity of its constituting members (Hampden-Turner and Trompenaars, 1997), which would make intra-national cultural differences irrelevant for international business research.

Dheer et al. (2014) examine a range of studies regarding cultural differences and various aspects of e.g. business and (ethical) behavior. They find inconsistent results for the U.S. and Canada. Furthermore, they hypothesize that these inconsistencies result from the presence of distinct intra-national cultural regions and empirically test this for the U.S. and Canada, using multiple cultural measures based on data from the World Values Survey – a longitudinal database containing cultural measures with worldwide coverage. Their evidence supports the hypothesis that there are culturally distinct regions in the U.S. and Canada that can explain the differences in results found in studies, using cultural measures on the national level. Additionally, Dheer, Lenartowicz and Peterson (2015) test for intra-national cultural heterogeneity in India and find similar results: based on the framework of cultural assessment developed by Lenartowicz and Roth (1999), they identify nine distinct subcultural regions, suggesting that an intra-national research focus is necessary to obtain unbiased results.

The existence of these subcultural regions also allows for a clearer quasi-experimental setting to research cultural effects, as political or legal institutional differences [e.g. legal origin, see LaPorta et al. (1998)] are minimal or non-existent between regions of the same country. However, the likelihood of finding a statistically significant relationship is lower in an intra-national setting, as cultural differences are likely to be lower. Given the mechanisms described in Section 2.3 and literature regarding interregional cultural differences discussed in this section, I hypothesize:

H<sub>1</sub>: Larger interregional cultural disparity is negatively related to merger volume

H<sub>2</sub>: Larger interregional cultural disparity is negatively related to merger gains

### **3.5 Potential Problems with Cultural Measures**

Arguably the most comprehensive critique on the use of cultural values as explanatory variables has been written by Shenkar (2001), which he summarized as eight ‘hidden assumptions’ that studies make without critically assessing them, namely: (1) symmetrical effect of cultural values across countries on the same phenomena, (2) stability over time, (3) linear effects of cultural values, (4) interpreting cultural effects as causal, and (5) ignoring any complementarity effects in cultural dissimilarity, (6) cultural homogeneity in corporations, (7) cultural homogeneity in (e.g. national) aggregates, and (8) equivalent importance of various aspects of culture.

As mentioned by Shenkar (2001), stable cultural values over time is a hidden assumption in most conceptualizations of cultural measures. It is a part of the definitions of Hofstede (1980) and Lenartowicz and Roth (1999). Beugelsdijk, Maseland, and Hoorn (2015) specifically test for these intertemporal cultural differences. They calculate the Hofstede dimension scores for two distinct birth cohorts using the World Values Survey and find different scores for contemporary (richer) societies concerning the measures of Indulgence (higher), Individualism (higher), and Power Distance (lower). Interestingly, despite these intertemporal differences, the authors find that the relative cultural distance between countries has remained stable over time, indicating that the consequences for international research are limited. However, if the changes in cultural values have been caused by the economic phenomena that are the subject of research, there is an issue of reverse causality.

The focus of this study is on the effect of regional culture, rather than corporate or organizational culture, on merger outcomes. The two distinct constructs are both “essential inputs determining merger processes and outcomes” (Weber, Shenkar, and Raveh. 1996, p. 1225). However, the same authors argue that differences in national culture are better predictors on said processes and outcomes than corporate culture is. Thus, even though I do not control for any corporate culture variables, the outcomes are still economically valid.

Summarizing, cultural factors are increasingly used in the (financial) economics literature. One such cultural application has been in the context of international mergers. However, national measures of culture imply that regions that constitute a nation are culturally homogenous. As demonstrated by the literature, this is rarely the case. Although involving cultural factors in economics research can be fruitful, researchers must keep in mind the (hidden) assumptions that come with cultural variables. In the next section I will discuss the source and manipulations of my data, which I will use to test the previously described hypotheses.



## **4 Data**

### **4.1 Mergers**

To test the effect of cultural disparity on the volume of cross-regional mergers, I start with an initial sample as large as possible given the necessary constraints. For the subsequent test concerning merger gains, the sample will be smaller due to additionally imposed restrictions. From the ThomsonONE Mergers & Acquisitions database, I collect all completed U.S. domestic transactions with a deal value above \$1 million from 1985 through 2017, where the acquirer owned more than 50% of the target company post-acquisition. I exclude deals where the state of incorporation of the acquirer or target is either unknown, or part of the U.S. foreign territories (e.g. Puerto Rico, Cayman Islands, etc.). Both the acquirer and the target are either public, private, or subsidiary companies, meaning that government owned entities and firms with unknown status are excluded.

For each transaction, I record the announcement date, primary standard industry classification (SIC) code, acquirer and target state, percentage of stock, cash, or other consideration paid, deal value, deal attitude, whether termination fees were involved, whether the initial offer was a tender offer, and the public status of both the acquirer and the target. After restrictions, the sample consists of 59,076 transactions. As this research concerns interregional mergers, I manually record the relevant U.S. Census Region for both the acquirer and the target, see **Figure 2** for an overview of the U.S. Census Regions. The sample consists of 34,798 interregional mergers. West South Central has the lowest fraction of interregional acquisitions (51.4%), and East South Central has the highest (73.9%). A matrix of all (cross-)regional mergers is provided in **Table 1**.

### **4.2 Stock Prices**

To test the effect of cultural disparity on the gains of cross-regional mergers, the initial sample as described above is limited to mergers involving two public companies. I obtain stock prices, common shares outstanding, and the CRSP value-weighted index from the Centre of Research in Stock Prices (CRSP) via the Wharton Research Data Services (WRDS) after converting the six-digit CUSIPs in the ThomsonONE sample to PERMNOs. I drop transactions with a deal value that is lower than one percent of the acquirer's market capitalization (calculated as stock prices multiplied by the common shares outstanding two days prior to the announcement). The resulting

sample contains 4,160 transactions, of which 2,165 are interregional. A matrix of public-public (cross-)regional mergers is provided in **Table 2**.

As measure of merger gains, I calculate the cumulative abnormal return (CAR) for both acquirer and target for the trading period starting one day before the announcement date and ending one day after. To calculate the ‘normal’ return for each company, I regress the CRSP value-weighted index return  $r_{mt}$  on the company’s stock return  $r_{it}$  in an estimation period of 180 days, ending 90 days before the announcement date, see **Formula 1**. The market model employed here is a single-factor model. Although multi-factor models exist (e.g. the Fama-French three-factor or Carhart four-factor model), they are more data intensive and only add marginal explanatory power (MacKinlay, 1997).

$$r_{it} = a_i + \beta_i r_{mt} + \varepsilon_i \quad (1)$$

Then, I predict the ‘normal’ return in the event period  $[-1; 1]$  using the estimated alpha  $\hat{a}_i$  and beta  $\hat{\beta}_i$ , and subtract it from the actual returns to obtain abnormal returns  $AR_{it}$ . After cumulating the abnormal returns as per **Formula 2**, per transaction, I average the acquirer and target  $CAR_i$  weighted by their respective market capitalization two days prior to the announcement to obtain the combined CAR. I drop combined CARs above the 99<sup>th</sup> and below the 1<sup>st</sup> percentile to remove outliers. The mean combined CAR is 1.87%.

$$CAR_i = \sum_{t=-1}^1 AR_{it} = \sum_{t=-1}^1 r_{it} - \hat{a}_i - \hat{\beta}_i r_{mt} \quad (2)$$

### 4.3 Geography

Determining the geographical distance between states is already a difficult and rather arbitrary task, let alone determining the distance between U.S. Census Regions with their irregular shapes and sizes, and sometimes even noncontiguous constituting states (e.g. Hawaii and Alaska). Despite these problems, controlling for geographical distance is of major importance in the estimation of the gravity model used, and I measure it as the great circle formula (accounting for earth’s curvature) distance between the capital of the state with the most acquirers in the acquiring region and the capital of the state with the most targets in the target region. Surprisingly, in a region, the state with the most acquirers is also the state with the most targets except for one case: the South Atlantic region. Here, Florida acquires the most, and Georgia has the most target companies. The

region-pair distances are provided in **Table 3**. Additionally, I manually record region-pair contiguity.

#### **4.4 GDP**

I collect gross domestic product (GDP) and GDP per capita for each state and for each year in the period 1985 through 2017 from the Bureau of Economic Analysis ([www.bea.gov](http://www.bea.gov)) to control for economic size. Due to a shift in industry classification (SIC to NAICS) in 1997, the data for GDP and consequently GDP per capita in that year slightly differ. As it is the most actual, I use the NAICS data in 1997. I aggregate GDP on the Census Region level to obtain regional GDPs for the sample period. However, the BEA only calculates GDP per capita on the state level. To calculate the GDP per capita for each Census Region, I collect population data for each state for each year from 1985 through 2017 from the Federal Reserve Economic Data (FRED) database, aggregate it per region, and divide the previously calculated region GDPs by the region population for each year.

#### **4.5 Culture**

The measures of culture are constructed from World Values Survey (WVS) longitudinal data. The WVS database contains data regarding i.a. social and political values, and is the result of waves of surveys conducted in almost 100 countries, including the United States. Currently, the WVS longitudinal database contains the first six waves: 1981 – 1984, 1990 – 1994, 1995 – 1998, 1999 – 2004, 2005 – 2009, 2010 – 2014. Following Ahern et al. (2015), I construct three measures of culture: individualism, trust, and hierarchy, respectively based on questions E035 (“Incomes should be more equal” vs. “We need larger income differences as incentives for individual effort”), A165 (“Most people can be trusted”), and C061 (“[I] follow instructions” vs. “[I] need to be convinced first”). Participants’ answers are on a scale, which I rescale to fit in the zero to one interval. The individual responses are then averaged per region per survey year.

The WVS questionnaire is different for each wave and can differ across countries. Consequently, for the U.S., the individualism and trust questions are only answered in the third, fourth, fifth, and sixth wave. The hierarchy question is only answered in the third and fourth wave. Furthermore, the cultural values per region can strongly differ across survey waves. For example, individualism in West South Central rose as much as 30.4% from 0.444 in 1995 to 0.579 in 1999. To smooth the variability and to obtain cultural values for each year in the sample, I pad the cultural value data

such that each year in the sample period of 1985 – 2018 contains cultural value data of the most recent WVS wave available in that year. I then take the average of the padded cultural values to obtain the padded mean.

Cultural distance, then, is simply the absolute difference between the padded means of two regions. According to the padded mean, the South Atlantic region is the most individualistic (0.571), and the Middle Atlantic region the most collectivistic (0.492). The Pacific is the most trustful (0.418), East South Central the most distrustful (0.257). The South Atlantic is also the most hierarchical (0.731), New England the most egalitarian (0.659). The mean cultural values per survey year per region, and the padded mean, are provided in **Table 4**.

#### **4.6 Other**

To control for payment type and industry, I construct dummies equal to one if the majority of payment is in cash and if the acquirer and target share the same three-digit SIC code, respectively. To control for (potential) overpayment I construct a relative size variable equal to deal value divided by target market cap. Continuous variables enter the regression in natural log form. Dummies and fractions are as is. All variables and descriptive statistics are provided in **Table 5**.

## 5 Methodology

### 5.1 Gravity Model

Tinbergen<sup>4</sup> (1962) popularized the application of the Newtonian gravity formula to international trade. He modeled international trade as a function of i.a. countries' economic size and geographical distance, analogous to gravitational force and mass in the Newtonian formula. The empirical success of the model has made it a cornerstone in modern economics, especially in the subfield of international economics. In its simplest form, the Tinbergen gravity model is specified as in **Formula 3**, where  $T_{ij}$  is the trade flow between country  $i$  and  $j$ ,  $Y_i^{a_1}$  the economic size of country  $i$ ,  $Y_j^{a_2}$  the economic size of country  $j$ ,  $D_{ij}^{a_3}$  the distance between country  $i$  and  $j$ , and  $\eta_{ij}$  is an error factor.

$$T_{ij} = a_0 Y_i^{a_1} Y_j^{a_2} D_{ij}^{a_3} \eta_{ij} \quad (3)$$

Assuming the expected error factor  $\eta_{ij}$  given  $Y_i$ ,  $Y_j$ , and  $D_{ij}$  equals one, log-linearizing will result in the empirically testable equation under **Formula 4**.

$$\ln(T_{ij}) = \ln(a_0) + a_1 \ln(Y_i) + a_2 \ln(Y_j) + a_3 \ln(D_{ij}) + \ln(\eta_{ij}) \quad (4)$$

### 5.2 Merger Volume

In order to test the effect of culture on merger volume, following Ahern et al. (2015), I extend the log-linearized gravity model with measures of cultural distance that enter the formula in natural log form (with one added to the cultural distance to account for zero values), and add controls for deal, region and region-pair characteristics. The dependent variable changes from trade volume to merger volume  $V_{ij}$ , measured both in number and in cumulative deal value. The regression is specified under **Formula 5**, with  $\beta$  as vector of coefficients and  $\varphi$  as vector of control variables.

$$\begin{aligned} \ln(V_{ij}) = & \ln(a_0) + a_1 \ln(1 + |\Delta Trust_{ij}|) + a_2 \ln(1 + |\Delta Hierarchy_{ij}|) \\ & + a_3 \ln(1 + |\Delta Individualism_{ij}|) + \beta\varphi + \ln(\eta_{ij}) \end{aligned} \quad (5)$$

Regressions with merger volume measured as cumulative deal value have additional deal-specific economic variables that regressions with merger volume measured in number have not. Variables are aggregated on the region-pair-year level. As the dependent variable only has values above zero,

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<sup>4</sup> Erasmus University Nobel laureate.

I use Tobit regressions with robust standard errors. An ordinary least squares (OLS) regression is added for completeness.

### 5.3 Merger Gains

Similar to the merger volume regressions, to test the effect of culture on merger gains, I use the gravity model extended with measures of cultural distances and deal, region, and region-pair control variables. The dependent variable is the combined CAR in the three-day period surrounding the merger announcement. The regression is specified as under **Formula 6**. I estimate the regression using OLS with observations on the deal-level.

$$\begin{aligned} \text{CAR}_{[-1;1]} = & \ln(a_0) + a_1 \ln(1 + |\Delta \text{Trust}_{ij}|) + a_2 \ln(1 + |\Delta \text{Hierarchy}_{ij}|) \\ & + a_3 \ln(1 + |\Delta \text{Individualism}_{ij}|) + \beta\varphi + \ln(\eta_{ij}) \end{aligned} \quad (6)$$

Using combined CAR as dependent variable instead of acquirer or target CAR has the advantage that the influence of value-shifting (from acquirer to target or vice versa) factors is limited, favoring factors that create (or destroy) value per saldo, e.g. through post-merger integration.

### 5.4 Heckman Correction

Managers only decide to merge if the potential merger is a positive NPV investment. Consequently, the sample of completed mergers I collected is not randomly generated, and any inferences suffer from selection bias. Heckman (1977) realized that selection bias can be viewed as a form of omitted-variable bias. As such, one can control for it by adding an additional variable to the regression, which takes into account the inherent non-random selection on a per observation basis. Heckman proposed a two-step procedure. Firstly, a selection probit is estimated, which takes into account the probability that a merger occurs in a region-pair-year given certain selection variables. The selection probit must include at least one independent variable not included in the following regression. I assume regional economic variables are likely to influence merger volume and unlikely to influence merger gains, which is why I include the acquirer and target GDP variables in the selection probit, see **Formula 7**, and exclude them in the merger gains OLS regressions.

$$\begin{aligned} \text{Pr}(\text{Merger} = 1) = & \ln(a_0) + a_1 \ln(1 + |\Delta \text{Trust}_{ij}|) + a_2 \ln(1 + |\Delta \text{Hierarchy}_{ij}|) \\ & + a_3 \ln(1 + |\Delta \text{Individualism}_{ij}|) + \text{Geographic variables} \\ & + \text{Acq. and Targ. Region Economic variables} + \ln(\eta_{ij}) \end{aligned} \quad (7)$$

Secondly, from the probit's predicted probability, the inverse Mills ratio or Heckman's lambda is calculated (using the `mills()` subcommand of the `heckman` command in Stata) for each region-pair-year in the original sample. This variable is then simply added to the original regression specification. A significant Heckman's lambda coefficient indicates an initially selection-biased sample. I add Heckman's lambda to merger gains OLS regressions only. Selection bias in the merger volume regressions is controlled for using Tobit regressions.

## 5.5 Poisson

Silva and Tenreyro (2006) argue that OLS estimates of log-linearized models, and the gravity model specifically, are severely biased under heteroscedasticity. The authors test the gravity model in a simulated environment and with real data using various estimation techniques, including Tobit, OLS, and Poisson-pseudo-maximum-likelihood (PPML). The PPML technique performed best in the simulated environment and produced some surprising real data results, implying OLS and Tobit in some cases produce biased results. Therefore, in addition to OLS and Tobit regressions with Heckman correction, I estimate the volume models using PPML (via the Stata `poisson` command). This requires a minor change to the regression specification under **Formula 4**; merger volume now enters the regression in linear form. The gravity model critique rests upon the notion that  $E[\ln(y)] \neq \ln(E[y])$ . As CAR enters the merger gains tests in linear form, I do not control for the Silva and Tenreyro (2006) critique in those regressions.

Summarizing, I empirically test the effect of cultural distance on merger volume twice: once with merger volume in cumulative deal value as dependent variable, and once with merger volume in number. Both are estimated using Tobit, with OLS and PPML as additional robustness tests. I estimate the effect of cultural distance on merger gains using OLS including Heckman's lambda. Standard errors are robustly calculated in all regressions.

## **6 Results**

Estimation results for the volume regressions measured in number, the volume regressions measured in cumulative dollar value, and the merger gains regressions are presented in **Table 6**, **Table 7**, and **Table 8**, respectively. In the following sections, I will discuss the results in that order.

### **6.1 Merger Volume in Number**

Of the three measures of cultural distance, two are significantly negatively related to the number of mergers between a given region-pair: trust and individualism, see **Table 6**. The significance holds in all regressions: Tobit, OLS, and PPML, and indicates that region-pairs that are more culturally distant in terms of trust vs. distrust and individualism vs. collectivism experience fewer mergers than other less culturally distant region-pairs. The significance level does, however, differ between the regressions: the significance of the individualism measure is on the 10% level in the full sample Tobit and OLS, whereas it is significant on the 1% level in the full sample PPML. The coefficients of the two measures are relatively similar across (full sample) regressions, ranging from -2.063 to -2.335 for trust, and -1.881 to -2.342 for individualism, indicating that a 1% increase in cultural distance roughly results in a 2% decrease in merger volume for both individualism and trust. The model's explanatory power is high, with an average pseudo  $R^2$  of 54.7% in the Tobit regressions, and a (pseudo)  $R^2$  of 79.3% and 59.9% in the OLS and PPML regressions, respectively.

Next, I discuss the results for the control variables. Geographical distance is significantly negatively related to merger volume across all regressions. However, according to the PPML, the Tobit and OLS overstate its magnitude, conform the results in Silva and Tenreyro (2006) for the gravity model of trade. The other geographical variable, contiguity, is significantly positively related to merger volume, according to all six models: contiguous regions experience a higher number of mergers, *ceteris paribus*. Of the region economic variables, all but acquirer region GDP per capita are significantly related to merger volume. Acquirer and target region GDP with positive coefficients, and target region GDP per capita with negative ones. PPML indicates the economy variables are slightly overstated in the OLS and Tobit regressions

### **6.2 Merger Volume in Dollars**

Similar to the previously discussed results, cultural distance measured in individualism and trust is significantly negatively related to region-pair merger volume measured in cumulative deal value,



see **Table 7**. Significance holds (to varying degrees) in all six regressions, indicating that larger cultural distance between two regions adversely affects merger volume between these regions as measured in cumulative deal value. The coefficients of trust and individualism range from -2.872 to -3.451 and -6.739 to -6.990, respectively, indicating that a one percent increase in cultural distance results in a roughly 3% decrease in the merger volume measure in the case of trust, and a roughly 7% decrease in the case of individualism. The models' explanatory power has fallen, compared to the previous regressions: pseudo  $R^2$  now is 25.1% for the Tobit measures, on average, and 62.3% and 56.4% for the OLS and PPML models, respectively.

Measuring volume in aggregated dollar value allows for additional (deal level) controls. The variable measuring the fraction of hostile mergers between two regions is significant and positive for all six regressions, indicating that a larger fraction of hostile mergers positively affects the dollar volume of mergers in a given region-pair. A significant positive relationship is also found for the target defense and acquirer or target termination fee variables, indicating that region-pairs with a larger fraction of deals that involve target defenses or termination fees experience higher aggregated dollar merger volume. The findings are consistent with Schwert (2000) and Bates and Lemon (2003), who find higher bid premiums for hostile takeovers and mergers with target termination fee, respectively. Although the significance level is lower in some cases compared to the previous regressions, the geographical and economic variables are of equal sign and roughly similar size. However, the significance in the PPML regression diminishes for all but the contiguity and target region GDP measures.

Concluding, I find that two out of three measures of cultural distance are statistically and economically significantly negatively related to merger volume, both for merger volume measured in number and in aggregated deal value, when controlling for a range of other factors. Even though the hierarchical measure of cultural disparity did not produce any significant results, culture measured in trust vs. distrust and individualism vs. collectivism is a significant factor in interregional merger volume. Based on these finding I cannot reject my first hypothesis: "*Larger interregional cultural disparity is negatively related to merger volume*".

### 6.3 Merger Gains

Contrary to the results found in the volume regressions, the measures of cultural distance are not significantly related to merger gains as measured in combined CAR, see **Table 8**. Thus, investors

do not think that cultural distance creates or destroys value, or they do not act on it. The insignificance hold for all four regressions. The regressions' explanatory power is also the lowest of all three models: adjusted  $R^2$  is on average 9.43%. Heckman's lambda is significant, indicating that selection bias was an issue in the initial sample, before controlling for it with the Heckman procedure.

Next, I discuss the results for the control variables. Even though the coefficient is small, the size of the acquirer measured by the market capitalization two days prior to announcement is significantly negatively related to (combined) merger gains. This is consistent with Moeller, Schlingemann, and Stulz (2004), who find a significant negative effect of acquirer size on acquirer abnormal returns upon merger announcement. The incidence of target termination fees is negatively related to combined CAR, although the significance is low and the coefficient very small. Hostility and tender offers are both significantly positively related to merger gains. Tender offer significance is in line with Dodd and Ruback (1977).

To test whether the event window fully captures the stock price change, I extend it to encompass the seven days surrounding merger announcement, see **Table 9** for the regression results. The (in)significance of the variables is equal to that of the previous models using the three-day period. However, the coefficients are closer to zero for all significant variables. Furthermore, the explanatory power of the models is lower: average adjusted  $R^2$  now equals 7.2%. These additional results support the assumption that the three-day event period fully captures the investor reaction to the merger announcement.

None of the variables measuring cultural distance are statistically significant in the relevant models, both for the three-day and seven-day event period. Therefore, I reject my second hypothesis: "*Larger interregional cultural disparity is negatively related to merger gains*".

#### **6.4 Robustness**

Heteroscedasticity is controlled for in the regressions by calculating heteroscedasticity robust standard errors. However, some additional issues have to be tested for in order to be able to interpret the regression results: multicollinearity and normality of the residuals. Multicollinearity is a linear association between two or more independent variables, i.e. when one explanatory is highly related to one or more others. As a result, coefficients are biased. Multicollinearity only influences the coefficients of the variables affected. It does not change the explanatory power of

the model or the coefficients of unaffected variables. Thus, multicollinearity is only an issue when the variables of interest are affected, in this case: trust, hierarchy, and individualism.

To test whether the culture variables are affected, I calculate the Variance Inflation Factors (VIFs) of the full model OLS regression for both the merger volume models, see **Table 10**. A VIF over 10 indicates multicollinearity issues for the relevant variable. None of the cultural variables in either of the two models have a VIF over 10: the VIFs range from 3.48 (trust) and 6.38 (individualism). Except for the four regional economy variables, none of the variables are subject to multicollinearity.

The normality of residuals assumption is rejected for all regressions, as measured by the Shapiro-Wilk test for normality. Although normality of the residuals is commonly assumed to be required for valid regressions, Lumley et al. (2002) demonstrate that for sufficiently large samples linear regression is valid regardless of the distribution of the residuals. Surprisingly, sufficiently large can be as small as 100 observations. None of the regressions in this paper have fewer than 2165 observations.

## **7 Conclusion**

I research the effect of regional culture differences on interregional merger volume and gains in a gravity model setting, for a sample of U.S. domestic interregional mergers in the period 1985 through 2017. The regions are as specified by the U.S. Census Bureau. The results indicate that larger interregional cultural distance is significantly associated with a lower volume of mergers between two regions. The significance holds for merger volume measured in number and in aggregated deal value. I do not find a significant relationship between interregional cultural distance and merger gains, as measured in the average CAR of acquirer and target weighed by their respective market capitalization. I account for acquirer, target and year fixed effects, and possible selection bias through Tobit or Heckman corrected regressions with robust standard errors.

This paper extends previous research on cultural effects on mergers, i.a. in an international context (Ahern, Daminelli, and Fracassi, 2015), with additional evidence on the regional level for cross-regional domestic mergers. The domestic setting of this paper has the advantage of shared national institutions; a problem that international research must address using a range of control variables. Conform the former research on the national level, regional culture negatively affects merger volume. The case is not so clear for merger gains: contrary to previous literature, I do not find a negative effect of regional cultural distance on merger gains.

Although further research is necessary concerning culture and merger gains, the economically and statistically significant impact of culture on volume stresses the importance of (regional) cultural factors. Even for domestic mergers, careful investors and managers should consider the effect of regional cultural disparities. Furthermore, any future (financial) research involving national measures of culture should carefully consider the possible intra-national heterogeneity of culture and its effect on the object of study.

## **8 Limitations and Extensions**

### **8.1 Cultural Issues**

Cultural values enter this research through three measures: trust (vs. distrust), hierarchy (vs. egalitarianism), and individualism (vs. collectivism). At least three issues concerning the cultural measures limit the current research, and can potentially be addressed in further research.

Firstly, the World Values Survey is a database primarily focused on national level cultural data, rather than regional. For some large countries, such as the U.S., a nation's regions are encoded, but the variation between regional survey results is relatively large, as indicated by the 30.4% increase in individualism in West South Central from 1995 to 1999. An increase of such magnitude is unlikely to accurately reflect actual changes in the relevant cultural value. Furthermore, the low number of data points (four for individualism and trust, two for hierarchy), do not allow for much other smoothing techniques other than taking the mean or median, which in turn reduces any actual time-variation to zero.

Secondly, I only used the cultural values used in Ahern, Daminelli, and Fracassi (2015). Other options include the Hofstede or Schwartz measures. However, they would still be constructed from data in the WVS (e.g. Beugelsdijk, Maseland, and Hoorn, 2015), meaning the first two points of critique previously discussed also apply for the Hofstede measures. Furthermore, Ahern, Daminelli, and Fracassi (2015) show that individualism, trust, and hierarchy are highly correlated with both the Hofstede and Schwartz measures of culture, suggesting results are unlikely to differ.

Thirdly, there is a possibility that mergers themselves have influence on a (regional) society's cultural values. Any inference from regressions using culture as an independent variable and merger volume or gains as dependent variable would then suffer from reverse causality bias. Further research could address this problem, e.g. through an instrumental variable approach to culture.

### **8.2 Additional Factors**

The significance of the cultural variables in the merger volume regressions can be subjected to additional robustness checks, provided that the necessary data is available. I control for industry similarity of acquirer and target through the three-digit SIC code. However, as discussed in Section 2, Hoberg and Philips (2009) show that the product market the companies in a merger operate in is also significant – something that is not entirely captured by the SIC measure: product markets

can stretch across industries. The problem with the Hoberg and Philips (2009) measure of product market similarity is that they are based on SEC 10k forms, which are only required of public companies. Controlling for this in the volume regressions would severely limit the sample. I did not add the product market variable to the merger gains regressions either: the cultural variables were already insignificant.

### **8.3 Volume vs. Gains**

According to this research, cultural distance is a factor in the volume of mergers between two U.S. Census Regions, but it is not significantly related to the combined gains of acquirer and target. Although not as hypothesized, these results are not necessarily contradictory: stock prices are based on investor reactions, and the fact that the mergers are all American might distract investors from the fact that interregional cultural disparity in fact can have economic consequences, such as in the case of mergers. However, it could also be the case that investors' perception of culture is different from those of the surveyed population. Further research is needed to properly identify the channels through which culture influences the decisions of managers and the (lack of) reaction of investors.

One could also argue for a different dependent variable to measure merger gains. I argue that cultural distance negatively impacts mergers through post-merger integration. A way to measure the success of this integration is how investors perceive it, e.g. through CARs. Another way to measure this is to track the merged company's performance in the years following the transaction. The upside to this approach is that it would measure actual integration of the acquirer and the target. The downside is that it is incredibly hard to statistically distinguish the effect of the merger on performance from all confounding factors: a challenge for future research.

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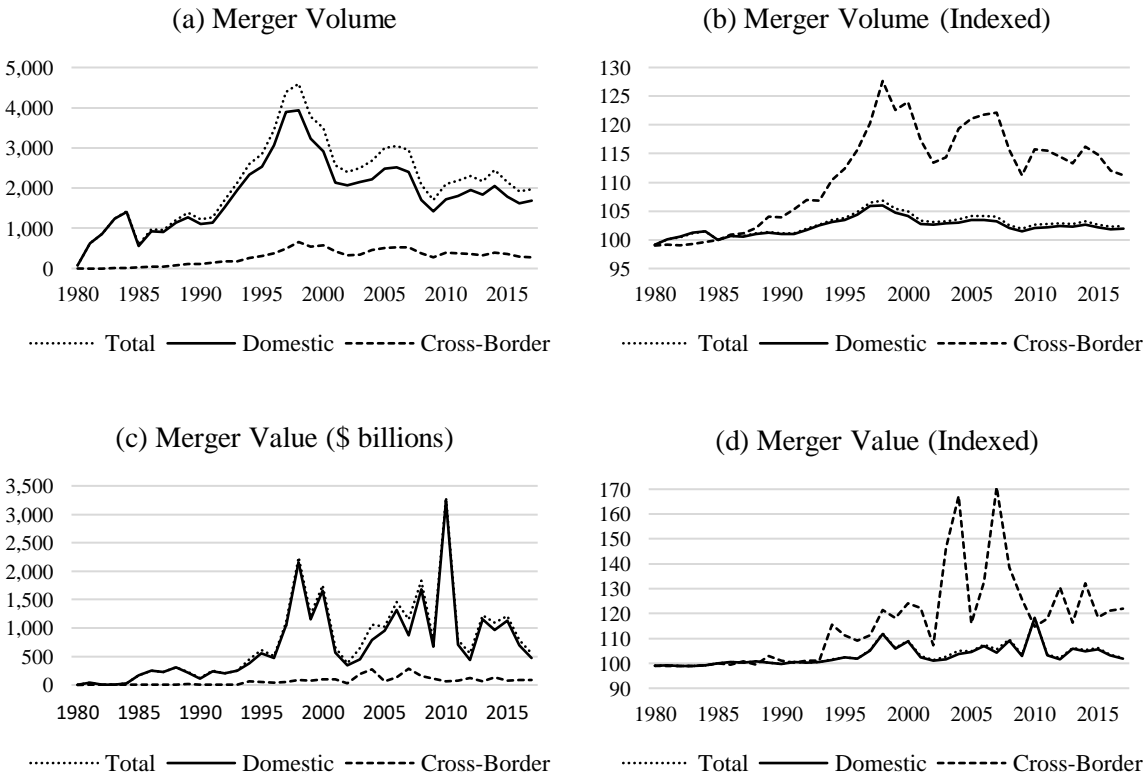
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## Appendix

**Figure I**

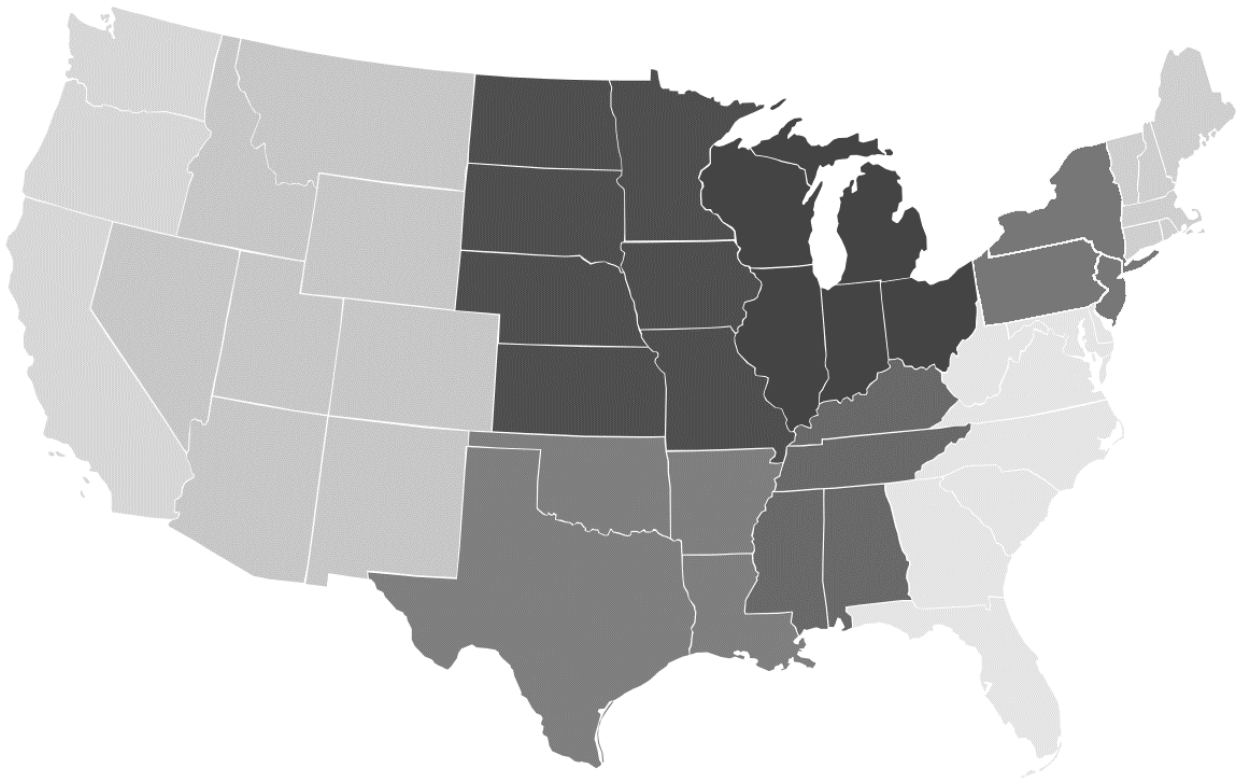
### Historic (Cross-Border) Merger Activity

Merger value and volume over the years 1980 through 2017 for U.S. acquirers, including only mergers with a deal value of \$1 million or more. Acquirers owned more than 50% of the target's shares after the transaction. Figures (a) and (b) are based on absolute data. Figures (c) and (d) are based on indexed data (index year 1980) to show historic growth. All charts are based on data from the SDC Platinum merger database.



**Figure 2****U.S. Census Regions**

The U.S. Census Bureau groups the United States into nine distinct Census Regions. Not featured here are Alaska and Hawaii. The Census Regions (clockwise, starting top left): Pacific, Mountain, West North Central, East North Central, Middle Atlantic, New England, South Atlantic, East South Central, West South Central.



*Pacific*: Oregon, Hawaii, California, Washington, Alaska; *Mountain*: New Mexico, Nevada, Montana, Utah, Idaho, Colorado, Wyoming, Arizona; *West North Central*: North Dakota, Minnesota, Kansas, Nebraska, Missouri, Iowa, South Dakota; *East North Central*: Michigan, Indiana, Illinois, Wisconsin, Ohio; *Middle Atlantic*: New York, New Jersey, Pennsylvania; *New England*: Vermont, New Hampshire, Connecticut, Massachusetts, Rhode Island, Maine; *South Atlantic*: South Carolina, Georgia, Virginia, D. of Columbia, North Carolina, West Virginia, Delaware, Florida, Maryland; *East South Central*: Tennessee, Alabama, Kentucky, Mississippi; *West South Central*: Arkansas, Texas, Louisiana, Oklahoma.

**Table 1**

**U.S. Domestic Mergers by Census Region, 1985 - 2018**

Data were obtained from the ThomsonONE Mergers & Acquisitions database. The sample includes only completed transaction with a deal value over \$1 million, where the acquirer owned more than 50% post-transaction. Acquirers or targets are either public, private, or subsidiary companies. Mergers are grouped by U.S. Census Region, rows for acquirer region, columns for target region.

Acquirer region		Target Region									Total
		ENC	ESC	MA	MNT	NE	PAC	SA	WNC	WSC	
East North Central	ENC	2,789	246	671	282	353	730	915	459	488	6,933
East South Central	ESC	202	583	136	92	59	177	488	100	268	2,105
Middle Atlantic	MA	1,066	268	3,905	453	817	1,417	1,744	392	674	10,736
Mountain	MNT	283	82	241	1,269	115	641	458	197	404	3,690
New England	NE	411	83	654	195	1,355	766	641	158	257	4,520
Pacific	PAC	577	153	787	718	601	5,320	1,084	276	613	10,129
South Atlantic	SA	847	483	1,160	457	510	1,320	4,532	371	814	10,494
West North Central	WNC	427	90	258	240	163	381	332	923	291	3,105
West South Central	WSC	449	243	491	545	196	708	838	293	3,601	7,364
Total		7,051	2,231	8,303	4,251	4,169	11,460	11,032	3,169	7,410	59,076
Total Interregional		4,259	1,649	4,401	2,980	2,814	6,143	6,498	2,247	3,809	34,798
% Interregional Acquirer		60.4%	73.9%	53.0%	70.1%	67.5%	53.6%	58.9%	70.9%	51.4%	

**Table 2**

**U.S. Public-Public Domestic Mergers by Census Region, 1985 - 2018**

Data were obtained from the ThomsonONE Mergers & Acquisitions database. The sample includes only completed transaction with a deal value over \$1 million, where the acquirer owned more than 50% post-transaction. Acquirers and targets are both public companies for which data was available in CRSP. Mergers are grouped by U.S. Census Region, rows for acquirer region, columns for target region.

Acquirer region		Target Region									Total
		ENC	ESC	MA	MNT	NE	PAC	SA	WNC	WSC	
East North Central	ENC	296	16	65	25	27	65	69	48	29	640
East South Central	ESC	13	51	12	4	7	14	51	9	19	180
Middle Atlantic	MA	57	11	402	24	67	124	99	27	36	847
Mountain	MNT	5	3	12	58	5	46	14	5	15	163
New England	NE	29	5	36	8	199	75	31	10	9	402
Pacific	PAC	22	6	48	41	48	384	42	20	41	652
South Atlantic	SA	48	25	69	23	22	65	319	12	37	620
West North Central	WNC	36	8	16	20	13	28	20	76	13	230
West South Central	WSC	28	10	36	21	16	47	37	21	210	426
Total		534	135	696	224	404	848	682	228	409	4,160
Total Interregional		238	84	294	166	205	464	363	152	199	2,165
% Interregional Acquirer		44.6%	62.2%	42.2%	74.1%	50.7%	54.7%	53.2%	66.7%	48.7%	

**Table 3**

**Region-pair Geographical Distance**

The table displays the great circle formula distance for each region-pair. The distance is measured between the capital of the state with the most acquirers for the acquiring region, and the capital of the state with the most targets in the target region. The state with the most acquirers equals the state with the most targets in a region for all but one case: South Atlantic, in which Georgia has the most targets, and Florida the most acquirers. The relevant state is displayed to right (acquirers) or below (targets) the region.

Acquirer region		Target region								
		ENC Illinois	ESC Tennessee	MA New York	MO Colorado	NE Massach.	PAC California	SA Georgia	WNC Minnesota	WSC Texas
East North Central	Illinois	-	474.3	1363	1309.1	1582.9	2731.9	817	640.2	1288.5
East South Central	Tennessee	474.3	-	1327.8	1641.3	1513	3058.9	345.1	1112	1211.5
Middle Atlantic	New York	1363	1327.8	-	2615.7	230.8	3997.9	1353.7	1566.7	2534.2
Mountain	Colorado	1309.1	1641.3	2615.7	-	2844.8	1425.6	1946.1	1134.4	1241.3
New England	Massachusetts	1582.9	1513	230.8	2844.8	-	4228.7	1499.9	1796.8	2724.2
Pacific	California	2731.9	3058.9	3997.9	1425.6	4228.7	-	3348.3	2444.5	2354.2
South Atlantic	Florida	1146.5	676.7	1646.6	2141.2	1763.2	3499.8	368	1786.6	1292.5
West North Central	Minnesota	640.2	1112	1566.7	1134.4	1796.8	2444.5	1450	-	1682.7
West South Central	Texas	1288.5	1211.5	2534.2	1241.3	2724.2	2354.2	1317	1682.7	-

**Table 4****Regional Cultural Values**

Three measures of culture for each of the nine U.S. Census Regions based on answers to questions in the World Values Survey (WVS). Individualism corresponds to “Incomes should be more equal” vs. “We need larger income differences as incentives for individual effort”, trust corresponds to “Most people can be trusted”, and hierarchy corresponds to “[I] follow instructions” vs. “[I] need to be convinced first”. Participants’ answers are rescaled to fit the zero to one interval, and averaged by region and survey wave. The cultural value data is then padded to the 1985 – 2018 merger sample such that each has the most recent cultural data available in that year. I take the mean for each cultural value over 1985 – 2018 to obtain the padded mean.

	Wave 3 (1995)	Wave 4 (1999)	Wave 5 (2006)	Wave 6 (2011)	Padded Mean (1985 - 2018)
<i>Panel A: Individualism</i>					
New England	0.479	0.513	0.563	0.507	0.505
Middle Atlantic	0.461	0.499	0.562	0.497	0.492
South Atlantic	0.611	0.531	0.579	0.527	0.571
East South Central	0.514	0.581	0.574	0.466	0.527
West South Central	0.444	0.579	0.598	0.522	0.513
East North Central	0.494	0.496	0.554	0.503	0.506
West North Cental	0.537	0.537	0.578	0.483	0.532
Mountain	0.470	0.505	0.620	0.510	0.509
Pacific	0.474	0.505	0.576	0.494	0.500
<i>Panel B: Trust</i>					
New England	0.339	0.433	0.425	0.415	0.388
Middle Atlantic	0.371	0.407	0.389	0.367	0.381
South Atlantic	0.250	0.317	0.385	0.345	0.305
East South Central	0.269	0.217	0.231	0.294	0.257
West South Central	0.425	0.315	0.381	0.302	0.369
East North Central	0.398	0.406	0.389	0.356	0.389
West North Cental	0.322	0.479	0.407	0.520	0.410
Mountain	0.282	0.379	0.439	0.399	0.351
Pacific	0.402	0.366	0.470	0.464	0.418
<i>Panel C: Hierarchy</i>					
New England	0.703	0.627			0.659
Middle Atlantic	0.664	0.813			0.750
South Atlantic	0.699	0.755			0.731
East South Central	0.737	0.886			0.823
West South Central	0.671	0.726			0.703
East North Central	0.671	0.737			0.709
West North Cental	0.736	0.750			0.744
Mountain	0.650	0.725			0.693
Pacific	0.606	0.757			0.693



**Table 5**  
**Descriptive Statistics**

The table provides the number of observations, mean, and median of the variables for each of the two samples. The first sample concerns the volume regressions, with observations aggregated on the region-pair-year level. The returns regressions are on the deal-level. Continuous variables enter the regression as log, dummies and fractions are not further transformed.

Variable	Sample: <i>Volume Regressions</i>			Sample: <i>Returns Regressions</i>		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
$\ln(\text{Deal value})$	2,315	7.203764	1.772849	2,165	5.699036	1.802998
$\ln(1 +  \Delta \text{Hierarchy} )$	2,315	.0498822	.0365383	2,165	0.0410064	0.0288
$\ln(1 +  \Delta \text{Individualism} )$	2,315	.0254585	.0211437	2,165	0.0288056	0.025005
$\ln(1 +  \Delta \text{Trust} )$	2,315	.0551754	.0408197	2,165	0.0479741	0.03441
Hostile	2,315	.0031408	.0231031	2,165	0.0184758	0.134695
Target defense	2,315	.0229676	.0727196	2,165	0.1709007	0.376509
Same industry (3d SIC)	2,315	.4216568	.2155668	2,165	0.5039261	0.5001
Acquirer termination fee	2,315	.0304612	.0677495	2,165	0.1764434	0.381285
Target termination fee	2,315	.0805073	.1087162	2,165	0.6073903	0.488444
Tender offer	2,315	.0393124	.0953148	2,165	0.2327945	0.42271
Majority cash	2,315	.9273026	.1061785	2,165	0.8849885	0.31911
$\ln(\text{Geographical Distance})$	2,315	7.345241	.6054551	2,165	7.362993	0.718074
Contiguous	2,315	.3784017	.4850933	2,165	0.4415704	0.496689
$\ln(\text{Target region GDP})$	2,315	13.7909	.6816296	2,165	13.90511	0.627203
$\ln(\text{Target region GDP/capita})$	2,315	3.541275	.3826745	2,165	3.51516	0.33482
$\ln(\text{Acquirer region GDP})$	2,315	13.79348	.6806682	2,165	13.89737	0.60958
$\ln(\text{Acquirer region GDP/capita})$	2,315	3.542446	.3824295	2,165	3.514273	0.338045
Combined $\text{CAR}_{[-1; +1]}$	-	-	-	2,165	0.0187069	0.067263
$\ln(\text{Acquirer Market Cap.})$	-	-	-	2,165	14.60821	1.991597
Relative size	-	-	-	2,165	0.0016059	0.001723



**Table 7**

**Merger Volume in Dollars and Cultural Distance**

The table provides the results for various regression with the natural log of aggregated merger dollar value as measure of merger volume. The sample consists of U.S. domestic interregional mergers over \$1 million in the period 1985 through 2017. Regressions 1 through 4 are Tobit, regressions 5 and 6 are OLS and PPML, respectively, as robustness check. Tobit and OLS regressions include Heckman’s lambda to control for selection bias. Main variables of interest are the cultural variables constructed from the WVS: trust (vs. distrust), hierarchy (vs. egalitarianism), and individualism (vs. collectivism). Observations are aggregated on the region-pair-year level. All regressions are robust and include fixed effects for acquirer- and target region, and year. Constant included, but not shown. Significance levels: \*\*\* 1%, \*\* 5%, and \* 10%, t-statistics in parentheses.

	ln( $V_{ij}$ ) in Dollars					$V_{ij}$ in Dollars
	Tobit (1)	Tobit (2)	Tobit (3)	Tobit (4)	OLS (5)	PPML (6)
ln(1 +   $\Delta Trust$  )	-3.387*** (-3.33)			-2.875*** (-2.73)	-2.872*** (-2.69)	-3.451** (-2.06)
ln(1 +   $\Delta Hierarchy$  )		-1.856 (-1.41)		-1.085 (-0.83)	-1.08 (-0.81)	1.986 (0.96)
ln(1 +   $\Delta Individualism$  )			-8.855*** (-3.40)	-6.742** (-2.50)	-6.739** (-2.47)	-6.990* (-1.79)
Hostile	2.436* (1.77)	2.303* (1.66)	2.435* (1.77)	2.499* (1.82)	2.500* (1.80)	2.331** (2.05)
Target defense	1.337*** (2.62)	1.380*** (2.72)	1.386*** (2.74)	1.346*** (2.65)	1.347*** (2.61)	2.091*** (3.92)
Same industry	0.0107 (0.07)	0.0299 (0.20)	0.0206 (0.14)	0.00642 (0.04)	0.00761 (0.05)	-0.164 (-0.79)
Acquirer termination fee	2.629*** (3.60)	2.550*** (3.45)	2.549*** (3.40)	2.592*** (3.50)	2.592*** (3.45)	2.245*** (4.91)
Target termination fee	2.311*** (6.84)	2.374*** (7.03)	2.364*** (7.00)	2.317*** (6.90)	2.316*** (6.80)	2.150*** (5.30)
Tender offer	0.5 (1.04)	0.491 (1.02)	0.485 (1.00)	0.497 (1.03)	0.497 (1.01)	-0.954* (-1.84)
Majority cash	-0.169 (-0.57)	-0.175 (-0.59)	-0.155 (-0.52)	-0.15 (-0.51)	-0.149 (-0.50)	-0.401 (-1.07)
ln(Geographical Distance)	-0.0947* (-1.70)	-0.154*** (-2.78)	-0.141** (-2.54)	-0.100* (-1.81)	-0.101* (-1.79)	0.0403 (0.43)
Contiguous	0.550*** (8.65)	0.514*** (8.09)	0.504*** (8.01)	0.532*** (8.49)	0.532*** (8.38)	0.342*** (3.27)
ln(Target region GDP)	2.100*** (4.84)	2.118*** (4.90)	2.113*** (4.90)	2.100*** (4.86)	2.100*** (4.80)	1.413* (1.81)
ln(Target region GDP/capita)	-1.698** (-2.13)	-1.711** (-2.15)	-1.717** (-2.17)	-1.703** (-2.15)	-1.701** (-2.11)	-2.064 (-1.51)
ln(Acquirer region GDP)	1.159*** (2.71)	1.159*** (2.71)	1.159*** (2.71)	1.163*** (2.72)	1.166*** (2.70)	0.72 (0.87)

(Table continues on the next page)



**Table 8****Merger Gains and Cultural Distance (1)**

The table provides the results for various regression with as dependent variable the combined seven-day CAR surrounding the announcement date. The combined CAR is the average acquirer and target CAR, weighted by their respective market capitalization four days prior to announcement. CARs are calculated using a market model with the CRSP value-weighted index as market index and returns calculated from CRSP stock prices. The sample consists of U.S. domestic interregional mergers over \$1 million in the period 1985 through 2017. All four regressions are estimated using OLS with Heckman's lambda to control for selection bias. Region economic variables are excluded as they are part of the Heckman selection probit. Main variables of interest are the cultural variables constructed from the WVS: trust (vs. distrust), hierarchy (vs. egalitarianism), and individualism (vs. collectivism). Observations are aggregated on the deal-level. All regressions are robust and include fixed effects for acquirer- and target region, and year. Constant included, but not shown. Significance levels: \*\*\* 1%, \*\* 5%, and \* 10%, t-statistics in parentheses.

	Combined CAR <sub>[-1;+1]</sub>			
	OLS (1)	OLS (2)	OLS (3)	OLS (4)
ln(1 +  Δ Trust )	-0.00645 (-0.10)			-0.0169 (-0.24)
ln(1 +  Δ Hierarchy )		0.0873 (0.94)		0.0842 (0.91)
ln(1 +  Δ Individualism )			0.0754 (0.45)	0.0833 (0.45)
ln(Acquirer Market Cap.)	-0.00804*** (-8.80)	-0.00804*** (-8.77)	-0.00802*** (-8.73)	-0.00802*** (-8.75)
Relative Size	0.353 (0.67)	0.383 (0.73)	0.363 (0.68)	0.389 (0.75)
Hostile	0.0200* (1.79)	0.0199* (1.79)	0.0199* (1.79)	0.0199* (1.79)
Target defense	-0.00318 (-0.82)	-0.00302 (-0.78)	-0.00318 (-0.82)	-0.00303 (-0.79)
Same industry	-0.000364 (-0.13)	-0.000335 (-0.12)	-0.000337 (-0.12)	-0.000331 (-0.12)
Acquirer termination fee	0.0044 (1.04)	0.00442 (1.05)	0.00436 (1.04)	0.00443 (1.05)
Target termination fee	-0.00676* (-1.83)	-0.00675* (-1.83)	-0.00675* (-1.83)	-0.00675* (-1.83)
Tender offer	0.0245*** (7.46)	0.0244*** (7.44)	0.0244*** (7.46)	0.0244*** (7.45)
Majority cash	0.00337 (0.66)	0.00335 (0.65)	0.00327 (0.63)	0.00327 (0.63)
ln(Geographical Distance)	-0.0032 (-0.99)	-0.00248 (-0.75)	-0.00338 (-1.06)	-0.00248 (-0.73)

(Table continues on the next page)

**Table 8** (continued)

	Combined CAR <sub>[-1; +1]</sub>			
	OLS (1)	OLS (2)	OLS (3)	OLS (4)
Contiguous	0.000506 (0.08)	0.000613 (0.10)	0.0000268 -	0.000652 (0.10)
ln(Target region GDP)	0.0335 (1.10)	0.0329 (1.08)	0.0331 (1.09)	0.0328 (1.07)
ln(Target region GDP/capita)	0.0504 (0.87)	0.0504 (0.87)	0.0514 (0.89)	0.0512 (0.88)
ln(Acquirer region GDP)	0.00259 (0.07)	-0.000566 (-0.02)	0.00145 (0.04)	-0.000472 (-0.01)
ln(Acquirer region GDP/capita)	0.0494 (0.79)	0.0523 (0.84)	0.0506 (0.81)	0.0521 (0.83)
Heckman's $\lambda$	0.0384** (2.26)	0.0354** (2.08)	0.0373** (2.22)	0.0357** (2.03)
Acquirer region F.E.	Yes	Yes	Yes	Yes
Target region F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.121	0.122	0.122	0.122
Adj. R <sup>2</sup>	0.094	0.095	0.094	0.094
N	2165	2165	2165	2165

**Table 9****Merger Gains and Cultural Distance (2)**

The table provides the results for various regression with as dependent variable the combined seven-day CAR surrounding the announcement date. The combined CAR is the average acquirer and target CAR, weighted by their respective market capitalization four days prior to announcement. CARs are calculated using a market model with the CRSP value-weighted index as market index and returns calculated from CRSP stock prices. The sample consists of U.S. domestic interregional mergers over \$1 million in the period 1985 through 2017. All four regressions are estimated using OLS with Heckman's lambda to control for selection bias. Region economic variables are excluded as they are part of the Heckman selection probit. Main variables of interest are the cultural variables constructed from the WVS: trust (vs. distrust), hierarchy (vs. egalitarianism), and individualism (vs. collectivism). Observations are aggregated on the deal-level. All regressions are robust and include fixed effects for acquirer- and target region, and year. Constant included, but not shown. Significance levels: \*\*\* 1%, \*\* 5%, and \* 10%, t-statistics in parentheses.

	Combined CAR <sub>[-3; +3]</sub>			
	OLS (1)	OLS (2)	OLS (3)	OLS (4)
ln(1 +   $\Delta$ Trust )	0.00133 (0.07)			-0.000257 (-0.01)
ln(1 +   $\Delta$ Hierarchy )		0.0186 (0.69)		0.0182 (0.67)
ln(1 +   $\Delta$ Individualism )			0.0154 (0.31)	0.0137 (0.26)
ln(Acquirer Market Cap.)	-0.00198*** (-7.51)	-0.00198*** (-7.48)	-0.00198*** (-7.46)	-0.00198*** (-7.47)
Relative Size	0.0519 (0.23)	0.0604 (0.27)	0.0497 (0.22)	0.0577 (0.25)
Hostile	0.00368 (1.05)	0.00367 (1.05)	0.00367 (1.05)	0.00366 (1.05)
Target defense	-0.00144 (-1.21)	-0.0014 (-1.18)	-0.00144 (-1.21)	-0.0014 (-1.18)
Same industry	0.000346 (0.41)	0.000351 (0.41)	0.00035 (0.41)	0.000355 (0.42)
Acquirer termination fee	0.00159 (1.28)	0.0016 (1.30)	0.00159 (1.29)	0.0016 (1.29)
Target termination fee	-0.00250** (-2.34)	-0.00250** (-2.35)	-0.00250** (-2.34)	-0.00250** (-2.35)
Tender offer	0.00720*** (7.16)	0.00719*** (7.15)	0.00719*** (7.16)	0.00719*** (7.15)
Majority cash	0.000838 (0.60)	0.00084 (0.60)	0.00082 (0.58)	0.000822 (0.58)
ln(Geographical Distance)	-0.00148 (-1.47)	-0.0013 (-1.28)	-0.00149 (-1.50)	-0.00132 (-1.28)

(Table continues on the next page)

**Table 9** (continued)

	Combined CAR <sub>[-1; +1]</sub>			
	OLS (1)	OLS (2)	OLS (3)	OLS (4)
Contiguous	0.000166 (0.09)	0.000242 (0.14)	0.000135 (0.07)	0.000191 (0.11)
ln(Target region GDP)	0.00737 (0.88)	0.00728 (0.87)	0.00733 (0.88)	0.00723 (0.86)
ln(Target region GDP/capita)	0.0166 (1.07)	0.0165 (1.07)	0.0167 (1.08)	0.0166 (1.08)
ln(Acquirer region GDP)	0.00579 (0.59)	0.00527 (0.54)	0.00567 (0.58)	0.00513 (0.52)
ln(Acquirer region GDP/capita)	-0.0108 (-0.62)	-0.0104 (-0.60)	-0.0107 (-0.61)	-0.0102 (-0.59)
Heckman's $\lambda$	0.0103** (2.25)	0.00983** (2.12)	0.0103** (2.25)	0.00973** (2.06)
Acquirer region F.E.	Yes	Yes	Yes	Yes
Target region F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.100	0.100	0.100	0.100
Adj. R <sup>2</sup>	0.073	0.073	0.073	0.072
N	2222	2222	2222	2222



**Table 10****Variance Inflation Factors for the Merger Volume Regressions**

The table provides the Variance Inflation Factors VIFs of the full-model OLS regressions for both models of merger volume to further test the robustness of the found results. A VIF over 10 indicates multicollinearity problems, corresponding to a inverse VIF of 10%. None of the culture variables are affected by multicollinearity according to the VIFs. Except for the regional economy variables, none of the controls are multicollinear either.

Variable	$\ln(V_{ij})$ in Dollars		$\ln(V_{ij})$ in Number	
	VIF	1/VIF	VIF	1/VIF
$\ln(1 +  \Delta Trust )$	3.51	0.285049	3.48	0.28771
$\ln(1 +  \Delta Hierarchy )$	4.56	0.219214	4.56	0.219491
$\ln(1 +  \Delta Individualism )$	6.39	0.156423	6.38	0.156771
$\ln(\text{Geographical Distance})$	3.08	0.324599	3.07	0.325651
Contiguous	2.23	0.447515	2.22	0.450305
$\ln(\text{Target region GDP})$	161.83	0.006179	160.76	0.00622
$\ln(\text{Target region GDP/capita})$	201.08	0.004973	200.23	0.004994
$\ln(\text{Acquirer region GDP})$	160.58	0.006228	159.71	0.006261
$\ln(\text{Acquirer region GDP/capita})$	201.81	0.004955	201.53	0.004962
Hostile	1.22	0.821456		
Target defense	1.43	0.701421		
Same industry	1.14	0.874806		
Acquirer termination fee	1.36	0.737968		
Target termination fee	1.61	0.621568		
Tender offer	1.43	0.701629		
Majority cash	1.08	0.924213		
Mean VIF	46.27		51.39	