

**Everybody is unique,  
Cultural distance and cross-border bank  
M&A's**

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Master Thesis Financial Economics

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# Cultural distance and cross-border bank M&A's

Master Thesis Financial Economics

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## **Abstract:**

I study how cultural differences between countries influence cross-border bank M&A flows and the stock price reaction of the merger around the announcement date. I use a sample of 1,176 cross-border bank deals announced in the period 1990-2015. Moreover, I obtain 745 cumulative abnormal returns of acquiring banks and 172 cumulative abnormal returns of target banks. Additionally, besides conventional measures of culture, I include a new measurement of cultural distance based upon individual survey data of cultural distance that controls for intra-country cultural variation. First of all, I find that cultural distance has a negative effect on cross-border bank M&A flows. Hence, cultural distance is a barrier for cross-border bank M&A activity. In practice, larger cultural distance lowers the probability that a bank will engage in a cross-border merger. Secondly, I find that cultural distance is negatively associated with the stock price reaction of acquiring banks around the announcement date of the merger. On the other hand, apart from several cultural values, cultural distance has a positive robust relationship with the stock price reaction of the target banks around the announcement date. This suggests that the market perceives cultural distance as a barrier for the acquirer and an opportunity for the target bank.

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*“At bottom every man knows well enough that he is a unique being, only once on this earth; and by no extraordinary chance will such a marvelously picturesque piece of diversity in unity as he is, ever be put together a second time” Friedrich Nietzsche.*

## 1. Introduction

Since the beginning of the 1990's changes in technology and regulation have led to a substantial increase in bank mergers and acquisitions (M&A) activity (Amel et al., 2004). This international consolidation of banks has led to changes of financial market's structure all over the world. Moreover, considering banks, cross-border M&A are the most important form of entrance in international expansions (Caiazza et al., 2014). Obviously, banks engage in cross-border expansion to pursue potential synergy gains of economics of scale, economies of scope, risk and revenue diversification. (Berger et al., 2001) However, the literature does not find evidence of these potential synergy gains (Correa, 2009). The literature argues that barriers in the form of institutional, cultural and economic differences between countries prevent potential synergies from realizing. (Vander Venet, 2004; Correa, 2009). However, besides the role of common language, the role of cultural differences has not been studied intensively in the literature on bank M&A. Nevertheless, the effect of cultural distance has been studied intensively on overall cross-border M&A. In fact, the literature on the effect of cultural distance on overall cross-border merger argues that cultural differences are indeed a barrier (Stahl and Voigt, 2008). However, Chakrabarti et al. (2005) state that cultural distance potentially has a positive effect on cross-border M&A in the long run. In this paper, I empirically examine the effect of cultural distance on cross-border bank M&A flows. Furthermore, I identify the relationship between cultural distance and the stock price reaction of the target and the acquiring banks around the merger's announcement date. Recent large bank mergers show that cultural differences can be a barrier or beneficial. The acquisition of Lehman Brothers its Asian and European branches by the Japanese Nomura showed that cultural differences can be a barrier in post-merger integration. On the other hand, cultural differences were overcome by BNP Paribas when they acquired Fortis Belgium. The general theory on cultural distance is that individuals prefer similar cultural values with corresponding practices (Hofstede, 2001). Culture can be defined as the collective mental

programming of a group of people that creates cultural values which lead to human behavior and practices (Hofstede, 1981). In case of a cross-border M&A, two different cultures, corporate or national, have to integrate and cooperate. Hence, these differences between two cultures is measured by the distance in cultural values. Note that cultural values shapes human behavior (Hofstede, 2001) and as a result it affects economic practices (Stultz and Williamson, 2003). Consequently, in case of a cross-border merger different cultures with different practices collide. Correa (2009) suggests that this collusion of cultures is a barrier in bank M&A that prevent potential synergies from realizing. Moreover, in general Stahl and Voigt (2008) find that cultural distance has a negative effect on the cross-border M&A flows. Interestingly, they find that cultural distance has positive effect on the stock price reaction of the target company and a negative effect on the stock price reaction of the acquiring company. Additionally, Amel et al. (2004) find that there is an increase in value for target banks in a merger. However, this is offset by a decrease in the value of the acquiring banks.

Obviously, a critical feature of studying the effect of culture on cross-border M&A's the measurement of cultural distance. Clearly, culture is an abstract institution and hard to quantify. Nevertheless, the dimensions of Hofstede (1980, 2001) in combination with the cultural distance index of Kogut and Singh (1988) have been widely used in the cross-border M&A literature (Stahl and Voigt, 2008). Although, this framework has proven its validity it comes with several limitations. Shenkar (2001) presents several critiques regarding this framework. Among other things he states that this framework assumes that countries are culturally homogeneous. Clearly, culture in countries can be different per region. Hence, countries are culturally heterogeneous. In fact, Au (2000) claims that intra-country cultural variation is important. Beugelsdijk et al. (2015) find that cultural distance that controls for intra-country cultural variation<sup>2</sup> outperforms the Euclidean cultural distance measurement of Kogut and Singh (1988). Hence, I create a cultural distance measurement that controls for intra-country cultural variation. In detail, I obtain individual level data of around 80 countries from the World Value Survey (WVS) based on three different questions that each represent a cultural value. I use the cultural values trust, individualism and hierarchy from Ahern et al. (2012). Next I measure the cultural distance for each cultural value between all available countries. In detail, I use the Jensen-Shannon distance

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<sup>2</sup>Intra-county cultural variation is equal to cultural heterogeneity in a country

to control for intra-country cultural variation. Furthermore, I use the conventional Euclidean distance<sup>3</sup> measurement. Note that the Euclidean distance does not capture intra-country cultural variation and as a result assumes cultural homogeneity within countries. Furthermore, besides, these Euclidean distances, I use the Euclidean distances of the six cultural dimensions of Hofstede (2001) and overall cultural distance measurements.

Mainly, I use these cultural distances to examine what effect culture has on cross-border bank M&A flows. In other words, what is the effect of cultural distance in the decision of a bank to engage in a cross-border merger. Additionally, I use these cultural distances to examine the relationship between cultural distance and the stock price reaction of target and acquiring banks around the announcement date of the merger. I obtain bank M&A data for 1,176 cross border bank mergers in the period 1990-2015 for around 80 different countries. First of all, I create an equivalent of the gravity model of trade with cross-border M&A flows as dependent variable, cultural distances as independent variable and I control with a set of country characteristics differences and other distance measures. Secondly, I estimate the effect of cultural distance on the stock price reaction of the merger around the announcement date. I use an event study to calculate the cumulative abnormal returns of the target and acquiring banks two days prior and after the announcement of the bank merger. Next, I use the cultural distances and controls from the gravity model to examine the relationship between cultural distance and the stock price reaction of the target and the acquiring banks around the announcement date.

This thesis contributes to the existing literature in several ways. First of all, as stated before, the effect of culture in cross-border bank M&A is not studied intensively. Several papers (Correa, 2009; Vander Venet, 2004) claim that culture is a barrier that prevent synergies from realizing, however this thesis tests this claim more intensively. Furthermore, the cross-border bank M&A literature finds many determinants on M&A activity and stock price reactions including culture. However, proxies of culture are usually are very roughly defined. In most papers, cultural distance is measured by a dummy variable of language (Karolyi and Taboada, 2015; Correa, 2009). While language is a feature of culture, it does not represent any cultural value. This paper goes beyond defining culture as language and includes a representative set of cultural values for

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<sup>3</sup> The distance between two points. In this case the distance between the cultural mean score between two countries. Hence I call it mean based distance.

companies as more refined measures of culture. Secondly, literature on cultural distance challenges the intensively used measure of cultural distance from Kogut and Singh (1988) and Hofstede (1980). Shenkar (2001) states several critiques including the assumption of country homogeneity within this measurement. This paper improves on this by including a measurement that controls for intra-country cultural variation. Furthermore, none have used the Jensen-Shannon (J-S) distance as a measurement of cultural distance that controls for intra country cultural heterogeneity. I improve upon previous literature dealing with cultural distances and financial outcomes by using the Jensen-Shannon distance (Cha, 2007) to calculate cultural distances in this paper.

Regarding the findings of this paper. First of all, In line with the literature, I find that cultural distance is a barrier in cross-border bank M&A flows. In fact, I find that overall cultural distance and individual cultural value distances have a significant negative effect on cross-border bank M&A activity in the period of 1990-2015. Secondly, I find that the cultural distance is negatively associated with the stock price reaction of the acquiring banks. On the other hand, cultural distance is positively associated with the stock price reaction of the target banks around the announcement date. With respect to the literature, this finding suggests that the value enhancing of target banks and decrease of stock value is associated with cultural distance. In short, cultural distance is as a barrier for banks to engage in a cross-border M&A. Furthermore, larger cultural difference is perceived positively for targets and negatively for acquirers by the stock market.

The remainder of this paper is organized as follows. In section 1, I describe the theory and literature on culture, cultural distance and its measurement issues, cross-border M&A's and cross-border bank M&A's. In section 2, I discuss the hypotheses regarding the effect of culture on cross-border bank M&A's in section 3. I present the data and the methods used to test the hypotheses in section 4. The results are discussed in section 5. Finally, I present a conclusion and discussion of this paper in section 6.

## 2. Literature review

In this literature review I discuss related literature. First of all, I discuss the definition of culture. In detail, I describe that culture can be described with cultural values which lead to human behavior. Consequently, differences in cultural values lead to different behavior. This difference

in cultural values can be captured with cultural distance. In the second part I discuss cultural distance. Especially, I discuss the measurement issues of cultural distance in the literature of cross-border M&A. Thirdly, I discuss how cultural distance affects general M&A flows and stock price reaction in previous studies. Finally I discuss the literature of bank M&A.

### *2.1 Culture*

According to Hofstede (1980), culture is the collective programming of the mind that distinguishes the members of one group or category of another. The category can refer to nations, regions, religion, etc. In fact, every individual has a consistent pattern of thinking, feeling and acting that was learned during their life. Hofstede calls these patterns mental programs. In depth, mental programming is the part of an individual's conditioning that is shared with other members of a group, region or country. However, it is not shared with individuals of a different group, region or country. An obvious example of collective mental programming is language.

These mental programs consist of three levels. First of all, universal is the one shared by all individuals and is most likely inherent genetically. Secondly, collective is the grouping of individuals. Thirdly, the individual personality. The mechanisms by which the mental programs are revealed is in terms of values held by collectives or individuals. In fact, values are feelings with a direction: Trust versus distrust, Individualism versus collectivism, hierarchy versus egalitarianism (Ahern et al, 2012; Hofstede, 1980; Schwartz, 1992). Notably, these cultural values are key drivers of human behavior. (Hofstede 2001, Van Hoorn, Ahern et al 2012) In fact, several papers prove that cultural values affect human behavior in terms of economic decision making. (Guiso, Sapienza, and Singales, 2006. Tabellini, 2010). In detail, Grinblatt and Keloharju (2001) for example find that the individual stock holding home bias in Finland exists. This is the tendency to hold a disproportional amount of home country investments in an individual's portfolio. Hence, individual investors prefer home country stocks without a legitimate economical reason. Furthermore, Stulz and Williamson (2003) use religion as a proxy for culture and explain why legal protection for shareholders and creditors differ across countries. They find that Protestant countries protect the rights of creditors more efficiently than most Catholic countries. Moreover, Guiso, Sapienza and Zingales (2008) study the effect of trust on stock market participation. They show that higher levels of trust leads to more participation in the



stock market. Thus, individual's economic decisions are affected by national cultures through cultural values.

Hofstede (1980) created a framework to capture culture with cultural values<sup>4</sup> by using cultural working values from 117,000 IBM employees across 70 countries. In fact, this paper identifies four different national cultural dimensions: power distance, individualism, uncertainty avoidance and masculinity. In a later stage long term orientation and indulgence versus restraint were added to the set of dimensions (Hofstede, 2001). In detail, power distance shows the degree to which the inequality of power is accepted by less powerful members of a society. In other words, by how much is the hierarchy in a country accepted by the members. Secondly, individualism versus collectivism describes the tradeoff between an individualistic society and a socially society. Members of an individualistic society only take care of themselves and their relatives. On the other hand, members of a collective society are integrated in a cohesive group which protects and helps them in exchange for loyalty. Thirdly, masculinity versus femininity describes to which extent a society is more masculine or feminine. Masculinity represents heroism, achievement, assertiveness and a more competitive society. A Feminine society prefers cooperation modesty, caring for the weak and quality of life. Finally, Uncertainty avoidance shows the level of endurance of a society towards ambiguity and uncertainty. Furthermore, Hofstede (2001) adds long term orientation and indulgence versus restraint as new cultural values. First of all, long term orientation shows the level of thrift and the education as a way to prepare for the future. Secondly, indulgence versus restraint represents the level of free gratification of enjoying live and having fun.

Furthermore Ahern et al. (2012) use three different cultural values in their study of the effect of cultural distance on M&A flows and performance. In fact, they use proxies for individualism, hierarchy and trust. In detail, trust is the dependence on another person to fulfill a commitment either implicit or explicit. Note that individualism and hierarch also appear in Hofstede's (1980) and Schwarz (1992) cultural values.

Clearly, cultural values that are directly related to working values may be a better representation of cultural distance compared to national cultural distance. Notably, Hofstede (1980,2001) cultural dimensions are in fact working values and therefore suitable to use in this setting. In detail, Chakrabarti et al. (2009) for example finds that the cultural distances on the overall score

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<sup>4</sup> The cultural dimensions of Hofstede (1980, 2001) are in fact cultural values.

of Hofstede's dimension have a negative effect on the short term. However, in the long term cultural distance has a positive effect. Furthermore, Ahern et al (2012) find that individualism, trust and hierarchy have a negative effect on cross-border M&A flows and performance.

Therefore, I focus on the cultural values that have been identified as important in previous studies. These cultural values include: trust, individualism, hierarchy, masculinity and uncertainty avoidance long term orientation and indulgence versus restraint.

Furthermore, managers are the individuals who make the decisions that lead to certain M&A flows and M&A returns. Notably, national cultures do capture firm's culture. Ahern et al (2012) state that of all CEO's of companies headquartered in the United states 97.7% are nationals of the United states. Furthermore, for board members this number is 95.8%. Moreover, regarding European companies 90% of the German, 85% of the French and 91 of Italian CEO's are from the country where the company is headquartered. As a result, I assume that that country level measures of culture are appropriate proxies for cultural values held by managers of a company.

In sum, culture is the collective mental programming of a group of people. Furthermore, cultural values are created by culture. Consequently, these cultural values are key drivers of human behavior and economic decision making. Cultural values differ across countries therefore individual's economic behavior is likely to differ as well. This difference is the cultural distance between countries.

## *2.2 Cultural distance*

Cultural distance is a widely used measurement in international business studies. Cultural distance measures the absolute cultural difference between a country pair based on one or multiple cultural values. Kogut and Singh (1988) introduced cultural distance and use Hofstede's (1980) four cultural values to construct absolute cultural distances. Henceforward, these cultural distances are used to study the entry mode of companies in a new market. The study finds that larger cultural distance deters entry by acquisition much more than by green-field or Joint venture. Hence, Kogut and Singh find that cultural distance has a negative effect on international business integration. Their explanation for this finding is that

Distance in culture can be measured with a single or multiple cultural values. Kogut and Singh (1988) use the four values of Hofstede. On the other hand, Ahern et al (2012) focus on distances of three different cultural values. They find that larger distance of trust, hierarchy and

individualism between countries leads to lower M&A volumes and lower announcement returns. Furthermore, Siegel et al. (2011) find that larger bilateral egalitarian distance is negatively associated with cross border equity and bond issuances and mergers and acquisitions.

### *2.3 Measurement issues of cultural distance*

The majority of studies that focus on the effect of culture on M&A use the Kogut and Singh (1988) index of Hofstede's (1980) cultural dimensions as a measure for cultural distance.

However, several fragilities appear in the quantification of culture and the measurement of cultural distance (Karolyi, 2015; Shenkar, 2001). In fact, both the cultural values of Hofstede (1980) and the cultural distance index of Kogut and Singh (1988) are debatable. First of all, as stated before the proxy of culture is based on the cultural dimensions of Hofstede (1980).

Secondly, the framework of cultural distance is based on the paper of Kogut and Singh (1998). They use the absolute difference of Hofstede's cultural values. In other words, they use a model that measures the average absolute difference among all four Hofstede measures of cultural distance. Hofstede (1980) its measurement of culture in combination with the cultural distance framework of Kogut and Singh (1998) is implemented in many cross-border cultural distance studies (Stahl and Voigt, 2008).

Notably, Shenkar (2001) presents several critiques regarding this combination of measurement of culture and cultural distance framework. Shenkar (2001) emphasizes that the measurement of culture is a complex, subtle and intangible process. Therefore, creating a measure capturing the distance between cultures is a challenge. Consequently, Shenkar (2001) lists several critiques that discusses the conceptual properties and the methodological properties on how cultural distance could be improved. In detail, the critiques can be divided in two part. Firstly, he critiques the conceptual properties of Hofstede (1980). The list of conceptual critiques includes:

- (1) The illusion of symmetry, in which cultural distance from country A to B is not the same as the distance from B to A. For example, there is no empirical support that cultural distance for German's towards Austria is equal to the cultural distance of Austria towards Germany.
- (2) The illusion of stability, in which culture is assumed to be constant over time. In depth, all papers that use the cultural values of Hofstede base their proxy of culture on a survey conducted between 1967 and 1973.

- (3) The illusion of linearity is the assumption that cultural distance has a linear relation with economic decisions.
- (4) The illusion of causality is the assumption that culture is the only determinant of distance.
- (5) The illusion of discordance is the assumption that cultural distance can have a positive effect or extremes on both side of a cultural value.

Secondly, he critiques the methodological properties of the cultural distance index of Kogut and Singh (1988). These critiques includes:

- (1) The assumption of homogeneity, the measures of national cultural distance assume that there is no cultural variation within a country. The cultural distance framework of Kogut and Singh measures the absolute differences of cultural values between country's averages. This is due to the fact that Hofstede only reports the average score of each country. Individual scores of countries cultural values are not available in Hofstede's data.
- (2) The assumption of equivalence, in which Kogut and Singh assume that the weight of each cultural value is equal. However, Hofstede (1980) states that uncertainty is potentially the most important dimension.

In this paper I mainly focus on improving on the assumption of the homogeneity critique by incorporating cultural value data based upon individual survey data. Additionally, I also take into account the illusion of causality and illusion of stability when empirically assessing the effect of culture on M&A flows and cross-border merger announcement returns. First of all, the critique on the assumption of homogeneity relates to the fact that Hofstede's scores on cultural values are country averages. Consequently, measuring distance between two country averages implies that the cultural distance is equal for a complete population. In practice, cultures are heterogeneous. For example, the cultural distance for the French speaking part of Belgium is smaller towards France than the Dutch speaking part of Belgium part is towards France. Au (2001) studies cultural distance which control for intra cultural variation (i.e. country cultural heterogeneity). Au (2001) finds that mean based<sup>5</sup> and variance based factors are not equal. Additionally, Beugelsdijk et al. (2015) finds that their variance based measure of cultural distance outperforms

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<sup>5</sup> Euclidean distance

the mean based Kogut and Singh (1998) index in explaining foreign affiliate sales of US multinational firms. Moreover, Van Hoorn (2015) incorporates intra cultural variation into working values. Van Hoorn (2015) finds that intra cultural variation is substantially more important than the Euclidean distance between countries.

In sum, all papers based on Hofstede's cultural dimensions assume homogeneity in a country. However, cultural distance that controls for country intra cultural variation describes a different story with respect to economic decision making. In practice, with respect to M&A, a company can acquire a target that is in a segment that is closer to the home country. Consequently, the cultural distance is lower than predicted by the mean based distance. In fact, intra cultural variation focuses on similarities between sub groups of countries rather than absolute distance. Therefore, I include a cultural distance measure that controls for intra cultural variation. Clearly, I do not state that results of the mean based cultural distance are wrong. Merely, that cultural distance measured that controls for intra-country cultural variation can present new insights with respect to studies which assume country homogeneity.

#### *2.4 M&A's and Culture*

The effect of cultural distance on mergers and acquisitions has been debated intensively in the M&A literature (Stahl and Voigt, 2008). The literature can be divided into two streams. First of all, a large set of papers claims that that culture has a negative effect on cross-border M&A flows and performance. This stream is established by the cultural distance hypothesis of Hofstede (1980). Which states that costs of cultural contact increases with larger cultural distance between two countries. In other words, it suggests that cultural distances increases the cost of integration of cultural collision during the post-acquisition period. (Kogut and Singh, 1988). On the other hand, the other stream opposes this view, they claim that culture has a positive effect (Morosini et al., 1998) or no effect on cross-border M&A flows and performance Stahl and Voigt (2005). Regarding the positive effect of cultural distance on cross-border M&A. This stream suggests that the acquirer enhances due to the fact that cultural distance provides the acquirer with a diverse set of new routines and skills that were previously not available to the acquirer. (Morosini et al., 1998; Chakrabarti et al., 2005)

In perspective, Stahl and Voigt (2008) presents a Meta study on the effect of cultural distance on M&A performance. Mainly, they argue that relationship between cultural distance and M&A performance is more complex than described by the cultural distance hypothesis (1980). They

emphasis that the contradicting findings in the literature is due to the fact that the different studies use different levels of measures of culture, performance and focal point of organization. Hence, Stahl and Voigt (2008) find that cultural distance is negatively related with sociocultural integration outcomes. In detail, they find that the magnitude of this relationship depends on the cultural dimension. Hence, this suggests that cultural distance is a barrier for the M&A integration process. Secondly, they find that there is an opposing relationship for cultural distance with the stock price reaction of the target and the stock price reaction of the acquiring firm. In fact, they find that cultural distance has a negative relationship with the stock price reaction of the acquiring firm. On the other hand, they find that cultural distance has a positive relationship with the stock price reaction of the target firm. Finally, they find that the degree of relatedness increases the magnitude of the negative relationship of culture with synergy realization. Additionally, regarding the differences outcomes of different cultural dimensions they recommend the use of alternative cultural distance measures.

Additionally, Chakrabarti et al. (2009) find that cultural distance has a negative effect on announcement returns of cross-border M&A's (i.e. short term). On the other hand, cultural distance has a positive effect on the long term return cross-border M&A's.

### *2.5 Bank M&A's*

In line with the literature of overall cross-border M&A, the bank M&A literature mainly considers the determinants of bank M&A flows and the performance of bank M&A's in terms of realizing synergy gains and the stock price reactions. First of all, size is an important determinant of cross-border bank acquisition flows. In fact, on bank level, the overall consensus on the determinants of domestic bank M&A's is that larger and more efficient banks acquire smaller and less efficient banks. Furthermore, acquiring banks tend to come from countries with a larger GDP relative to the target (Vander Venet, 2002; Caiazza et al., 2014) Secondly, on country level, bank M&A activity is higher for country pairs that are economically, geographically, legally and institutionally closer (Buch and Delong, 2004). Thirdly, regarding bank M&A performance, in general Letetit et al. (2004) find that bank M&A's are significantly value enhancing for targets and much less for acquirers in terms of the stock price reaction. In perspective, Amel et al. (2004) state that larger and more efficient banks acquire relatively smaller and less efficient banks. However, improvements in efficiency of the cross-border bank M&A is limited. In detail, bank M&A do not improve profit and cost efficiency. The positive

stock price reaction of target banks is offset by the negative stock price reaction of the acquiring banks. As a result, bank M&A's do not generate share-holder value. However, on one hand, Vander Venet (2004) finds that bank cross-border M&A's improve efficiency in profitability. Hankir et al (2011) shows that this is due to the fact that the market positively perceives the increase in market power of a bank M&A. On the other hand, Vander Venet (2004) find that potential gains are not realized in terms of operational efficiency. Additionally, Correa (2009) tests whether there is evidence for either the global advantage hypothesis or the home field hypothesis. The home field hypothesis claims that domestic owned banks are more efficient compared to the foreign owned banks. This due to the cost of managing institutional, cultural and economic distances. On the other hand, the global hypothesis claims that cross-border banks have the ability to overcome these distance related costs due to superior management skills, technology and diversification of risks Hence, Correa (2009) finds the acquirer is not able to increase the performance of the foreign acquired bank relative to the domestic owned bank. As a result, he finds weak support for the global hypothesis. Consequently, difficulties arise in improving efficiency of foreign acquired banks due to country institutional, cultural and economic differences. In sum, the general literature finds that bank M&A's do not improve cost argues that synergy gains and share-holder value improvements are not achieved due differences in language, culture, currency and regulations. Indeed, Karolyi and Taboada (2015) finds that an institutional difference of bilateral differences in regulation levels affects cross-border bank acquisition flows and performance. Notably, cultural distance has not been studied explicitly to explain the suggested cultural barrier. Nevertheless, some papers have included culture as a variable in their analyses. However, they all use language as a proxy for culture. (Karolyi and Taboada, 2015; Correa, 2009; Focarelli and Pozzolo, 2001) Interestingly, having a common language has a positive effect on cross border bank acquisition flows (Karolyi and Taboada, 2015). Notably, this paper will generate a theoretical stronger proxy for cultural distance and therefore improve upon the previous literature dealing with cultural distance and bank M&A's. As stated before, Karolyi and Taboada (2015) find evidence that in cross-border bank acquisitions the acquirer comes from a regulative stricter country compared to the target. These findings were conducted with different instrumental variables. In order to control for endogeneity concerns they use government ownership, systematic banking crisis and years of independence as instrumental variable.

Interestingly, as stated in the internet appendix of Karolyi and Taboada (2015), they find that the distance in cultural dimensions uncertainty avoidance, masculinity and individualism of Hofstede (1980) all have a relationship with the regulatory variables. This suggests, that regulatory differences could be an outcome of cultural differences. Notably, in order to control for this effect I include regulatory differences in all models.

### 3. Hypothesis development

This paper contributes to the aforementioned literature in several ways. First of all, it extensively explores the effect of cultural distance on cross-border bank M&A flows and stock price reactions. Secondly, next to the fundamental Kogut and Singh and Hofstede (1980) cultural distance framework, I incorporate a new framework that controls intra-country cultural variation. The aim of this paper is to examine the effect of cultural distance between countries on cross-border bank M&A flows. Additionally, this paper examines the relationship of cultural distance with stock price returns of the target and acquiring banks around the announcement of the merger. As stated before, a cross-border bank M&A implies that two banks from different countries and therefore cultures merge and consequently have to cooperate from that time on. As stated in the literature, culture can be measured by cultural values, for example the cultural dimensions of Hofstede (1980). Furthermore, these cultural values are key drivers of human behavior and practices. As a result, different cultural values lead to different human behavior and practices. Regarding a cross-border merger, two different cultures with corresponding cultural values and therefore different practices join and have to cooperate. This clash of cultures can lead to different outcomes. In cross-border mergers in general the effect of this clash is debatable. Nevertheless, in this paper, cross-border bank M&A flows (activity) focusses on the point of view of how banks perceive cultural distances in their acquisition behavior. If banks perceive cultural distance as a barrier (opportunity) then cultural distance has a negative (positive) effect on the probability of a cross-border bank acquisition to occur. In other words, how does cultural distance affect the decision of banks to acquire a foreign bank? On the other hand, the stock price reaction around the announcement of the cross-border bank merger reflects how the market prices cultural distances in cross-border bank M&A. In other words, does the market price the clash of cultures negatively, positively or not at all?



As stated before, several papers find that cultural distance matter in M&A. Moreover, bank M&A literature suggest that culture is a barrier that prevents the realization of cross-border bank synergies. Notably, the bank M&A literature claims that there are barriers that prevent banks from realizing synergy gains (Correa, 2009). Although, Stahl and Voigt (2008) find that culture is a barrier Morosini et al. (1998) state that cultural distance has a positive effect on cross-border M&A activity. In order to examine the effect of cultural distance on cross-border bank M&A flows the first set of hypothesis contains:

**Hypothesis 1a:** *Cultural distance has a negative effect on cross-border bank M&A flows.*

**Hypothesis 1b:** *Cultural distance has a positive effect on cross-border bank M&A flows.*

Again, regarding the literature, the literature debates whether the relationship on the stock price reaction of the cross-border M&A is positive or negative. Amel et al. (2004) and Stahl and Voigt (2008) find that the stock price reaction of targets is positively and that the stock price reaction of the acquirers is negatively. However, if this is the case, what is the relationship with culture and the stock price reaction. As a result the second set of hypothesis are:

**Hypothesis 2a:** *Cultural distance is negatively associated with cross-border bank M&A stock price reactions around the announcement date of the merger.*

**Hypothesis 2b:** *Cultural distance is positively associated with cross-border bank M&A price reaction around the announcement date of the merger.*

## 4. Data Collection

Clearly, regarding the hypotheses, this research can be divided in two parts. First of all, determining the effect of cultural distance on cross-border bank M&A flows. Secondly, determining the effect of cultural distance on cross-border M&A stock price reaction. Quantifying all terms is crucial. In this part I describe the research design. In depth, I state what the origins of the data are and motivate how the data is constructed.

### 4.1 Bank M&A data

I extract a broad data sample of domestic and cross-border bank acquisitions from Thompson Financial's securities data corporation (SDC) database. In line with the literature (Karolyi and Taboada, 2015) I select bank acquisitions in which the acquirer is a bank holding company or a

commercial bank. Target banks include commercial banks, bank holdings, all insurance companies, mortgage and nonmortgage loan brokers and securities brokerage companies. Furthermore, I exclude privatizations, leverage buyouts, spinoffs, recapitalizations, self-tenders, exchange offers and repurchases. I keep acquisitions in which the acquirer had a minority control before the acquisition (< 50%) and has a majority control after the acquisition (>50%). This sample contains 8128 domestic and cross-border deals announced between 01/01/1990 and 12/31/2015. In detail, 1,176 (14%) of the deals are cross-border deals and 6,952 (86%) are domestic deals.

Panel B of table 1 shows the 25 most active target and acquiring countries on the total number of cross-bank M&A's from the data sample. It shows that the United States (127), United Kingdom (86) and France (56) are the three largest target countries for bank M&A's. Furthermore, the top three of home countries of acquirers consist of France (105), United Kingdom (81) and Germany (75). Panel A of table 1 shows the 30 largest target, acquiring and domestic in terms of bank M&A deal value. Furthermore, figure 1 shows the developments in total number, total value, average and the division of cross-border, domestic and total bank M&A deals over the period 1990 and 2000. The total number of M&A's grew rapidly in the 1990's from 131 in 1990 to 360 in 1998 to remain between 300 and 400 for the next decade. However, the total number of cross-border M&A did not grow as fast as domestic bank M&A. Cross-border bank M&A peaked in 2001 around the internet bubble and around before the financial crisis of 2007 to bound back to 1990 numbers after this crisis. Furthermore, the total dollar value of bank M&A shows that cross-border value of bank M&A peaked in 2000 and 2006. Clearly, before the internet bubble and financial crisis. The average value of domestic and cross-border deals per year shows that in the 1990's the values moved similar to a peak in 2000 and to a bottom in 2002/2003. However, after 2003 the domestic deals reached a peak in 2008 and fell to an early 1990's values in 2013. In fact, the peak of average domestic deal value in 2008 is due to mergers initiated by the government to keep the financial system stable.<sup>6</sup> On the other hand, cross-border deal average deal values grew to a peak in 2015. Consequently, the share of cross-border deal value in the world shows the same development. In fact, peaking in 2001, 2007 and 2015.

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<sup>6</sup> In the United States Bank of America acquired Merrill Lynch with a value of \$48,766 million and Lloyds TBS group acquired HBOS with a value of \$25,439 million in the United Kingdom.

Additionally, I merge the bank M&A data with stock price data from Datastream. The abnormal return is cumulated two days before and two days after the announcement date. As a result, due to data availability I obtain the cumulative abnormal stock price return (CAR) around the announcement date of the M&A of 745 acquirers and 172 targets. Table 2 shows the average return, standard deviation and number of observations for each target and acquiring country over the observation period 1990-2015. Furthermore, regarding panel B I perform a *t*-test whether the CAR of target and acquiring banks is significantly different than zero and with respect to each other. Panel B of table 2 reports that the average CAR for target banks is significantly larger than the CAR for acquiring banks. Furthermore, in line with Stahl and Voigt (2008), the CAR of target banks is significantly positive. Although, the CAR of acquiring banks is negative it is not statistically significant. Nevertheless, table 2 shows the development of the average target and acquirers CAR per year over the observation period. In detail, figure 1 shows that the target bank's CAR is mainly positive with exceptions in 1991, 1996 and 2010. On the other hand, the CAR of the acquiring banks is negative in the period 1998-2006 and tops in 2009, 2012 and 2014. After merging CAR data with the control variables data I keep 225 observations for the acquirers CAR and 65 observations for the targets CAR.

## *4.2 Cultural distance*

### *4.2.1 WVS*

Quantifying culture is a challenging and difficult process. I obtain my cultural value data from Hofstede (1980, 2001) and from the World Value Survey (WVS). I create a mean based distance measure on the Hofstede values and on the WVS. On the other hand, by using individual level data from WVS individual data I create a measurement of cultural distance that controls for intra country cultural heterogeneity.

I extract cultural values data from The World Value Survey (WVS). Due to the fact that this data is available on individual level and available for multiple points in time. Note, that this is not the case for data of Hofstede (1980). The World Values Survey (WVS) is a database with respondents on questions that can be related to basic values and motivations. It consists of six waves consisting of ranges from 1981-1984, 1989-1993, 1994-1998, 1999-2004, 2005-2008 and 2009-2014, over 100,000 respondents, around 100 countries, and involves around 250 items on perceptions of life, the environment, work and national identity. For example, one question in the

WVS I use is: “*How proud are you to be your nationality*” with respondent options ranging from very proud (responding 4) to not at all proud (responding 1). In the United States 61% of the people respond that they are very proud and 0.9% respond that they are not at all proud. Hence, the WVS database is a perfect tool to construct a measurement to control for within country heterogeneity in a cultural distance variable.

Additionally, the World Value Survey is available for multiple points in time. Consequently, the critique of illusion of stability (Shenkar, 2001) is improved upon. In fact, I use the third till the sixth wave, representing a period ranging from 1995 till 2014. Although, the second wave represents the first five years in my data sets it is not included. Due to the fact that the second wave contains around 10 countries, of which 4 appear in the bank M&A dataset.

Following Ahern et al. (2012), I extract the cultural values trust, individualism and hierarchy from the world values survey. First of all, to measure trust I use the following survey question from the WVS:

*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*

1. *Most people can be trusted*
2. *Need to be very careful*

Secondly, to measure individualism I use the following survey question from the WVS:

*How would you place your views on this scale? 1 means you completely agree with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between.*

*Incomes should  
be made more equal.*

*We need larger income differences  
as incentives for individual effort.*

1      2      3      4      5      6      7      8      9      10

In which, individualistic counties select the second option and collective counties select the first option.

Thirdly, to measure hierarchy I use the following survey question from the WVS:

*People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them. Others say that one should follow one's superior's instructions only when one is convinced that they are right. With which of these two opinions do you agree?*

- 1. Should follow instructions*
- 2. Must be convinced first*

In which people that chose the first option are hierarchical and people who chose the second option are supposed to be egalitarian.

Notably, this question is only available for the third and fourth wave. In other words, it is only possible to proxy for hierarchy from 1994 till 2004. This limits the amount of available data. Furthermore, each wave consist of a specific range of countries. Consequently, assuming that hierarchy is constant for the remaining does not improve the amount of data. As a result, hierarchy has a substantially lower amount of available data compared to individualism and trust.

#### *4.2.2 Hofstede*

Although, the measurement of culture by Hofstede (1980) is prone to critiques it is a fundamental work in the literature on cultural distance (Stahl and Voigt, 2008).

I obtain all six cultural values from Hofstede's database. Which contain, power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, long term orientation and indulgence versus restraint.

Ahern et al. (2012) state that the questions from the WVS proxy for the same individualism and hierarchy as Hofstede's dimensions of individualism vs collectivism and power distance.

However, both measures contain of different questions. Therefore they can be seen as different measures. In detail, Hofstede measures individualism with four different questions. In which larger job security and the amount of respect obtained from the job shifts towards individualism. On the other hand, more time for personal life and having an interesting job shifts a society towards a collective society. As a result, these questions are different than the question from WVS. This question focusses mainly on the relation between income and incentives. Secondly, power distance questions is larger if responses on being consulted by your boss and fear to

contradict a boss is larger. Moreover, power distance is smaller when respect for a boss and the preference for one boss is larger. The corresponding question in the WVS is similar to one feature of Hofstede's question. Furthermore, the correlations between Hofstede's power distance and the mean based difference and Jensen-Shannon distance of Hierarchy from WVS respectively -0.01 and 0.14. Regarding individualism these correlations are 0.04 and 0.13. Given these points, the data obtained from the WVS and from Hofstede capture different features of cultural values.

#### *4.2.3 Instrumental variable*

Notably, culture and economics may have effect on each other. In other words, it is possible that cultural values of countries are affected cross-border activity. Moreover, there may be omitted variables in the empirical analyses that may affect both cross-border M&A flows as well as cultural distances consequently. To address these concerns, as well as the possibility that the cultural distance variable captures some measurement error, I instrument the main cultural values in order to control for such issues as reverse causality and endogeneity in general. In detail, in order to find a causal link, I use religious distance between country pairs from Spolaore and Wacziarg (2016) as an instrument for the cultural distance variables. Clearly, one may argue that religion may have an effect on cross-border M&A's through other channels than my measures of cultural distance. In my findings I present that additional tests, present that the instrumental variable appears to have significant explanatory power. The first stage F test supports whether the instrument is relevant and whether I am unable to reject the joint null hypothesis that the instrumental variable has no explanatory power. Moreover, I use the Woolridge (1995) test that indicates whether the variables are in fact endogenous. A possibility for future research would be to condition upon these other channels in the empirical analyses. A direct effect of religious distance as set many centuries ago on current cross-border M&A flows seems highly unlikely. In detail, Guiso et al. (2006) defines culture as those customary beliefs and values that ethnic, religious and social groups transmit relatively unchanged from generation to generation. With respect to Hofstede's measures this definition of culture has the focus on the transition of culture from generation to generation. Valid factors that can be treated as time invariant and that are transmitted from a generation on the next generation is religion. In other words, religion is given to an individual, it is relatively hard to change in a short time span. New religious practices are adopted only in long time periods (i.e. centuries). Consequently, religious distance are suitable

instruments for cultural value distance. Using these variables as instruments for cultural distance is justified, given that country religion is set many centuries ago and therefore current cross-border M&A flow is unlikely to have a direct effect on these outcomes. Moreover, it can be expected that religion is related to my measures of cultural distance as they capture the time invariant parts of culture which is also supported from the empirical results in the first stage of 2SLS regression.

#### *4.3 Control variables*

In addition, other variables can influence both cross-border bank flows and performance. First of all, I derive my model to examine the effect of cultural distance on cross-border bank M&A flows from the gravity model of trade (Tinbergen, 1962). In line with the trade literature I obtain GDP per capita and GDP per capita growth from World Bank database (World Development Indicators). Furthermore, weighted distance between countries from Mayer and Zignago (2011) is used to control for geographical distance. Moreover, I include indicator variables for countries that have the same language, share a border and those countries that have had a colonial link. Regarding bilateral trade flows I extract import data from the International Monetary Fund's (IMF) direction of trade data bank (DOT). Trade flows are the log of imports from the acquiring country  $j$  to the target country  $i$ . An average of all six indicators of governance (Kaufman, Kraay and Mastruzzi., 2009) is used to create one governance indicator. I include real stock market returns and real exchange returns according to Erel et al. (2012). Furthermore, according to Beck and Demirguc-Kunt (2009) bank industry conditions matter. Henceforward, to control for banking sector conditions I use bank private credit provided by the banking sector relative to the country's GDP to control for the size of the bank sector and the assets of the top three banks with respect to all commercial banks as a measure for bank concentration. Finally, due to the fact that besides the instrumental variables presented in Karolyi and Taboada (2015) they use the four dimensions of Hofstede (1980) as alternative instruments for regulatory arbitrage. They find that using the alternative cultural dimensions as instruments is in line with regulatory arbitrage. Consequently, to control for the effect of regulatory distance I include the first principal component (PCA) measure of regulation from Karolyi and Taboada (2015). In detail, this is constructed as the first principal component (PCA) of the four indexes of Barth et al. (2013).

## 5. Methodology

I create a model to examine how cultural distance affects the volume and frequency of cross-border bank M&A's. In order to do this I create a gravity model of trade to capture cross-border bank M&A flows. Furthermore, I create a model to examine how cultural distance affects the stock price reactions of the acquirer and target of a cross-border bank M&A. In order to do this I calculate the cumulative abnormal returns in an event study.

In order to capture cross-border M&A flows I calculate the cross-border ratio. On the other hand, I capture cross-border bank M&A performance by calculating the cumulative abnormal returns (CAR) of the target and the acquirer banks around the announcement day of the acquisition. Notably, the main determinant in this study is cultural distance. I calculate cultural distance on several cultural values which are stated before. In fact, regarding the critiques on the current literature (Shenkar, 2001) I create a distance framework that controls for within country cultural heterogeneity. In order to capture intra cultural variation in a distance framework I use the Jensen-Shannon distance. Additionally, following the literature I compute the Kogut and Singh (1988) and cultural distances of Hofstede's (1980, 2001) cultural dimensions as a benchmark against the Jensen-Shannon distance. Furthermore, I compute several overall measures of cultural distance using the first principal component analysis (PCA). All these measurements as well as the control variables can be found in the variable list (appendix D)

### *5.1 Cultural distances*

As stated before, I will measure cultural distance with the assumption of country cultural homogeneity and with the assumption of cultural heterogeneity in a country. I obtain cultural values from the World Value Survey (WVS) and Hofstede (Hofstede,2001) database. Since, the WVS contains individual level data it is only possible to create a cultural distance measurement with the WVS data. Nevertheless, I create a measure that controls for intra-country cultural distance using both the WVS and the Hofstede data. In fact, these are Euclidean distances based on the cultural value mean of a country. Consequently, I create two mean-based measurements. The widely used Kogut and Singh (1988) cultural distance on Hofstede's dimensions. Moreover, following Ahern et al. (2012) I create a mean based cultural distance measure on the cultural values obtained from the WVS. Kogut and Singh (1988) use the following formula to measure cultural distance:



$$CD_{i,j} = \sum_{i=1}^n \left\{ \left( \frac{(D_i - D_j)^2}{\text{var}D} \right) / 4 \right\} \quad (1)$$

Where:  $CD_{ij}$  = Cultural distance between country  $i$  and country  $j$  ( $i \neq j$ ),  $D_{i,j}$  = Cultural dimension  $D$  in country  $i,j$ ,  $\text{var}D$  = variance of cultural dimension  $D$ .

Note that cultural dimensions are the six cultural dimensions<sup>7</sup> of Hofstede. Furthermore, the variance of cultural dimension  $D$  is for the Dimension itself. In other words, it is not the variance of the dimension in country target country  $i$  or acquiring country  $j$ .

The second mean based cultural distance measure is from Ahern et al (2012) on the cultural values from the WVS. The cultural distance of trust, individualism, hierarchy and each dimension of Hofstede (1980, 2001) is calculated by the following equation:

$$\Delta \text{ cultural value} = |\bar{X}_j - \bar{X}_i| \quad (2)$$

In which,  $\bar{X}_{i,j}$  average score of cultural value  $X$  in acquiring country  $j$  or target country  $I$  ( $i \neq j$ ).

Note that cultural value  $X$  is either trust, individualism or hierarchy or one dimension of Hofstede (1980). The previous two equations are both absolute Euclidean distances. Which can be best described as the distance between two points. Obviously, these two points are in both equations the average score of a cultural value in a country. Moreover, cultural distance is either high or low it is not negative.

Next, in order to create a cultural distance measure that controls for intra country cultural variation I will use the Jensen-Shannon (J-S) distance (Cha, 2007). This distance measure is derived from the Jensen-Shannon divergence. The Jensen-Shannon distance is used to measure the difference between two probability distributions. In detail, the J-S distance is a modification from the more generally known Kullback-Leibler divergence (1951). Moreover, the J-S distance uses a method to make the Kullback-Leibler divergence symmetric. (Cha, 2007). The formula of the Jensen-Shannon distance is:

$$\text{Jensen Shannon distance} = \sqrt{\frac{1}{2} \sum_{i=1}^d P_i \ln \left( \frac{2P_i}{P_i+Q_i} \right) + \sum_{i=1}^d Q_i \ln \left( \frac{2Q_i}{P_i+Q_i} \right)} \quad (3)$$

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<sup>7</sup> Hofstede (1980,2001) cultural values include: Power distance, individualism vs collectivism, masculinity vs femininity, uncertainty avoidance, long term orientation and indulgence vs restraint.

Where  $d$  is the number of bins of the vector,  $P_i$  is the value  $i$  of country probability vector  $P$ ,  $Q_j$  is value  $j$  of country probability vector  $Q$ . Hence, this formula calculates the distance between probability vector  $P$  and probability vector  $Q$ . In this paper  $P$  and  $Q$  represent the score distribution of a question from the world value survey for country  $P$  and country  $Q$  countries.

As stated before, I use a questions from the World Value Survey (WVS) that can be related to trust, individualism and hierarchy. These questions bound between 1-2 for trust and hierarchy or 1-10 for individualism. For example, for ‘‘individualism’’ the question bounds between 1 and 10. In which 1 represents low individualism and 10 high individualism. Given all responses, I will create a probability distribution vector for each country, each WVS question and each WVS wave. For example, appendix E shows that for the ‘‘individualism’’ question in wave 5 (i.e. 2005-2009)<sup>8</sup>. The Jensen-Shannon distance measures the distance in each bin of the vector. As a result, the Jensen-Shannon distance of individualism between the Netherlands and the United States in the period 2005 till 2009 is 0.07. Clearly, the difference in perception of individualism is low between the Netherlands and the U.S. Furthermore, the Jensen-Shannon distance between Germany and the Netherlands is 0.19 and the Jensen-Shannon distance between the United States and Germany is 0.16. With respect to the mean based distance the cultural distance are 0.02, 0.12 and 0.10. Hence, I test in table 8 of Appendix E whether the Jensen-Shannon distance and Euclidean distance of trust, individualism and hierarchy are significantly different. Indeed, I find that both measurements are statistically significantly different.

Clearly, the Jensen-Shannon distance measures the overlap between two probability distributions. Consequently, if the probability distribution vectors  $P$  and  $Q$  are identical the J-S distance is 0. On the other hand, if vector  $P$  and vector  $Q$  do not overlap the J-S distance is 1. Since, the vectors I use are on the same interval no values higher than 0.50 are reported. As a result, a high similarity of the probability distribution results in a low J-S distance and low similarity of the probability distribution results in a high J-S distance.

Importantly, due to the fact that the Jensen-Shannon distance varies over time and is not a mean based distance measure the illusion of stability and the assumption of intra-country cultural homogeneity both do not hold. Hence, the Jensen-Shannon distance varies over time and controls

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<sup>8</sup> The Netherlands has a probability distribution vector of: (0.08, 0.05, 0.09, 0.08, 0.14, 0.12, 0.19, 0.14, 0.04, 0.06) and the United States: (0.12, 0.05, 0.09, 0.08, 0.15, 0.12, 0.13, 0.15, 0.04, 0.07).

for intra-country cultural heterogeneity. However, the illusion of symmetry still hold in all distance measures. In fact, the cultural distance of the Netherlands to Germany is equal to the distance of Germany to the Netherlands.

Furthermore, all the cultural distances are absolute numbers. Consequently, a large number of cultural distance means that two countries are cultural more disperse. This notion is important with respect to the gravity model of trade.

In order to capture the combined effect of different cultural values I create several overall culture measurements. In detail, I perform the principal component analysis (PCA) on all Jensen-Shannon cultural distance measures, all mean-based (Euclidean) WVS cultural value distances, all six Hofstede dimensions and of all cultural values. As a result, I calculate the first principal component of all important cultural values. In detail, I include the J-S distances of trust and individualism and all of Hofstede's cultural dimensions excluding individualism. Moreover, as stated before I capture overall culture by calculating the Kogut and Singh (1988) cultural distance framework.

## *5.2 Cross-border bank M&A flows*

I first examine how cultural distance of several cultural values and indexes influence cross-border bank M&A flows. In order to capture cross-border bank acquisition flows and incorporate it in a gravity model I compute a cross-border ratio of country pairs. In fact, for each country pair, I calculate the cross border ratio, which is the total number of cross-border bank acquisitions in year  $t$  in which the target is from country  $i$  and the acquirer comes from country  $j(i \neq j)$  divided by all majority domestic and cross-border bank acquisitions in target country  $i$  in year  $t$ . Hence, the cross-border ratio is the proportion of inward cross-border bank M&A flows relative to all bank M&A activity. In this way I control for factors that influence cross-border and domestic M&A. In case of zero cross border bank activity for target  $i$  in year  $t$ , these observations are excluded. Furthermore, this measure is consistent with other the literature on cross-border M&A flows (Erel et al, 2012; Karolyi and Taboada, 2015)

In order to capture cross border bank M&A flows I estimate the cross-border ratio by using a gravity model. The gravity is originally from Tinbergen (1962). The gravity model of trade explains the amount of bilateral trade by the economic mass (GDP) and the geographic distance

between country pairs. In which, economic mass has a positive effect and distance a negative effect on the amount of bilateral trade. Clearly, gravity models of trade are the most widely used models in the international trade literature. In sum, the gravity model is a perfect method to estimate bilateral flows. In perspective, instead of bilateral trade flows I use the gravity model to estimate bilateral bank acquisition flows. Notably, with respect to the original gravity model of trade I use the cross-border ratio instead of trade flows and cultural distance instead of geographical distance.

Clearly, the objective is to determine the effect of cultural distance on cross-border bank M&A flows. Consequently, I run a panel regression derived from the gravity model of trade. Which is as follows:

$$\text{Cross - border ratio}_{i,j,t} = \alpha + \beta \text{cultural distance}_{j,i,t} + \gamma \Delta X_{j-i,t} + \delta_i + \vartheta_j + \tau_t + \epsilon_{j-i,t} \quad (4)$$

Where the *Cross - border ratio*<sub>*i,j,t*</sub> is the ratio of the total number of cross-border bank acquisitions in target country *i* and acquirer is from country *j* (*j*≠*i*) in year *t*, divided by the total number of domestic and cross-border bank acquisitions in target country *i* in year *t*. I exclude data if a target country has of zero cross-border bank acquisitions in year *t*.

*βcultural distance*<sub>*j,i,t*</sub> is a vector of variables that measure the cultural distance between target country *i* and acquirer country *j* in year *t*. Note, the distance is an absolute number and with respect to the control variables not the difference between target country *i* and acquirer country *j*. In detail, cultural distance can either be the Kogut and Singh (1988) index, the absolute difference of average country scores or the Jensen-Shannon distance. *ΔX*<sub>*j-i,t*</sub> is a vector of control variables that measure the difference between acquirer country *j* and target country *i* in year *t*. This vector consist of the difference of the natural logarithm of the GDP per capita and the difference of GDP growth. Furthermore, the difference in governance is measured with the overall index from Kaufmann et al. (2009). Furthermore, I use bank credit relative to GDP as the proxy for the size of the banking sector. I measure the market share of the largest three banks as a proxy for bank industry concentration. I use the imports from target country *i* from acquiring country *j* as a proxy for bilateral trade. Moreover, regarding the gravity model of trade I use weighted distance of distance from Zignago (2011) to control for geographical distance. Following Erel et al. (2012) I include real stock market and real exchange return differences between target country *i* and acquirer country *j* in year *t*. Furthermore, I include three dummy

variables that indicate if target country  $i$  and acquirer country  $j$  share a border, have the same language and a dummy variable that indicates if the country pair ever had a colonial link. Finally, following Karolyi and Taboada (2015) I include the first principal component (PCA) to capture differences in overall regulation index.  $\delta_i, \vartheta_j$  represents the target and acquirer country fixed effects in order to control for any other time invariant country characteristics. Furthermore, in order to control for overall market conditions that are not captured I use  $\tau_t$  for year fixed effects.

I estimate the gravity model of M&A flows using three different estimations. First of all, ordinary least square estimation of the model (4). Secondly, the Poisson Pseudo maximum likelihood (PPML) estimator of the gravity model. Thirdly, the two stage least square (2SLS) regression with an instrumental variable. As stated before, I instrument the cultural value distances and overall cultural distances by the religious distance from Spolaore and Wacziarg (2016). Certainly, the Poisson Pseudo maximum likelihood (PPML) is a debatable estimation. However, for this set of data the PPML estimation makes perfect sense due to the large set of zero's in the dependent variable. Note that the dependent variable is the ratio of bank acquisitions of a country pair in a given year. Obviously, many country pairs do not have any bank acquisitions in a given year. In fact, only 711 of the 17.000 observations of the dependent variable cross border ratio is larger than zero. As a result, 99.96 % of the dependent variable in the total data set and 83% of the dependent variable in the estimations is zero. Santos Silva and Tenreyo (2006) present the Poisson pseudo maximum likelihood estimator (PPML) as a solution for this problem. They show that the PPML estimation provides consistent estimates of the original nonlinear gravity model under the assumption that the gravity model contains the correct set of explanatory variables. Moreover, PPML estimations are commonly used in count data models and has proved to do well in other models with a large set of zeroes (Santos Silva and Tenreyo, 2011). Furthermore, explanatory variables' coefficients have a different interpretation compared to those in an OLS estimation. The coefficients in a PPML model means that if the explanatory variable  $\beta_i$  increases with one standard deviation the dependent variable increases (decreases if the coefficient is negative) by a factor of  $e^{\beta_i \cdot sdi}$ .

### *5.3 Cross-border bank M&A performance*

Next, in order to examine the effect of cultural distance on cross-border bank performance I measure the stock price reaction on the date of announcement. Hence, I calculate the cumulative

abnormal returns (CAR) of both the acquirers and targets around the announcement day. I create a market model with the MSCI world index to estimate the real returns. Consequently, the actual return is described as follows:

$$R_{ijkt} = \alpha_{ijk} + \beta_{ijk}R_{wt} + \varepsilon_{ijkt} \quad t = -260, \dots, -3. \quad (5)$$

In which,  $R_{ijkt}$  is the daily stock return for either the target or acquirer  $k$ . Furthermore, each deal consist of a target coming from country  $i$  and, the acquiring country coming from country  $j$ .  $t$  is the day in the event window,  $R_{wt}$  is the MSCI world index and  $\varepsilon_{ijkt}$  is the abnormal return. Hence, the abnormal returns are calculated over event window  $t = (-2, +2)$ . The cumulative abnormal return (CAR) is computed in the following way:

$$CAR_{ijk}^{-2,+2} = \sum_{-2}^{+2} (\varepsilon_{ijkt}) \quad (6)$$

I use the MSCI world index to estimate the returns of a target or acquirer due to fact that abnormal returns have to be compared on an international level. In sum, in the estimation window  $t = (-260, \dots, -3)$  I estimate the normal returns of the alpha ( $\alpha$ ) and beta ( $\beta$ ) of the target or acquirer. Consequently, I estimate the abnormal returns in the event window by calculating the difference between the real returns and the normal estimated returns. Next, the abnormal returns are cumulated over the event period  $t = (-2, \dots, +2)$ .

Clearly, the objective is to determine the effect of cultural distance on the stock price reaction of the target and acquirer. Consequently, I estimate the stock price reaction on the announcement day with the following regression model:

$$CAR_{i,j,k,t} = \alpha + \beta \text{cultural distance}_{j,i,t} + \gamma \Delta X_{j-i,t} + \delta_i + \vartheta_j + \tau_t + \epsilon_{i,j,k,t} \quad (7)$$

In which,  $CAR_{i,j,k,t}$  is the the cumulative abnormal return for acquirer or target bank  $k$  in year  $t$  and in which the target bank is from country  $i$  and the acquirer is from country  $j$ .

$\beta \text{cultural distance}_{j,i,t}$  is the set of cultural distances mentioned before. Furthermore,  $\gamma \Delta X_{j-i,t}$  is a set of control variables that represent country characteristic distances. These are similar to those used to estimate the cross-border ratio in equation (4).  $\delta_i, \vartheta_j$  represents the target and acquirer country fixed effects in order to control for any other time invariant country

characteristics. Furthermore, in order to control for overall market conditions that are not captured I use  $\tau_t$  for year fixed effects.

Finally, I estimate the equation (7) with ordinary least square regressions. In which the dependent variable is the cumulative abnormal returns around the announcement date of the merger of either the target bank or acquiring bank  $k$ . Furthermore, all independent variables are differences between target country  $i$  and acquiring country  $j$  in year  $t$ . Clearly, the variables of cultural distance are absolute distances.

## 6. Results & analysis

### *6.1.1 Cross-border M&A activity*

All the models in all tables are estimated by each country-pair per year. Independent variables are the differences between acquirer country  $j$  and target country  $i$  in year  $t$ . The dependent variable is the Cross-border ratio (CBR). This is the ratio of cross-border bank acquisitions in target country  $i$  which originates from acquiring country  $j$  of all bank acquisitions in target country  $i$  in year  $t$ . This method aggregates cross-border acquisition flows by country pairs during the sample period 1990-2015. Moreover, all estimations include target country, acquiring country and year fixed effects and the standard errors are clustered by the target country in all estimations. As a result, the t-statistics in braces is robust. Moreover, any time series variation is suppressed due the fact that target country, acquiring country and year fixed effects and standard errors are clustered by the target country. Furthermore, in each estimate one cultural value distance is measured. Note, the description of all variables can be found in the variable list in Appendix D. Additionally, I present an overview table of the statistical and economic significance in table 8.

Table 3 presents the results of the OLS estimation for of all models. Panel A reports the models that include the Euclidean and Jensen-Shannon (J-S) distance of the individual cultural values from the WVS. Model 2 - 4 present the cultural distances measured by using the Jensen-Shannon distance and model 5-7 show the cultural distances measured by using the Euclidian distance. In all models the coefficient of bilateral trade has a significant positive coefficient at conventional levels. Moreover, a country pair sharing the same language, country pairs that have a colonial link and the coefficient of GDP per capita all have a significant positive coefficient at

conventional levels. Moreover, these results are economically significant. A standard deviation increase (1.63) in the distance of log of GDP per capita is related to a 2.45 percent increase of the cross-border ratio (25% of its standard deviation). Furthermore, a one standard deviation increase (2.33) increase in the log of bilateral trade is associated with a 1.56 percent increase of the cross-border ratio (15% of its standard deviation). Finally, the magnitudes of the common language and former colony variables are 0.83% percent increase of cross-border ratio with a one standard deviation increase in common language and 0.92% increase for former colonial link. Which represents 9.03% and 9.75% of the standard deviation of the cross border ratio. In sum larger differences in GDP, higher bilateral trade, the same language and a former colonial link have a positive effect on the cross-border M&A flows in terms of the cross-border ratio. In line with the literature (Correa 2009; Amel et al.,2004) these findings suggest that acquiring banks tend to come from more developed countries. Moreover, it shows that cross border bank activity is higher for countries that have higher bilateral trade flows and share the same language.

Turning to the distances of the cultural values. Panel A of table 3 present the Jensen-Shannon and the Euclidean distance of trust. Both measures have a negative statistical significant coefficient. Moreover, these results are economically significant. In detail, regarding the robust coefficient distance in trust values measured with the J-S-distance (-0.042), a one standard deviation increase in this distance (0.108, which is approximately the distance between the US and Argentina) is related with a 0.51 decrease in the cross-border ratio. This is 5.22 percent of the standard deviation of the cross border ratio. Furthermore, regarding the robust coefficient of the Euclidean distance of trust (-0.006), a one standard deviation increase in this distance of trust is related with a 0.62% decrease in the cross-border ratio. In perspective this is 6.5 percent of the standard deviation of the Cross-border ratio. Consequently, these results suggests that cross border bank acquisition activity is negatively affected by a higher difference in trust between countries. In practice, this means that banks look for targets in countries with similar value of trust.

Furthermore, the J-S distance of individualism has a positive statistical significant coefficient. In fact, the robust coefficient of the Jensen-Shannon distance in individualism (0.054) implies that a one standard deviation increase in the J-S distance of individualism (0.09, around the distance of the United States and Switzerland) is related with a 0.50 percent increase in the cross-border



ratio. Which is 5.09 percent of the standard deviation of the cross-border ratio. Note that the significance is low. These results could suggest that cross border bank acquisitions are positively affected by a higher distance of individualism. In sum, this suggests that banks are interested in countries with different values of individualism.

However, both measurements of cultural distance in values of hierarchy are not significant. As stated before, the responding question of hierarchy is only available in wave 2 and wave 3 of the WVS. As a result, only 1,640 country pairs of data are available. This subset of data presents different coefficients of the control variables compared to the other estimations. In model (4) and (7) the coefficients of bilateral trade and colonial link and the real exchange rate are positively significant.

Panel B of table 3 shows the ordinary least square regression estimations of the Euclidian distance of each dimension of Hofstede (1980, 2001). The coefficient of GDP and bilateral trade is significant positive in all six estimations. Common language coefficient is positively significant in estimations 1-3 and 5-6. Furthermore, the coefficient colonial link significantly positive in estimation 2. The magnitudes of these coefficients are comparable to those in panel A. Finally, none of Hofstede's cultural distance reports a significant effect on the cross-border ratio.

Panel C of table 3 present the results of the OLS regression estimates of the six different overall cultural measures. In line with the estimations in panel A the coefficients of GDP per capita distance, bilateral trade and common language have a significant positive effect at conventional levels. On the other hand, estimation 1 and 2 show different results due to the fact that both overall measurements includes the distance of hierarchy. Consequently, the number of observations is lower. All statistical significant coefficient have a comparable magnitude to those in Panel A and are therefore economically significant. Finally, none of the overall cultural distance coefficients are statistically significant in any model.

Panel A of table 4 shows the results of the Poisson Pseudo maximum likelihood (PPML) estimations from Santos Silva and Silvana (2006) with the cross border ratio as the dependent variable. Panel A shows the models that include the Euclidean and Jensen-Shannon (J-S) distance of the individual cultural values from the WVS. Estimations 4 and 7 report the results for both measurements of distance in hierarchy. Similar issues appear with respect to panel A in

table 3. Nevertheless, both distance measurements of hierarchy are insignificant. On the other hand, in model the coefficients of distance in the GDP per capita, bilateral trade and common language are all positively significant at conventional levels. Moreover, these coefficients are economically significant. The magnitude of significant PPML coefficients should be interpreted as a  $e^{\beta_i * SD_i}$  times increase in the mean of the dependent variable. Consequently, the robust coefficient of log GDP per capita implies that with a one standard deviation increase in log GDP per capita distance (1.45) is related with a 18.7 percent higher cross-border ratio. Furthermore, the effect of a one standard deviation increase in bilateral trade (2.1) is associated with a 9.7 percent higher cross-border ratio. In practice, in line with the findings of the OLS estimations 3, acquirers tend to come from countries with larger GDP per capita numbers, larger bilateral trade between countries and a common language have positive effect on cross border bank activity.

Turning to the distances of cultural values, the Euclidian distance measure of trust has a negative coefficient of -0.31 at statistically conventional levels. This robust coefficient implies that a one standard deviation increase (0.14 around the distance between Japan and Latvia) is related to a 0.5% lower Cross-border ratio. This is 5.1 percent of the standard deviation of the cross-border ratio. Moreover, distance in trust measured by the J-S distance has a negative coefficient but statistically insignificant. Finally, the coefficient of individualism measured by the J-S distance has a significant positive coefficient of 5.237. Hence, this robust coefficient implies that a one standard increase of distance in individualism measured by the J-S distance (approximately the distance between the United States and the Philippines) is related to a 1.41 percent increase in the cross-border ratio. Which is 12.51 percent of its standard deviation. In sum, the Euclidian distance and the J-S distance of individualism is in line with the results of the OLS estimation. On the other hand, with respect to the J-S distance of trust in the OLS estimation, the PPML estimation is not statistically significant.

Panel B shows the results of the PPML estimations of the distance in the six cultural dimensions of Hofstede (1980, 2001). The results of the control variables are comparable to those in panel A in terms of significance and magnitude. These results are in line with the previous tables.

Notably, both the coefficient of individualism and the coefficient of masculinity have a statistically significant negative coefficient. This robust coefficient (-0.306) implies that a one standard deviation increase in the distance of individualism is related with a 0.5 percent decrease

in the cross-border ratio (5.36% of the standard deviation of the CBR). On the other hand the coefficient of distance of masculinity is -0.231 and statistically significant. This robust coefficient implies that a one percent increase in the standard deviation of distance in masculinity values is associated with a 0.4 percent decrease in standard deviation (4.2% of the standard deviation of CBR). This suggests that a higher distance in cultural values of individualism versus collectivism and masculinity vs femininity has a negative effect on cross-border bank acquisition activity.

Panel C of table 4 shows the result of the PPML regression estimates of the overall cultural distance measurements. Again, estimation 1 and 2 present biased results due to a lower number of observations in hierarchy. Furthermore, in line with previous estimations, the coefficients of distance in GDP per capita, bilateral trade and common language have a statistically significant positive coefficient and are economically significant. Notably, the coefficient of real exchange rate return has a positive significant coefficient at conventional levels. Finally, the Kogut and Singh (1988) index of cultural distance has a statistically significant negative coefficient of 0.249. Regarding this coefficient (0.249), a one standard deviation increase in the Kogut and Singh (1988) index of cultural distance (1.24 around the distance between France and Germany) is related with a 0.58 percent decrease in the cross border ratio. This decrease is 5.32% of the standard deviation of the cross border ratio. Moreover, the first principal component (PCA) of the six Hofstede cultural dimensions has a negative coefficient that is significant at conventional levels. This robust coefficient implies that a one standard deviation increase in the overall cultural distance of all six Hofstede cultural dimensions (1.43 around the distance of the Netherlands and Peru) is associated with a 0.49 percent decrease of the cross-border ratio (4.54% of its standard deviation). These findings suggest that cultural distance tends to have a negative effect on cross-border bank acquisition flows.

Table 6 shows the 2SLS regressions results of all distances with the cross-border ratio as the dependent variable. All cultural value distances are instrumented using religious distance from Spolaore and Wacziarg (2016). All models report the second stage coefficients of independent variables, the first stage instrumental variable coefficient of the religious distance, the corresponding P-value of the robust t-statistic, first stage F statistic, and the endogeneity test P-value of Wooldridge (1995) in order to evaluate the validity of the model. Clearly, no instrument

is perfect. Nevertheless, I assume that if the first stage F statistic and Woolridge test are significant that religious distance as an instrumental variable appears to present significant explanatory power on cultural distance.

Panel A shows the Euclidean and J-S distance of the individual cultural values from the WVS results. The coefficient of religious distance in the first stage regression is significantly positive at conventional levels. Furthermore, the first stage F statistic is significant at a 5% level and Woolridge (1995) test of endogeneity indicates that the variables are in fact endogenous. In detail, the coefficient in the second stage regression is negative and statistically significant. This coefficient (-0.219) implies that a one standard increase in distance of trust measured by the J-S distance (0.11) is related with a 1.44 percent decrease of the cross-border ratio. In perspective, this is 68% of the standard deviation of the dependent variable (CBR). Furthermore, none of the other J-S distance coefficients have a significant coefficient. Regarding model 4, the coefficient of religious distance in the first stage regression is significantly positive at conventional levels. Furthermore, the first stage F statistic is significant at a 5% level and Woolridge (1995) test of endogeneity is significant. Furthermore, the coefficient of the second stage regression of the Euclidean distance of trust is statistical significant at the 5% level. This coefficient (-0.174) implies that a one standard deviation increase in the Euclidean distance of trust (0.14) is related to a 2.52 percent lower cross border ratio. In perspective, this is 127% of the standard deviation of the cross-border ratio. In sum, the instruments exhibit significant explanatory power for distances in cultural values. Furthermore, the findings are statistically and economically significant. In practice, that a higher distance between countries has a negative effect on cross border bank acquisitions flows between these countries. Notably, the magnitude of distance in trust that controls for intra cultural variation is lower compared to the magnitude

Panel B shows the results of the 2SLS regression estimates of the six Hofstede (1980, 2001) cultural dimensions distances. First of all, model A shows the results of distance in the power distance index. The first stage regression coefficient of religious distance is positive and statistically significant. Moreover, the first stage F-statistic of the null hypothesis that the instrument has no explanatory power for the cultural value distances can be rejected at the 1% level. Furthermore, the Woolridge (1995) test is significant at 1%. The second stage regression coefficient of distance in the power index has a statistically significant negative coefficient. This

robust coefficient (-0.027) implies that a one standard deviation in distance of the power distance index is related to a 2.87 decrease in the cross-border ratio. In perspective, this is 139% of the standard deviation of the cross-border ratio. Model 3 shows the results of the distance of the uncertainty avoidance. The first stage coefficient of religious distance is positive and significant at conventional level and the first stage F-statistics significant at the 1% level. Moreover, the endogeneity test is significant at 10% level. The second stage regression coefficient of distance in uncertainty avoidance is significantly negative at conventional levels. This robust coefficient (-0.019) implies that a one standard deviation increase in the uncertainty avoidance distance is related with a decrease of 3.28 percent of the cross border ratio. Consequently, this is 94% of the standard deviation of the cross-border ratio. Finally, distance in long term orientation has a significant positive coefficient. However, the first stage F-statistic is low and argues that the instruments do not have significant explanatory power for cultural value distance. In sum, these results present a negative effect of distance in the power index and distance in uncertainty avoidance on cross-border bank acquisition flows. In fact, the magnitude of distance in the power distance index is stronger than distance in uncertainty avoidance. In practice, banks prefer countries with similar power distance and uncertainty cultural value levels in case of cross-border acquisitions. Larger distance between a country pair in these cultural values negatively affects the change of a cross-border bank merger from happening.

Table 5 presents the results of the 2SLS estimations of the overall cultural distance variables. First of all, regarding model (3) with the Kogut and Singh (1988) index, the first stage coefficient of the instrumental variable religious distance has a statistically significant positive coefficient at conventional levels. Moreover, the first stage F statistic is significant at the 1% level and the endogeneity test of Woolridge (1995) is significant. The second stage coefficient of the Kogut and Singh index is negative and statistically significant at conventional levels. The robust coefficient of the Kogut and Singh index (-0.017) implies that a one standard deviation increase (1.23) is related with a 2.11 percent lower cross-border ratio. Which is 21% of the standard deviation of the cross-border ratio (CBR).

Secondly, regarding model (5) with the first principal component (PCA) of all cultural distances, the first stage coefficients of the instrumental variables is positive and statistical significant, the F-statistic is significant at the 1% level and the endogeneity test of Woolridge (1995) is

significant at the 10% level. Furthermore, the magnitude of the coefficient of all cultural distances (-0.013) results in a 1.78 percent decrease of the cross-border ratio. Which is 18% of the standard deviation of the cross-border ratio. These results show that the overall cultural distances of the Kogut and Singh (1988) cultural distance index and the first principal component (PCA) of all cultural value distances have negative effect on cross-border bank acquisition flows. In practice, this means that the likelihood of a cross-border bank merger is lower when the cultural distance between a country pair increases.

In sum, I use two different distance methods in order to capture distance in values of each cultural value between countries. The Euclidean distance controls for country cultural homogeneity and the Jensen-Shannon distance controls for intra-country cultural variation. However, due to a lack of observations hierarchy does not have a significant relationship or effect on either the cross border bank acquisition flows or stock returns around the announcement date.

#### *6.1.2 Findings per cultural value*

First of all, in the OLS regression both measurements of trust have a similar robust coefficient. However, the relationship's economic magnitude with the cross-border ratio of the Euclidean distance of trust is three times stronger compared to the Jensen-Shannon distance of trust. Secondly, in the Poisson Pseudo maximum likelihood (PPML) estimation only the Euclidean distance has a statistically and economical significant relationship with the cross-border ratio. Finally, the two stage least square regression estimations on both measurements of trust have a statistical significant negative effect on the cross-border ratio. Moreover, the magnitude of both distances are relatively similar. Although, both have a statistically significant relationship the economic significance is different with respect to the cross-border ratio. Notably, the instrumented variables of trust show the similar negative effect on the cross-border ratio. Nevertheless, differences trust have a negative effect on the cross-border ratio. In sum, higher distance in trust values affects cross-border bank M&A flows negatively.

Secondly, regarding individualism obtained from the (WVS), only the Jensen-Shannon distance has a robust significant positive relationship with the cross-border ratio. Furthermore, the magnitude of the relationship is larger in the Poisson Pseudo maximum likelihood (PPML) estimation. However, both distances of individualism are not significant when they are

instrumented by religious distance. Therefore, higher distance in individualism does not have an effect on cross border bank acquisition activity. However, there is a positive relationship with larger distance in individualism and cross-border bank acquisition flows. A possible explanation could be found in Chan and Cheung (2016), they state that individualism leads to more extraversion which in turn lead to more M&A activity. This positive relationship is a possible explanation of overconfidence of CEO's. This overconfidence leads to more M&A activity.

Turning to the individual cultural dimensions of Hofstede (1980, 2001). Individualism measured by Hofstede (1980) has significant negative relationship with the cross-border ratio according to the PPML estimation. Furthermore, when instrumented by religious distance individualism of Hofstede (1980) has a significant negative effect on the cross-border ratio. As stated before, individualism from the WVS is different from the individualism of Hofstede (2001). This explains the difference in relation and effect on the cross-border ratio. Clearly, a higher distance of individualism of Hofstede has a negative effect on cross-border bank acquisition flows.

In the PPML estimation higher distance in the masculinity versus femininity has a negative relationship with the cross-border ratio. However, when instrumented masculinity does not have a significant effect. Furthermore, higher distance in the power distance index and in uncertainty avoidance has a statistically and economically significant negative effect on the cross-border ratio.

Regarding the overall measurements of cultural distance, the PPML estimation show that the Kogut and Singh index and the first principal component (PCA) of all six Hofstede's dimension distances has a negative relationship with cross-border bank acquisition flows. Furthermore, when the overall cultural distances are instrumented by religious distance they appear to have a negative effect on cross-border bank acquisition activity.

In sum, due to all the findings of the distances of the individual cultural distances and the distances of the overall cultural distance. I can conclude that overall cultural distance has a negative effect on cross-border bank acquisitions activity. Banks perceive cultural distance negatively in their decision to acquire a foreign bank. Consequently, I reject Hypothesis 2b and I cannot reject hypothesis 2a. In detail, larger distance in Hofstede's cultural dimensions of individualism, power distance, uncertainty avoidance and both measures of trust and overall measures of culture have a negative effect on cross-border bank M&A flows.

## 6.2 *Stock price reaction*

All estimations are ordinarily least square regressions on the cumulative return of either the target bank or the acquiring bank. In all estimations the dependent variable is the cumulative abnormal return (CAR) equation (6) of either the acquiring banks or target banks. Target country, acquiring country and year fixed effects are included in all estimations. Furthermore, the standard errors are clustered by the target country. The results from the estimation (7) of the cumulative abnormal returns of the acquiring banks are reported in table 6 . Furthermore, the cumulative abnormal returns of target banks are reported in table 7. As stated before, due to data limitation the number of observation in the estimations ranges between 88 and 225 for the acquiring banks and around 40 to 70 for target banks. Nevertheless, I present several significant results in the tables. Additionally, I present an overview table of the statistical significance in table 8.

### 6.2.1 *Acquiring banks*

Table 6 reports the ordinary least square estimations with the acquiring bank's cumulative abnormal return (CAR) around the announcement day. Panel A reports the empirical findings using the distances of the cultural values obtained from the WVS. Larger distance in governance levels between countries has a statistically significant positive coefficient at conventional levels. Furthermore, larger amount of bilateral trade, larger geographic distance and differences in real exchange return all have a statistically significant negative coefficient at conventional levels. In practice these results suggest that higher governance levels in the acquiring country has a positive relationship with the CAR. Furthermore, higher bilateral trade and higher geographic distance has a negative relationship with CAR. Finally, higher real exchange returns in the target country results in lower CAR's. Notably, none of the cultural distance measures on the cultural values of the WVS have a significant effect on the cumulative abnormal return of the acquiring bank.

Panel B of table 6 shows the estimates of the distances of the individual Hofstede (1980, 2001) cultural dimensions. First of all, the results of the control variables are similar to those reported in panel A. However, sharing a border has statically significant positive coefficient in estimation 1 and 3. Furthermore, geographical distance coefficient is insignificant in these estimations. Finally, the coefficient of the power distance index is -0.009 and statistically significant at



conventional levels. This result suggest that a higher difference in power distance results in a 1% lower CAR for the acquiring bank. This coefficient implies that a one standard decrease increase in the power distance index distance between two countries is related to a 1.1 percent decrease of the CAR around the announcement date. This is around 30% of the standard deviation of the standard deviation acquirer bank's CAR. In comparison, this magnitude is larger than the statistically significant coefficient of common border and real exchange rate return.

Panel C of table 6 displays the estimates of the overall cultural distances on the CAR for the acquiring banks. Columns 1 and 2 report different results for the control variables compared to panel A. This is due to the fact that hierarchy is included in the overall culture measurements for the J-S distance and the Euclidian distance. Nevertheless, estimations 3-6 show similar results in significance and magnitude to those reported in panel A. However, the coefficient of GDP has a positive significant coefficient of 0.032 and it is significant at conventional levels. Furthermore, the coefficient of common language has a negative statistically significant coefficient ranging between 0.02 and 0.025 at conventional levels in estimation 3, 4 and 6. Turning to the overall cultural distances, the Kogut and Singh (1988) index has a negative statistical significant coefficient of -0.014 at conventional levels. This robust coefficient implies that a one standard deviation increase of the Kogut and Singh (1988) index is related to 1.52 decrease of the CAR (42% of its standard deviation). In perspective this magnitude is stronger than that of common border, common language and distance in real exchange return. Secondly, the first principal component (PCA) of the distances on the six Hofstede (1980, 2001) cultural dimensions has a negative statistically significant coefficient at conventional levels, This robust coefficient implies that a one standard deviation increase of the first principal component (PCA) of all Hofstede's cultural dimension distances (1988) is related to 1.42 decrease of the CAR (39% of its standard deviation). In perspective this magnitude is stronger than that of common border, common language and distance in real exchange return. Finally, the first principal component (PCA) of the distance of all cultural values has a statistically significant negative coefficient at conventional levels. In practice, this means that larger cultural distance between countries has a negative effect on the cumulative abnormal returns of the acquiring bank. This robust coefficient implies that a one standard deviation increase of the first principal component (PCA) of all cultural value is related to 1.41 decrease of the CAR (39% of its standard deviation). In

perspective this magnitude is stronger than that of common border, common language and distance in real exchange return.

In sum, larger overall cultural distance is negatively associated with acquiring bank's cumulative abnormal returns around the announcement date.

### 6.2.2 *Target banks*

Table 7 reports the models with OLS estimations on the target bank's cumulative abnormal returns (CAR) around the announcement. Panel A reports the results of the Euclidian and J-S distance on the cultural values trust and individualism obtained from the WVS. Hierarchy is not included due to low amount of observations. Although, the observations ranging of 64 on the remaining estimations is relatively low the R-squared of 0.81 suggest that a large part of the variation is explained by the estimations. Furthermore, many individual variables have a significant coefficient. First of all, in the estimation without a cultural distance variable (1) the coefficient of GDP per capita difference, distance in GDP growth, geographical distance, having common border, difference in real market return and difference the real exchange return all have a statistically negative significant coefficient at conventional levels. The coefficient of difference in bank concentration has a positive statistically significant coefficient at conventional levels. Additionally, all these coefficients are economically significant.

Regarding the distances of cultural values on the CAR of the target bank, both coefficient measures of trust are significantly negative. First of all, estimation (2) shows that the Jensen-Shannon distance of trust has a statistically negative significant coefficient of -5.325 at conventional levels. This coefficient implies that a one standard deviation increase (0.08) is related to a 43.18 percent decrease in the cumulative abnormal return. This is 170% of the standard deviation of CAR. This is relatively a stronger effect in comparison to the other statistical significant coefficients of GDP growth and regulation. Secondly, the Euclidean distance of trust has a significant negative coefficient of -2.778 at a statistical conventional level. This coefficient implies that a one standard deviation increase in the Euclidean distance of trust (0.10) is related to a 29.41 percent decrease in the cumulative abnormal return. This is 122% of the standard deviation. In comparison to the other statistical significant coefficients this effect is larger than the effects of regulation, real market return and real exchange return distances. Finally, the Euclidean distance coefficient of individualism has a statistical negative significant

of -6.509 at conventional levels. This robust coefficient implies that a one standard deviation increase in individualism is related with a 64.03 percent decrease of the CAR. Which is 267% of its standard deviation. In perspective, only distance in GDP per capita, bilateral trade and geographic distance have a stronger relationship. In sum, higher difference in values of trust has a negative effect on the cumulative abnormal return of the target banks assuming both cultural homogeneity and cultural heterogeneity. Furthermore, controlling for intra-country cultural homogeneity, larger distance in individualism has a negative relationship with the cumulative abnormal return.

Panel B of Table 7 shows the estimations of the six individual of Hofstede's (1980, 2001) cultural dimension distances. Three cultural distances coefficients are statistical significant in this table. In detail, estimation 1 shows that power index distance has a statistically negative significant coefficient of -0.603 at conventional levels. This robust coefficient implies that with a one standard deviation increase of the distance in the power distance index (1.20) is related with a 73 percent decrease in the CAR. This is around 298 of its standard deviation. In comparison, this relationship is larger than the statistical significant coefficients of common border and distance in regulation. Furthermore, individualism distance has a statistically significant positive coefficient at conventional levels. This robust coefficient implies that a one standard deviation increase in distance of individualism is related with a 44.74 percent increase in the CAR. Which is 186% of its standard deviation. In perspective, this effect is larger than the statistical significant coefficients of distance in GDP growth, real market return, real exchange rate return and regulation. Finally, the coefficient of uncertainty avoidance distance is 0.622 and statistically significant at conventional levels. Regarding this robust coefficient a one standard deviation increase in distance of uncertainty avoidance is related with a 61.55 percent increase in the CAR. Which is 252% of its standard deviation. In perspective, only the statistical significant coefficients of distances in GDP per capita, bank concentration, bank credit to GDP and geographical distance have a stronger magnitude than the distance in uncertainty avoidance.

These results show that larger distance in the power distance index has a negative relationship with the cumulative abnormal return of target banks. On the other hand, larger distance in individualism and uncertainty avoidance is positively associated with the cumulative abnormal return of target banks.

Panel C of Table 7 reports the estimates results of the overall cultural distance measures on the cumulative abnormal return of target banks. The coefficient of the Kogut and Singh (1988) index is negative and statistically significant at conventional levels. Regarding this robust coefficient a one standard deviation increase in distance of the Kogut and Singh (1988) index is related with a 130 percent increase in the CAR. Which is 5.44 times larger than its standard deviation. In perspective, only the statistical significant coefficients of distances in GDP per capita, geographical distance, common language and common border have a stronger magnitude than the Kogut and Singh (1988) index.

Furthermore, the coefficient of the first principal component (PCA) of all six cultural dimensions distances of Hofstede (1980, 2001) has a statistically significant coefficient of 0.52 at conventional levels. The magnitude of this coefficient is related to 104% increase in the cumulative abnormal return. This is more than 4 times the standard deviation of the CAR. In perspective, only the statistically significant coefficient of distances of GDP per capita, governance, bilateral trade and geographic distance are larger than the first principal of all six Hofstede (1980) distances. Finally, the coefficient of first principal component (PCA) of all cultural distances is 5.731 and statistically significant at conventional levels. In perspective only the robust coefficients of GDP per capita, credit to GDP, bilateral trade and geographic distance are larger than this coefficient. In sum, overall measures of cultural distance have a positive relation with the cumulative return of target banks. Notably, besides trust and power distance this effect is opposite to the effect of cultural distance on the cumulative abnormal return of acquiring banks

### *6.3. Acquirers vs targets*

In sum, in line with Stahl and Voigt (2008) I find that cultural distance is negatively associated with the cumulative abnormal returns of the acquiring banks. Moreover, in line with the literature, cultural distance is positively associated with the cumulative abnormal return of the target banks. Regarding Letetit et al. (2004) the increase in value for targets and decrease of value for acquires tends to come from cultural distance.

In detail, regarding the cultural values obtained from the WVS, I do not find a significant relationship with the acquiring bank's cumulative abnormal returns. Nevertheless, both distance measurements of trust have negative statistically significant effect on target bank's cumulative

abnormal returns around the announcement date. Notably, the relationship of the Jensen-Shannon is 1.45 times higher compared to the Euclidean distance. Therefore, I conclude that higher distance in trust values is negatively associated with target bank's cumulative abnormal return around the announcement date. In detail, this effect is stronger in the method that controls for country cultural heterogeneity. Hence, this suggests that this relationship is stronger than captured with the cultural distance its conventional model.

More interesting are the differences between the cumulative abnormal returns of the target and acquiring banks in the cultural dimension distances of Hofstede. Although, power distance has a statistical and economical significant negative relation with the cumulative abnormal returns of the target and the acquiring banks, the distance in uncertainty avoidance and individualism is only significant for the target banks. As a result, I conclude that higher distance of individualism and uncertainty avoidance is positively related with the cumulative abnormal return of target banks.

Notably, interesting results also arise in the overall robust measurements of cultural distance. The relationship of the Kogut and Singh index (1988), the first principal component (PCA) of all six Hofstede's dimensions and the first principal component (PCA) of all cultural values is negative with respect to the cumulative abnormal returns of the acquiring banks. However, this relationship is positive with the cumulative abnormal returns of the target banks around the announcement date.

In practice these findings suggest that the market thinks positively about higher distance of these cultural values for the side of the target bank and thinks negatively about higher distance for the acquiring bank. In perspective, the literature states that possible synergy gains in a bank merger are not realized. In fact, Correa (2009) suggest that culture is a possible barrier that prevents synergies from realizing. Indeed, in line with the literature, I find that culture is indeed a barrier. However, this barrier is a barrier for the acquiring bank. Obviously, the market is aware of this barrier and prices it as a risk. As a result, I find that culture is negatively associated with the stock price reaction of the acquiring banks. On the other hand, in line with the literature, I find that culture is positively associated with the target banks. Correa (2009) states that target banks are relatively smaller and less efficient. Hence, the market tends to price cultural differences

positively due to the fact that the target bank can be enhanced with the culture of the acquiring bank.

In practice, the result of a cross-border merger is that two different cultures merge and have to cooperate from that time on. Consequently, it is possible that the market prices the practices of the acquiring bank, that will be available to the target bank after the merger, positively for the target. On the other hand, the acquiring bank has the responsibility of merging the two banks. Consequently, the market prices this obligation as a risk and as a result the relationship is negative. Nevertheless, individual cultural value distances of trust, power distance have a significant negative relationship with the target's stock price reaction. For the acquiring bank's only power distance has a significant negative relationship.

#### *6.4. Country cultural homogeneity vs cultural heterogeneity*

Furthermore, focusing on the specific statistical significant cultural values and their magnitudes present some interesting findings. First of all the cultural distance based obtained from the world value survey (WVS). Which are trust, individualism and hierarchy. Cultures are not homogeneous (Shenkar, 2001). Hence, I measured three cultural distances with the Jensen-Shannon distance which in turn holds for cultural heterogeneity. As stated before, the results of the two different distances in trust show that assuming for cultural heterogeneity can present different results. Although, the effect of both trust distances are similarly negative on cross-border bank M&A activity, the magnitude of the relationship with the cumulative abnormal return of the target bank is different. In fact, assuming country heterogeneity presents a stronger negative relationship of distance of trust and the stock price reaction of the bank. Furthermore, controlling for intra-country cultural variation in the distance of individualism obtained from the WVS presents a positive relationship with cross-border bank M&A activity while controlling for country cultural homogeneity does not presents a significant relationship. As a result, I conclude that controlling for intra-country cultural heterogeneity presents different results compared to the controlling for country cultural homogeneity.

## 7. Conclusion & discussion

### *7.1 Main findings*

This study examines the effect of cultural distance on cross-border bank M&A flows. In other words, how does cultural distance affect the decision of a bank to engage in a cross-border merger? Moreover, it contributes by identifying the relationship between cultural distance and cross-border stock price reactions of the target and acquiring bank around the announcement date. In other words, how is cultural distance associated by the market around the announcement of a bank merger? I examine the role of cultural distance with conventional measurements of cultural distance and with an improved measurement that controls for intra-country cultural variation.

First of all, I find that cultural distance has a negative effect on cross-border bank M&A activity. Hence, in line with Stahl and Voigt (2008) I find that cultural distance is a barrier for cross-border bank M&A flows. As suggested by Correa (2009), this finding suggests that cultural distance may explain the unrealized synergy gains.

Secondly, I find that cultural distance is negatively associated with the cumulative abnormal return of acquiring banks around the merger's date of announcement. On the other hand, besides distance in trust values, cultural distance is positively associated with the cumulative abnormal return of target banks around the announcement date. Hence, as found by Amel et al. (2004), these findings suggest that cultural distance may explain the positive cumulative abnormal returns of targets and negative cumulative abnormal returns of acquirers around the announcement of the targets.

In line with the literature (Stahl and Voigt, 2004; Correa, 2009) I find that cultural distance is a barrier for cross border bank M&A flows. Nevertheless, I think that if a company has the ability to overcome this barrier it has a competitive advantage. Regarding the different in stock price reactions between the target and the acquiring banks. The market reacts negatively to the acquiring bank due to the fact that the cultural distance is a risk factor due to the fact that the acquiring bank is responsible for the merger. On the other hand, the literature states that targets are smaller and less efficient. The market reacts positively because it perceives that the culture of the acquiring bank can enhance the target bank.

## 7.2 Further research

Luckily, research is a never completely perfect and in fact a never ending story. Therefore this paper provides some interesting avenues for further research. First of all this thesis takes into account within country cultural heterogeneity for three cultural values. Still, the cultural dimensions from Hofstede (1980, 2001) assume within country homogeneity. Although, Hofstede (2001) claims that there are no differences in results I find that there are difference in magnitude for distances in trust and differences in significance in distances of individualism. The World Value Survey is a valid database in which many questions related to work, religion, politics and the role of women appear. Therefore, it could be possible to find similar questions to those of Hofstede (1980, 2001). Secondly, I have controlled for the assumption of causality by estimating the cross-border ratio with a two stage least square regression with instrumental variables. However, estimating the target and acquiring bank's cumulative abnormal returns did not present any significant results. Moreover, not all critiques of Shenkar (2001) have been incorporated in this paper. In fact, all distances assume symmetry, a linear relation, and some part of discordance. Thirdly, Chakrabarti et al (2009) find that long term effects differ from short term effects. For performance I only mention stock price reactions. Furthermore, bank specific indicators could be integrated in the gravity model in the future. Finally, In line with Karolyi (2015), I call for *caveat emptor*. There are fragilities in the construction of many cross-border studies that incorporate cultural distances. Therefore, these measurements should be improved because differences in cultures can help to explain cross-border activities of companies.



## Appendix A. Reference list

- Ahern, K.R., Daminelli, D. and Fracassi, C., 2015. Lost in translation? The effect of cultural values on mergers around the world. *Journal of Financial Economics*, 117(1), pp.165-189.
- Amel, D., Barnes, C., Panetta, F., & Salleo, C., 2004. Consolidation and efficiency in the financial sector: A review of the international evidence. *Journal of Banking & Finance*, 28(10), 2493-2519.
- Au, Kevin Y. Intra-cultural variation as another construct of international management: A study based on secondary data of 42 countries. *Journal of international management* 6.3 (2000): 217-238.
- Beugelsdijk, S, Maseland, R, Onrust, M, van Hoorn, A & Slangen, A 2015, Cultural distance in international business and management: from mean-based to variance-based measures. *International Journal of Human Resource Management*, vol 26, no. 2, pp. 165-191.
- Berger, A.N., De Young, R. and Udell, G.F., 2001. Efficiency barriers to the consolidation of the European financial services industry. *European Financial Management*, 7(1), pp.117-130.
- Caiazza, S., Pozzolo, A.F. and Trovato, G., 2014. Do domestic and cross-border M&A's differ? Cross-country evidence from the banking sector. *Applied Financial Economics*, 24(14), pp.967-981.
- Campa, J.M. and Hernando, I., 2006. M&A's performance in the European financial industry. *Journal of Banking & Finance*, 30(12), pp.3367-3392.
- Cha, S. H. 2007. Comprehensive survey on distance/similarity measures between probability density functions. *International journal of mathematical models and methods in applied science*, pp.300-307
- Chan, A.W. and Cheung, H.Y., 2016. Extraversion, individualism and M&A activities. *International Business Review*, 25(1), pp.356-369.
- Chakrabarti, R., Gupta-Mukherjee, S. and Jayaraman, N., 2009. Mars–Venus marriages: Culture and cross-border M&A. *Journal of International Business Studies*, 40(2), pp.216-236.
- Correa, R., 2009. Cross-border bank acquisitions: Is there a performance effect?. *Journal of Financial Services Research*, 36(2-3), pp.169-197.
- Cornett, M.M., McNutt, J.J. and Tehranian, H., 2006. Performance changes around bank mergers: Revenue enhancements versus cost reductions. *Journal of Money, Credit and Banking*, pp.1013-1050.
- Focarelli, D. and Pozzolo, A.F., 2001. The patterns of cross-border bank mergers and shareholdings in OECD countries. *Journal of banking & Finance*, 25(12), pp.2305-2337.
- Guiso, L., Sapienza, P. and Zingales, L., 2006. Does culture affect economic outcomes?. *The journal of economic perspectives*, 20(2), pp.23-48.
- Hankir, Y., Rauch, C. and Ueber, M.P., 2011. Bank M&A: A market power story?. *Journal of Banking & Finance*, 35(9), pp.2341-2354.

- Hofstede, G., 1980. *Culture's consequences: International differences in work-related values* (Vol. 5). sage.
- Hofstede, G., Hofstede, G.J. and Minkov, M., 1991. *Cultures and organizations: Software of the mind* (Vol. 2). London: McGraw-Hill.
- Van Hoorn, A., 2015. Differences in work values: understanding the role of intra-versus inter-country variation. *The International Journal of Human Resource Management*, 26(7), pp.1002-1020.
- Karolyi, A., 2015, The Gravity of Culture for Finance. *Journal of Corporate Finance*. (Accepted)
- Karolyi, G.A. and Taboada, A.G., 2015. Regulatory arbitrage and cross-border bank acquisitions. *The Journal of Finance*, 70(6), pp.2395-2450.
- Kogut, B. and Singh, H., 1988. The effect of national culture on the choice of entry mode. *Journal of international business studies*, pp.411-432.
- Lepetit, L., Patry, S. and Rous, P., 2004. Diversification versus specialization: an event study of M&A's in the European banking industry. *Applied Financial Economics*, 14(9), pp.663-669.
- Kullback, S.; Leibler, R.A., 1951, On Information and Sufficiency *Annals of Mathematical Statistics* 22 (1)
- Morosini, P., Shane, S. and Singh, H., 1998. National cultural distance and cross-border acquisition performance. *Journal of international business studies*, pp.137-158.
- Santos Silva, J.M.C., Tenreyro, S., 2006. The log of gravity. *The review of Economics and Statistics* 88(4), 641-658
- Santos Silva, J.M.C., Tenreyro, S., 2011. Further Simulation Evidence on the Performance of the Poisson Pseudo-Maximum Likelihood Estimator. *Economics Letters* 112, 220-222.
- Schwartz, S.H., 1999. A theory of cultural values and some implications for work. *Applied psychology*, 48(1), pp.23-47.
- Shenkar, O., 2001. Cultural distance revisited: Towards a more rigorous conceptualization and measurement of cultural differences. *Journal of international business studies*, pp.519-535.
- Spolaore, E. and Wacziarg, R., 2016. Ancestry, language and culture. In *The Palgrave Handbook of Economics and Language* (pp. 174-211). Palgrave Macmillan UK.
- Stahl, G.K. and Voigt, A., 2005. Impact of cultural differences on merger and acquisition performance: A critical research review and an integrative model. *Advances in mergers and acquisitions*, 4, pp.51-82.
- Stahl, G.K. and Voigt, A., 2008. Do cultural differences matter in mergers and acquisitions? A tentative model and examination. *Organization Science*, 19(1), pp.160-176.
- Stulz, R.M. and Williamson, R., 2003. Culture, openness, and finance. *Journal of financial Economics*, 70(3), pp.313-349.

Tabellini, G., 2010. Culture and institutions: economic development in the regions of Europe. *Journal of the European Economic Association*, 8(4), pp.677-716.

Tinbergen, J., 1962. Shaping the world economy; suggestions for an international economic policy. *Books (Jan Tinbergen)*.

Vander Venet, R. and Gropp, R., 2003. Cross-border mergers in European banking and bank efficiency. In *Foreign direct investment in the real and financial sector of industrial countries* (pp. 295-321). Springer Berlin Heidelberg.

Wooldridge, J.M., 1995. Asymptotic Properties of Tests for Heteroskedasticity. *Econometric Theory*, 11 (02), pp.399-400.

## Appendix B. Summary statistics on main variables

This table presents the summary statistics of the main variables. In panel A I report the descriptive statistics and in panel B I present the correlation matrix. The independent variables that are differences  $\Delta(j-i)$  between acquiring country  $j$  and target country  $i$  of the are; log of GDP per capita, percentage growth of GDP per capita, governance index of all six Kaufman et al (2009) governance indicators, the assets of the top three banks as a share of all commercial banks, private credit provided by the banking sector as a percentage of GDP, annual real stock market return, annual real exchange return. Beside differences between country pairs, I proxy for the bilateral trade link by log of imports from the acquiring country  $j$  to the target country  $i$ . Furthermore, I include indicator variables for whether a country pair share the same language, have a common border or have had a colonial link. Moreover, the geographic distance of weighted distance from Mayer and Zignago (2011). Regarding the cultural distance variables I include the Jensen-Shannon and Euclidean distances of cultural variables trust, individualism and hierarchy obtained from the World Value Survey (WVS). I include the Euclidean distances of all six cultural dimensions of Hofstede (1980, 2001). Moreover, I include overall cultural distance indices based on individual cultural value distances. In detail, these are conducted as the first principal component (PCA) or the Kogut and Singh (1988) index of cultural distance. Furthermore, I present the statistics of the instrumental variable religious distance from Spolaore and Wacziarg (2016). Finally, I list the summary statistics of the dependent variables annual cross-border ratio of each country pair and the cumulative abnormal returns of the acquiring and the target banks two trading days prior and after the announcement date.

Panel A. Descriptive statistics of country level variables							
	Obs	Mean	Median	95%	Std. Dev.	Min	Max
$\Delta$ GDP per capita(log) $_{j-i}$	16,563	0.095	0.066	3.130	1.826	-5.593	5.593
$\Delta$ GDP per capita growth (%) $_{j-i}$	16,527	-0.058	-0.022	7.470	5.222	-52.988	32.566
$\Delta$ Governance $_{j-i}$	17,139	0.033	0.030	2.070	1.235	-3.200	3.914
$\Delta$ Bank concentration $_{j-i}$	16,258	2.81	3.40	49.88	28.80	-78.60	78.60
$\Delta$ Bank credit to GDP $_{j-i}$	16,057	1.68	2.74	133.36	77.30	-248.88	231.81
Bilateral trade	13,133	19.57	19.91	23.88	2.98	2.18	26.87
Distance	15,485	0.038	0.000	0.000	0.191	0.000	1.000
Contiguous	15,485	0.104	0.000	1.000	0.305	0.000	1.000
Same language	15,485	0.020	0.000	0.000	0.140	0.000	1.000
Colonial link	15,485	8.626	8.990	9.700	0.923	5.195	9.886
$\Delta$ Regulation $_{j-i}$	9,235	-0.001	0.002	1.950	1.161	-3.507	3.547
$\Delta$ Real stock market return $_{j-i}$	11,532	-0.001	0.001	0.194	0.131	-1.552	0.764
$\Delta$ Real exchange rate return $_{j-i}$	10,238	0.016	0.003	0.194	0.347	-1.374	3.229
Trust (Jensen-Shannon)	15,072	0.155	0.133	0.367	0.111	0.000	0.538
Individualism (Jensen Shannon)	15,379	0.227	0.211	0.411	0.103	0.035	0.796
Hierarchy (Jensen-Shannon)	6,523	0.131	0.113	0.312	0.093	0.001	0.451
Trust (Euclidean)	17,224	0.195	0.163	0.479	0.145	0.000	0.713
Individualism(Euclidean)	17,224	0.126	0.106	0.302	0.094	0.000	0.468
Hierarchy (Euclidean)	8,295	0.139	0.119	0.326	0.100	0.000	0.484
Power distance index	11,927	2.758	2.995	4.007	0.994	0.000	4.466
Individualism	11,941	3.046	3.258	4.204	0.988	0.000	4.443
Masculinity	11,910	2.709	2.944	4.025	0.990	0.000	4.500

Uncertainty avoidance index	11,916	2.884	3.091	4.043	0.985	0.000	4.500
Long term orientation	15,238	2.947	3.169	4.134	1.021	-5.291	4.605
Indulgence versus restraint	15,180	2.848	3.117	4.057	1.082	-2.521	4.605
WVS - Jensen-Shannon (PCA)	6,519	0.000	0.174	1.683	1.041	-2.442	3.604
WVS -Mean-based (PCA)	8,295	0.000	0.024	1.608	1.036	-6.200	5.421
Kogut and Singh	12,466	1.973	1.793	4.372	1.331	0.017	8.060
Hofstede (PCA)	11,081	0.000	0.174	1.684	1.279	-4.568	2.285
Cultural distance overall (PCA)	10,227	0.000	0.124	1.938	1.269	-4.820	3.164
Religious distance	7,151	0.811	0.875	0.996	0.178	0.222	0.999
Cross-border ratio $_{j,i}$	17,224	0.015	0.000	0.500	0.098	0.000	1.000
CAR Acquiring banks	504	-0.003	0.000	0.051	0.038	-0.191	0.354
CAR Target banks	124	0.086	0.027	0.413	0.197	-0.797	0.749

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Panel B: correlation matrix

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(1)	Cross-border ratio $_{j,i}$	(18)	Trust (Euclidean)
(2)	$\Delta$ GDP per capita(log) $_{j-i}$	(19)	Individualism(Euclidean)
(3)	$\Delta$ GDP per capita growth (%) $_{j-i}$	(20)	Hierarchy (Euclidean)
(4)	$\Delta$ Governance $_{j-i}$	(21)	Power distance index
(5)	$\Delta$ Bank concentration $_{j-i}$	(22)	Individualism
(6)	$\Delta$ Bank credit to GDP $_{j-i}$	(23)	Masculinity
(7)	Bilateral trade	(24)	Uncertainty avoidance index
(8)	Distance	(25)	Long term orientation
(9)	Contiguous	(26)	Indulgence versus restraint
(10)	Colonial link	(27)	WVS - Jensen-Shannon (PCA)
(11)	Same language	(28)	WVS -Mean-based (PCA)
(12)	$\Delta$ Regulation $_{j-i}$	(29)	Kogut and Singh
(13)	$\Delta$ Real stock market return $_{j-i}$	(30)	Hofstede (PCA)
(14)	$\Delta$ Real exchange rate return $_{j-i}$	(31)	Cultural distance overall (PCA)
(15)	Trust (Jensen-Shannon)	(32)	Religious distance
(16)	Individualism (Jensen Shannon)	(33)	CAR target banks
(17)	Hierarchy (Jensen-Shannon)	(34)	CAR Acquirer banks

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Panel B: correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34					
1	1.00																																						
2	0.07	1.00																																					
3	-0.02	-0.35	1.00																																				
4	0.08	0.92	-0.30	1.00																																			
5	-0.07	-0.01	-0.04	0.07	1.00																																		
6	0.09	0.69	-0.37	0.65	-0.21	1.00																																	
7	0.13	0.04	0.13	0.04	-0.28	0.15	1.00																																
8	0.17	0.06	0.02	0.06	-0.05	0.08	0.30	1.00																															
9	-0.01	0.08	-0.05	0.07	0.08	0.02	0.04	-0.01	1.00																														
10	0.18	-0.09	0.00	-0.09	-0.06	0.05	0.24	0.35	0.09	1.00																													
11	-0.16	-0.09	-0.01	-0.11	-0.02	0.05	-0.30	-0.43	-0.02	-0.06	1.00																												
12	0.02	-0.17	0.16	-0.23	-0.47	-0.02	0.43	0.16	0.00	0.04	-0.15	1.00																											
13	0.05	0.12	-0.02	0.11	0.03	0.16	-0.05	0.00	0.02	0.00	-0.01	-0.11	1.00																										
14	0.02	0.08	-0.17	0.06	0.10	-0.07	0.04	0.01	-0.02	-0.01	-0.03	-0.09	-0.01	1.00																									
15	-0.09	-0.08	0.03	-0.03	0.16	-0.11	-0.25	-0.15	-0.02	-0.10	0.12	-0.14	-0.06	-0.04	1.00																								
16	-0.04	-0.02	0.02	-0.04	0.03	0.02	-0.01	-0.13	0.06	-0.14	0.22	0.06	-0.06	-0.07	0.08	1.00																							
17	0.11	0.00	0.00	-0.02	-0.19	-0.06	0.18	0.06	0.01	-0.14	-0.12	0.17	-0.07	0.03	-0.14	-0.05	1.00																						
18	-0.08	-0.11	0.03	-0.07	0.11	-0.13	-0.26	-0.20	-0.02	-0.15	0.14	-0.11	-0.07	-0.03	0.94	0.05	-0.10	1.00																					
19	-0.08	-0.03	0.03	-0.08	0.06	-0.05	-0.07	-0.19	0.05	-0.17	0.15	0.03	-0.05	-0.02	0.01	0.67	0.02	0.00	1.00																				
20	-0.11	0.05	-0.01	0.02	0.01	-0.02	-0.06	-0.19	-0.01	-0.28	0.24	0.01	0.04	0.01	-0.10	0.07	0.15	-0.06	0.09	1.00																			
21	-0.16	-0.08	0.04	-0.04	0.07	-0.10	-0.25	-0.40	-0.06	-0.22	0.24	-0.11	-0.02	0.04	0.51	0.14	-0.10	0.54	0.07	0.04	1.00																		
22	-0.14	-0.06	0.02	-0.07	-0.06	-0.08	-0.14	-0.24	0.01	-0.25	0.28	-0.06	-0.01	0.06	0.25	0.12	0.03	0.28	0.02	0.09	0.65	1.00																	
23	-0.06	0.05	-0.05	0.01	0.14	-0.13	-0.21	-0.12	-0.02	-0.43	-0.14	-0.13	0.01	0.05	-0.02	-0.05	0.04	0.03	-0.07	0.17	0.06	0.15	1.00																
24	-0.08	-0.02	0.07	0.01	0.06	-0.06	-0.07	-0.21	0.03	-0.53	0.09	-0.01	-0.01	-0.02	0.30	0.04	0.08	0.33	0.00	0.09	0.37	0.24	0.23	1.00															
25	-0.07	-0.04	0.08	-0.03	0.05	-0.06	0.01	-0.28	0.00	-0.34	0.11	0.07	-0.03	0.01	-0.15	0.19	0.12	-0.08	0.16	0.35	-0.05	0.01	0.04	0.17	1.00														
26	-0.02	-0.02	-0.01	0.00	0.15	-0.04	-0.24	-0.07	0.01	-0.04	0.03	-0.12	0.01	-0.01	0.06	-0.09	0.19	0.09	-0.13	0.05	0.16	0.02	0.04	0.10	0.13	1.00													
27	-0.11	-0.05	0.03	-0.04	0.16	-0.02	-0.19	-0.19	0.03	-0.11	0.26	-0.08	-0.05	-0.08	0.61	0.78	-0.40	0.56	0.48	-0.05	0.39	0.21	-0.05	0.16	0.03	-0.09	1.00												
28	0.01	-0.02	-0.01	0.03	0.02	-0.04	-0.13	0.07	-0.03	-0.05	0.02	-0.04	-0.05	-0.01	0.54	-0.34	-0.06	0.57	-0.63	-0.02	0.24	0.09	0.06	0.27	-0.09	0.08	0.05	1.00											
29	-0.11	0.04	0.01	0.06	0.11	-0.08	-0.17	-0.16	-0.03	-0.30	0.11	-0.17	-0.03	0.07	0.51	0.04	0.10	0.51	-0.05	0.12	0.61	0.55	0.43	0.46	-0.08	0.10	0.26	0.31	1.00										
30	-0.17	-0.06	0.04	-0.04	0.08	-0.12	-0.28	-0.37	-0.01	-0.43	0.23	-0.12	-0.01	0.04	0.42	0.09	0.05	0.46	0.00	0.13	0.85	0.78	0.31	0.61	0.09	0.38	0.27	0.24	0.71	1.00									
31	-0.15	-0.07	0.05	-0.03	0.17	-0.13	-0.31	-0.36	-0.01	-0.43	0.20	-0.13	-0.04	-0.01	0.69	0.23	-0.01	0.70	0.09	0.08	0.80	0.50	0.26	0.69	0.10	0.37	0.52	0.36	0.70	0.88	1.00								
32	-0.08	-0.02	0.00	-0.04	0.10	0.06	0.01	-0.19	0.04	-0.11	0.13	-0.04	0.08	0.03	0.00	0.10	-0.02	0.08	0.21	-0.02	0.01	-0.07	0.09	0.28	0.11	-0.04	-0.02	0.06	0.05	0.05	1.00								
33	-	-0.46	0.17	-0.56	0.36	-0.23	0.15	0.31	-0.23	-0.01	-0.38	0.08	0.03	-0.29	-0.01	-0.05	0.33	0.02	0.24	0.40	0.05	0.11	-0.18	0.36	0.33	0.20	-0.17	-0.18	0.18	0.17	0.15	-							
34	-	0.09	0.04	-0.06	-0.14	0.06	-0.21	0.05	-0.15	0.02	-0.06	0.25	0.08	-0.11	0.15	-0.03	0.03	0.13	-0.03	0.09	0.22	0.07	0.06	0.17	-0.09	0.12	0.04	0.09	0.19	0.17	0.18	-							

## Appendix C. Main tables and figures

**Table 1. Completed cross-border and domestic bank M&A by target and acquiring country**

This table shows the descriptive statistics of all completed bank M&A with available information in the dataset in the period 1990-2015. A bank M&A is defined if the acquirer is a commercial bank or bank holding and the targets may also be insurance companies, mortgage bankers and security brokers. Panel A reports the statistics of the acquiring banks and panel B reports the statistics of the target banks. The left

Panel A: Acquiring countries					Bank M&A value in Billion U.S. Dollar(\$)			
Acquirers:	Number of bank M&A's			Cross-border (%)	Cross-border	Domestic	Total	Cross-border (%)
	Cross-border	Domestic	Total					
France	105	153	258	41%	33.43	77.04	110.46	30%
United Kingdom	81	76	157	52%	67.85	133.29	201.14	34%
Germany	75	200	275	27%	49.16	57.78	106.94	46%
Switzerland	74	130	204	36%	41.80	47.62	89.43	47%
United States	73	4,394	4,467	1.6%	52.34	1,270.67	1,323.01	4%
Netherlands	70	33	103	68%	41.84	13.41	55.24	76%
Spain	57	166	223	26%	56.65	68.16	124.80	45%
Canada	50	87	137	37%	48.18	25.54	73.71	65%
Belgium	47	30	77	61%	36.50	49.59	86.09	42%
Italy	43	378	421	10%	25.10	201.07	226.17	11%
Austria	38	38	76	50%	8.29	1.43	9.72	85%
Australia	28	52	80	35%	6.91	47.45	54.36	13%
Russian Fed	27	156	183	15%	5.17	7.18	12.35	42%
Portugal	26	24	50	52%	0.86	4.50	5.36	16.13%
Sweden	26	31	57	46%	12.43	6.02	18.45	67%
Greece	23	23	46	50%	3.03	5.63	8.66	35%
Japan	21	219	240	9%	7.46	289.33	296.79	3%
Luxembourg	21	10	31	68%	1.30	0.09	1.38	94%
China	18	9	27	67%	9.54	5.62	15.15	63%
South Africa	18	25	43	42%	0.60	11.86	12.46	5%
Hong Kong	14	19	33	42%	0.45	3.28	3.73	12%
Denmark	13	72	85	15%	8.32	9.46	17.77	47%
Hungary	13	19	32	41%	1.92	0.77	2.69	71%
Iceland	13	6	19	68%	2.31	0.39	2.71	86%
South Korea	12	32	44	27%	0.16	9.92	10.08	1.5%
Other	275	869	1,124	25%				
Total:	1,261	7,251	8,492	15%	522	2,347	2,869	18%

part of the table shows the number of deals by origin and the right panel shows the value of the deals by origin.

Panel B: target countries								
targets:	Number of bank M&A's				Bank M&A value in Billion U.S. Dollar(\$)			
	Cross-border	Domestic	Total	Cross-border (%)	Cross-border	Domestic	Total	Cross-border (%)
United States	127	4,394	4,521	3%	180.09	1,270.67	1,450.76	12%
United Kingdom	86	76	162	53%	60.63	133.29	193.92	31%
France	56	153	209	27%	27.34	77.04	104.38	26%
Germany	45	200	245	18%	35.63	57.78	93.41	38%
Russian Fed	36	156	192	19%	6.99	7.18	14.17	49%
Brazil	35	66	101	35%	11.25	32.51	43.76	26%
Ukraine	33	13	46	72%	7.63	0.39	8.02	95%
Italy	32	378	410	8%	17.08	201.07	218.15	8%
Switzerland	32	130	162	20%	2.03	47.62	49.65	4%
Spain	30	166	196	15%	4.12	68.16	72.28	6%
Turkey	30	24	54	56%	20.17	1.33	21.51	94%
Hong Kong	27	19	46	59%	18.52	3.28	21.80	85%
Netherlands	26	33	59	44%	18.13	13.41	31.54	57%
Poland	23	43	66	35%	9.26	3.21	12.47	74%
Argentina	21	38	59	36%	3.24	1.98	5.22	62%
Australia	21	52	73	29%	2.59	47.45	50.04	5%
Belgium	19	30	49	39%	5.88	49.59	55.47	11%
Taiwan	19	23	42	45%	3.05	12.56	15.61	20%
Indonesia	18	26	44	41%	0.07	0.98	1.05	6%
Luxembourg	17	10	27	63%	5.75	0.09	5.84	98%
Denmark	16	72	88	18%	6.73	9.46	16.19	42%
Romania	16	7	23	70%	0.28	0.05	0.33	84%
Austria	14	38	52	27%	8.47	1.43	9.90	86%
Ireland-Rep	14	10	24	58%	2.25	3.24	5.49	41%
Portugal	14	24	38	37%	4.88	4.50	9.37	52%
Other	454	1,070	1,504	30%				
Total:	1,261	7,251	8,492	15%	462	2,048	2,510	18%



**Table 2. Cumulative abnormal return of target and acquiring banks around the announcement date.**

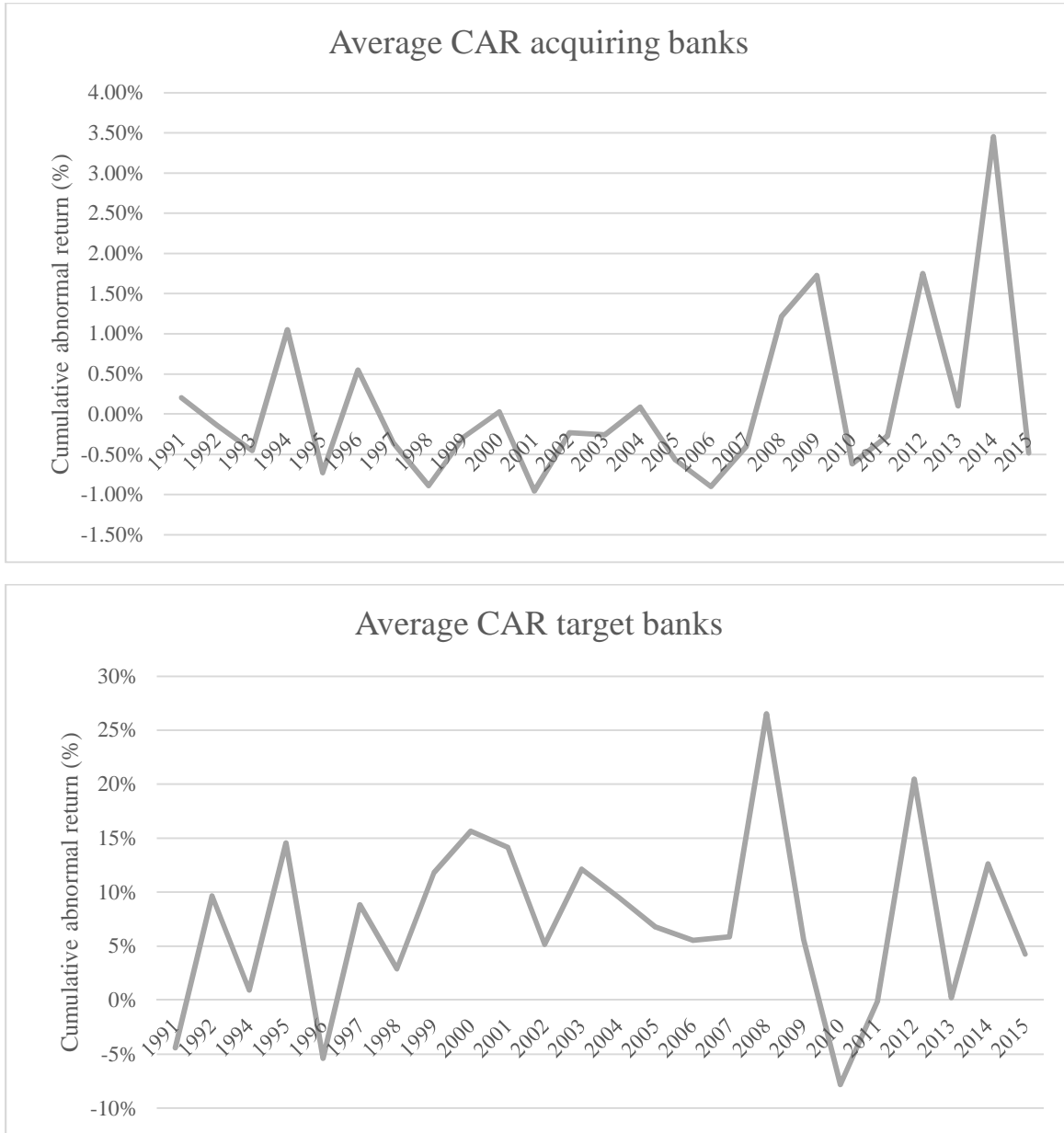
This table shows the cumulative abnormal return (CAR) for target and acquiring banks two days before and two days after the announcement of the bank merger. The Car is calculated by using equation (5) and (6). Panel A reports the average CAR per year in the left part for the acquiring banks and in the right part for the target banks. Panel B reports the test of differences. In detail, whether the difference between the CAR of acquiring country  $j$  is different from target country  $i$ . Moreover, in line with Stahl and Voigt (2008), whether target bank CAR is significantly negative and acquiring bank CAR is significantly positive.

Panel A: average Cumulative abnormal returns per year						
Acquirers:				Targets:		
Year	Mean	Sd	N	mean	sd	N
1991	0.20%	0.021	12	-4.41%		1
1992	-0.14%	0.019	17	9.66%		1
1993	-0.45%	0.018	8			0
1994	1.05%	0.012	5	0.92%		1
1995	-0.73%	0.040	18	14.57%	0.266	6
1996	0.55%	0.032	26	-5.39%	0.323	5
1997	-0.36%	0.030	41	8.83%	0.228	8
1998	-0.89%	0.047	42	2.89%	0.124	10
1999	-0.28%	0.052	35	11.82%	0.192	18
2000	0.03%	0.046	51	15.64%	0.233	16
2001	-0.95%	0.037	57	14.16%	0.271	12
2002	-0.23%	0.030	21	5.16%	0.073	5
2003	-0.26%	0.023	29	12.12%	0.136	4
2004	0.09%	0.038	36	9.52%	0.106	11
2005	-0.57%	0.021	48	6.77%	0.083	7
2006	-0.90%	0.038	75	5.55%	0.105	20
2007	-0.40%	0.027	65	5.87%	0.157	14
2008	1.22%	0.060	43	26.54%	0.316	9
2009	1.73%	0.047	16	5.61%	0.066	5
2010	-0.62%	0.027	28	-7.81%	0.485	4
2011	-0.27%	0.033	19	-0.11%	0.002	2
2012	1.75%	0.025	18	20.46%	0.229	3
2013	0.10%	0.031	11	0.23%	0.151	4
2014	3.45%	0.063	13	12.63%	0.132	3
2015	-0.48%	0.025	11	4.25%	0.095	3
Mean	-0.15%	0.001	745	9.11%	0.015	172

Panel B: test of differences			
Tests:	Difference	<i>t-statistic</i>	P-value
Difference CAR $j_i$	-9.26%	-11.74	0.00
CAR target >0	9.11%	5.59	0.00
CAR acquirer <0	-0.15%	-1.08	0.13

**Figure 1. Average cumulative abnormal returns of acquiring and target banks.**

These figures graphs the data of panel A. Which is the development of the average cumulative abnormal returns of the acquiring and the target banks over the period 1990-2015.



### **Table 3. OLS regression analysis of the determinants of cross-border bank M&A.**

The table shows the ordinary least square regressions of cross-border bank M&A by country pair and years over the period 1990-2015. The dependent variable is the annual cross-border ratio of each country pair. Which is the number cross-border bank acquisitions in target country  $i$  from acquiring country  $j$  ( $i \neq j$ ) in year  $t$  divided by the total number of bank acquisitions in country  $i$  in year  $t$ . I exclude targets  $i$  for which there is no cross-border bank acquisition activity in year  $t$ . Independent control variables are either the differences  $\Delta$  ( $j-i$ ) or the absolute difference between acquiring country  $j$  and target country  $i$ . The independent cultural distance variables are absolute differences between acquiring country  $j$  and target country  $i$ . This table includes three different sets of cultural distance variables. In panel A, I include the Jensen-Shannon and Euclidean distances of cultural variables obtained from the World Value Survey (WVS). In panel B, I include the Euclidean distances of all six cultural dimensions of Hofstede (1980, 2001). Finally, in panel C, I include overall cultural distance indices based on individual cultural value distances. Additionally, I control with differences  $\Delta$  ( $j-i$ ) between acquiring country  $j$  and target country  $i$  of the; log of GDP per capita, percentage growth of GDP per capita, governance index of all six Kaufman et al (2009) governance indicators, the assets of the top three banks as a share of all commercial banks, private credit provided by the banking sector as a percentage of GDP, annual real stock market return, annual real exchange return. Beside differences between country pairs, I proxy for the bilateral trade link by log of imports from the acquiring country  $j$  to the target country  $i$ . Furthermore, I include indicator variables for whether a country pair share the same language, have a common border or have had a colonial link. Finally, I control with the geographic distance of weighted distance from Mayer and Zignago (2011). Detailed information of each variable can be found in the variable description list. I include acquiring country, target country and year fixed effects in all estimates and cluster standard errors by target country. I report the R-squared and number of observations. Heteroskedasticity robust  $t$ -statistics are reported in parentheses. With respect to significance levels at 10%, 5% and 1% level I indicate it with \*, \*\*, \*\*\*.

Panel A: OLS regression							
Independent variables:	Dependent variable: Cross-border ratio $i,j$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\Delta$ GDP per capita $_{j-i}$	0.013** (2.15)	0.015** (2.26)	0.015** (2.28)	0.000 (0.00)	0.013** (2.09)	0.013** (2.16)	-0.002 (-0.11)
$\Delta$ GDP per capita growth (%) $_{j-i}$	-0.000 (-0.50)	-0.000 (-0.56)	-0.000 (-0.69)	-0.000 (-0.02)	-0.000 (-0.44)	-0.000 (-0.50)	-0.000 (-0.11)
$\Delta$ Governance $_{j-i}$	-0.001 (-0.18)	-0.000 (-0.03)	-0.000 (-0.02)	-0.005 (-0.32)	-0.000 (-0.05)	-0.001 (-0.17)	0.006 (0.41)
$\Delta$ Bank concentration $_{j-i}$	-0.000 (-1.03)	-0.000 (-0.89)	-0.000 (-0.95)	0.000 (1.10)	-0.000 (-0.98)	-0.000 (-1.02)	0.000 (0.79)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.000 (-1.13)	-0.000 (-1.22)	-0.000 (-1.26)	-0.000 (-0.93)	-0.000 (-1.07)	-0.000 (-1.13)	-0.000 (-0.71)
Bilateral trade	0.006*** (3.06)	0.007*** (2.91)	0.007*** (3.07)	0.009** (2.30)	0.006*** (2.76)	0.006*** (3.07)	0.009*** (2.83)
Distance	-0.006 (-1.19)	-0.005 (-0.94)	-0.005 (-1.02)	-0.003 (-0.33)	-0.006 (-1.28)	-0.006 (-1.18)	-0.003 (-0.33)
Contiguous	0.012 (0.94)	0.011 (0.87)	0.012 (0.91)	-0.004 (-0.14)	0.010 (0.82)	0.012 (0.96)	0.005 (0.24)
Same language	0.027** (2.34)	0.027** (2.41)	0.029** (2.52)	0.039** (2.21)	0.026** (2.31)	0.027** (2.35)	0.031** (2.26)
Colonial link	0.156** (2.34)	0.166** (2.34)	0.166** (2.34)	-0.034 (-1.10)	0.159** (2.37)	0.155** (2.32)	-0.033 (-1.24)
$\Delta$ Regulation $_{j-i}$	0.001 (0.40)	0.001 (0.25)	0.001 (0.29)	-0.006 (-0.60)	0.001 (0.41)	0.001 (0.40)	-0.002 (-0.31)
$\Delta$ Real stock market return $_{j-i}$	-0.001 (-0.38)	-0.000 (-0.06)	-0.000 (-0.05)	-0.004 (-0.70)	-0.001 (-0.33)	-0.001 (-0.38)	-0.003 (-0.56)
$\Delta$ Real exchange rate return $_{j-i}$	0.001 (0.20)	0.002 (0.34)	0.002 (0.37)	0.025** (2.24)	0.001 (0.14)	0.001 (0.19)	0.024*** (2.94)
<i>Jensen-Shannon distances:</i>							
Trust		-0.047** (-2.03)					
Individualism			0.054** (2.16)				
Hierarchy				0.071 (1.26)			
<i>Mean based distances:</i>							
Trust					-0.045** (-2.19)		
Individualism						0.013 (0.48)	
Hierarchy							0.023 (0.73)
Observations	4,459	4,225	4,224	1,640	4,459	4,459	1,915
R-squared	0.089	0.094	0.094	0.122	0.092	0.089	0.099
Target FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: OLS regression						
Independent variables:	Dependent variable: Cross-border ratio $i,j$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta$ GDP per capita $j-i$	0.013** (2.04)	0.011* (1.90)	0.013** (2.11)	0.013** (2.05)	0.013** (2.17)	0.013** (2.13)
$\Delta$ GDP per capita growth (%) $j-i$	-0.000 (-0.23)	-0.000 (-0.33)	-0.000 (-0.24)	-0.000 (-0.12)	-0.000 (-0.30)	-0.000 (-0.38)
$\Delta$ Governance $j-i$	-0.002 (-0.33)	-0.002 (-0.28)	-0.001 (-0.23)	-0.004 (-0.49)	-0.003 (-0.54)	-0.004 (-0.59)
$\Delta$ Bank concentration $j-i$	-0.000 (-0.43)	-0.000 (-0.34)	-0.000 (-0.33)	-0.000 (-0.59)	-0.000 (-1.04)	-0.000 (-1.06)
$\Delta$ Bank credit to GDP $j-i$	-0.000 (-0.96)	-0.000 (-0.94)	-0.000 (-0.90)	-0.000 (-0.71)	-0.000 (-1.12)	-0.000 (-1.14)
Bilateral trade	0.008*** (3.09)	0.010*** (3.62)	0.009*** (3.17)	0.008*** (3.13)	0.008*** (3.38)	0.008*** (3.34)
Distance	-0.003 (-0.63)	-0.002 (-0.46)	-0.004 (-0.71)	-0.004 (-0.87)	-0.005 (-0.92)	-0.004 (-0.80)
Contiguous	0.014 (0.91)	0.013 (0.90)	0.015 (0.99)	0.016 (1.04)	0.013 (1.04)	0.013 (1.03)
Same language	0.025** (2.29)	0.024** (2.19)	0.028** (2.49)	0.018 (1.68)	0.025** (2.23)	0.025** (2.26)
Colonial link	0.217 (1.64)	0.257* (1.82)	0.212 (1.60)	0.220 (1.67)	0.166 (1.56)	0.166 (1.55)
$\Delta$ Regulation $j-i$	0.001 (0.27)	0.001 (0.26)	0.001 (0.31)	0.001 (0.30)	0.001 (0.32)	0.001 (0.27)
$\Delta$ Real stock market return $j-i$	0.000 (0.03)	-0.001 (-0.15)	0.000 (0.03)	0.002 (0.47)	-0.001 (-0.31)	-0.001 (-0.30)
$\Delta$ Real exchange rate return $j-i$	0.004 (0.72)	0.004 (0.65)	0.003 (0.54)	0.004 (0.62)	0.001 (0.22)	0.002 (0.31)
Power distance index	-0.000 (-0.18)					
Individualism		-0.001 (-0.27)				
Masculinity			-0.005 (-1.57)			
Uncertainty avoidance index				-0.001 (-0.29)		
Long term orientation					0.002 (1.04)	
Indulgence versus restraint						-0.001 (-0.25)
Observations	4,000	4,016	3,978	4,001	4,362	4,357
R-squared	0.096	0.097	0.099	0.093	0.088	0.088
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel C: OLS regression					
Independent variables:	Dependent variable: Cross-border ratio $i,j$				
	(1)	(2)	(3)	(4)	(5)
$\Delta$ GDP per capita $j-i$	0.001 (0.04)	-0.002 (-0.11)	0.012** (2.04)	0.012* (1.92)	0.014* (2.01)
$\Delta$ GDP per capita growth (%) $j-i$	-0.000 (-0.07)	-0.000 (-0.18)	-0.000 (-0.09)	-0.000 (-0.06)	-0.000 (-0.16)
$\Delta$ Governance $j-i$	-0.005 (-0.34)	0.007 (0.45)	-0.001 (-0.16)	-0.005 (-0.73)	-0.005 (-0.69)
$\Delta$ Bank concentration $j-i$	0.000 (1.07)	0.000 (0.88)	-0.000 (-0.79)	-0.000 (-0.61)	-0.000 (-0.63)
$\Delta$ Bank credit to GDP $j-i$	-0.000 (-0.92)	-0.000 (-0.71)	-0.000 (-0.78)	-0.000 (-0.79)	-0.000 (-0.83)
Bilateral trade	0.009** (2.33)	0.008*** (2.81)	0.008*** (3.20)	0.008*** (2.78)	0.008** (2.71)
Distance	-0.002 (-0.29)	-0.003 (-0.35)	-0.003 (-0.69)	-0.004 (-0.82)	-0.004 (-0.73)
Contiguous	-0.004 (-0.15)	0.007 (0.35)	0.012 (0.97)	0.020 (1.11)	0.020 (1.12)
Same language	0.038** (2.17)	0.029** (2.18)	0.022** (2.16)	0.021** (2.18)	0.023** (2.25)
Colonial link	-0.035 (-1.05)	-0.033 (-1.23)	0.216 (1.65)	0.255* (1.81)	0.215 (1.61)
$\Delta$ Regulation $j-i$	-0.006 (-0.59)	-0.003 (-0.35)	0.001 (0.42)	0.001 (0.23)	0.000 (0.13)
$\Delta$ Real stock market return $j-i$	-0.003 (-0.58)	-0.003 (-0.61)	-0.001 (-0.13)	0.001 (0.26)	0.002 (0.44)
$\Delta$ Real exchange rate return $j-i$	0.025** (2.25)	0.025*** (3.14)	0.004 (0.65)	0.004 (0.75)	0.005 (0.76)
<i>Culture distance overall:</i>					
WVS - Jensen-Shannon (PCA)	-0.001 (-0.24)				
WVS -Mean-based (PCA)		-0.003 (-0.93)			
Kogut and Singh			-0.003 (-1.52)		
Hofstede (PCA)				-0.001 (-0.45)	
Cultural distance overall (PCA)					-0.001 (-0.41)
Observations	1,639	1,915	4,253	3,823	3,728
R-squared	0.119	0.100	0.092	0.100	0.099
Target country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes
Year country fixed effects	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4. Poisson-Pseudo Maximum Likelihood (PPML) estimation analysis of the determinants of cross-border bank M&A.**

The table shows the Poisson-Pseudo Maximum Likelihood (PPML) of cross-border bank M&A by country pair and years over the period 1990-2015. The dependent variable is the annual cross-border ratio of each country pair. Which is the number cross-border bank acquisitions in target country  $i$  from acquiring country  $j$  ( $i \neq j$ ) in year  $t$  divided by the total number of bank acquisitions in country  $i$  in year  $t$ . I exclude targets  $i$  for which there is no cross-border bank acquisition activity in year  $t$ . Independent control variables are either the differences  $\Delta(j-i)$  or the absolute difference between acquiring country  $j$  and target country  $i$ . The independent cultural distance variables are absolute differences between acquiring country  $j$  and target country  $i$ . This table includes three different sets of cultural distance variables. In panel A, I include the Jensen-Shannon and Euclidean distances of cultural variables obtained from the World Value Survey (WVS). In panel B, I include the Euclidean distances of all six cultural dimensions of Hofstede (1980,2001). Finally, in panel C, I include overall cultural distance indices based on individual cultural value distances. Additionally, I control with differences  $\Delta(j-i)$  between acquiring country  $j$  and target country  $i$  in the; log of GDP per capita, percentage growth of GDP per capita, governance index of all six Kaufman et al (2009) governance indicators, the assets of the top three banks as a share of all commercial banks, private credit provided by the banking sector as a percentage of GDP, annual real stock market return, annual real exchange return. Beside differences between country pairs, I proxy for the bilateral trade link by log of imports from the acquiring country  $j$  to the target country  $i$ . Furthermore, I include indicator variables for whether a country pair share the same language, have a common border or have had a colonial link. Finally, I control with the geographic distance of weighted distance from Mayer and Zignago (2011). Detailed information of each variable can be found in the variable description list. I include acquiring country, target country and year fixed effects in all estimates and cluster standard errors by target country. I report the R-squared and the number of observations. Heteroskedasticity robust  $z$ -statistics are reported in parentheses. With respect to significance levels at 10%, 5% and 1% level I indicate it with \*, \*\*, \*\*\*.

Panel A: Poisson Pseudo Maximum Likelihood Estimation							
Independent variables:	Dependent variable: Cross-border ratio $i,j$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\Delta$ GDP per capita $j-i$	1.294** (2.22)	1.465** (2.47)	1.522*** (2.80)	2.502 (1.57)	1.220** (2.05)	1.309** (2.23)	1.229 (1.10)
$\Delta$ GDP per capita growth $j-i$	-0.045 (-0.55)	-0.053 (-0.63)	-0.062 (-0.78)	0.037 (0.16)	-0.045 (-0.54)	-0.040 (-0.49)	0.069 (0.35)
$\Delta$ Governance $j-i$	-0.292 (-0.48)	-0.233 (-0.40)	-0.291 (-0.50)	-4.824* (-1.69)	-0.216 (-0.37)	-0.413 (-0.64)	-2.036 (-0.95)
$\Delta$ Bank concentration $j-i$	-0.494 (-1.08)	-0.330 (-0.80)	-0.247 (-0.66)	2.264** (2.33)	-0.475 (-1.06)	-0.473 (-1.02)	1.322 (0.91)
$\Delta$ Bank credit to GDP $j-i$	-0.093 (-0.22)	-0.340 (-0.91)	-0.399 (-1.18)	-1.333 (-1.52)	-0.123 (-0.30)	-0.103 (-0.25)	-1.083 (-1.59)
Bilateral trade	0.831*** (5.47)	0.733*** (4.60)	0.796*** (4.98)	1.531*** (4.53)	0.738*** (4.81)	0.850*** (5.62)	1.404*** (5.43)
Distance	-0.215 (-0.98)	-0.256 (-1.17)	-0.309 (-1.35)	0.555 (1.47)	-0.311 (-1.38)	-0.214 (-0.99)	0.411 (0.93)
Contiguous	0.128 (0.42)	0.200 (0.64)	0.037 (0.12)	-0.457 (-0.66)	0.130 (0.41)	0.101 (0.35)	-0.486 (-1.07)
Same language	1.278*** (4.18)	1.263*** (4.07)	1.566*** (5.57)	2.212*** (3.89)	1.208*** (3.81)	1.333*** (4.20)	1.580*** (2.90)
$\Delta$ Regulation $j-i$	0.010 (0.05)	-0.063 (-0.28)	-0.043 (-0.20)	-1.080* (-1.76)	-0.011 (-0.05)	0.007 (0.03)	-0.660 (-1.13)
$\Delta$ Real stock market return $j-i$	-0.227 (-0.48)	-0.194 (-0.42)	-0.153 (-0.34)	-1.676 (-1.13)	-0.237 (-0.51)	-0.221 (-0.47)	-1.232 (-1.09)
$\Delta$ Real exchange rate return $j-i$	0.337 (0.52)	0.461 (0.69)	0.516 (0.78)	6.970*** (3.64)	0.236 (0.35)	0.303 (0.47)	4.706** (2.17)
<i>Jensen-Shannon distances:</i>							
Trust		-1.826 (-1.51)					
Individualism			5.237*** (3.01)				
Hierarchy				5.277 (1.47)			
<i>Mean based distances:</i>							
Trust					-2.156** (-2.35)		
Individualism						2.511 (0.95)	
Hierarchy							-0.081 (-0.03)
Observations	2,961	2,814	2,825	895	2,961	2,961	1,059
R-squared	0.283	0.296	0.298	0.634	0.295	0.284	0.434
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust z-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Panel B: Poisson Pseudo Maximum Likelihood Estimation						
Independent variables:	Dependent variable: Cross-border ratio $i,j$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta$ GDP per capita $j-i$	1.475** (2.44)	1.457** (2.44)	1.554** (2.36)	1.308** (2.20)	1.255** (2.20)	1.265** (2.17)
$\Delta$ GDP per capita growth (%) $j-i$	-0.057 (-0.61)	-0.057 (-0.63)	-0.035 (-0.45)	-0.097 (-0.87)	-0.048 (-0.57)	-0.044 (-0.50)
$\Delta$ Governance $j-i$	-0.348 (-0.55)	-0.271 (-0.46)	-0.299 (-0.55)	-0.431 (-0.75)	-0.338 (-0.59)	-0.414 (-0.72)
$\Delta$ Bank concentration $j-i$	-0.107 (-0.25)	-0.110 (-0.26)	-0.135 (-0.33)	-0.177 (-0.44)	-0.522 (-1.11)	-0.514 (-1.08)
$\Delta$ Bank credit to GDP $j-i$	-0.375 (-0.76)	-0.342 (-0.65)	-0.203 (-0.40)	0.065 (0.16)	-0.124 (-0.29)	-0.123 (-0.27)
Bilateral trade	0.849*** (4.39)	0.895*** (4.65)	0.823*** (4.54)	0.833*** (3.96)	0.828*** (4.78)	0.808*** (4.52)
Distance	-0.255 (-1.00)	-0.183 (-0.72)	-0.301 (-1.18)	-0.241 (-0.95)	-0.237 (-1.06)	-0.190 (-0.85)
Contiguous	0.113 (0.31)	0.123 (0.39)	-0.057 (-0.19)	0.139 (0.36)	0.155 (0.52)	0.192 (0.64)
Same language	1.361*** (3.83)	1.062*** (2.99)	1.422*** (5.00)	1.149*** (3.11)	1.260*** (3.92)	1.334*** (3.97)
$\Delta$ Regulation $j-i$	-0.062 (-0.25)	-0.033 (-0.13)	-0.027 (-0.11)	-0.040 (-0.17)	-0.003 (-0.01)	-0.017 (-0.07)
$\Delta$ Real stock market return $j-i$	-0.217 (-0.45)	-0.211 (-0.45)	-0.180 (-0.41)	0.058 (0.12)	-0.194 (-0.42)	-0.198 (-0.42)
$\Delta$ Real exchange rate return $j-i$	0.904* (1.70)	1.016* (1.95)	0.901 (1.59)	0.878 (1.52)	0.256 (0.38)	0.421 (0.62)
Power distance index	0.015 (0.14)					
Individualism		-0.306** (-2.08)				
Masculinity			-0.231** (-2.20)			
Uncertainty avoidance index				-0.079 (-0.56)		
Long term orientation					0.141 (0.94)	
Indulgence versus restraint						-0.122 (-1.51)
Observations	2,662	2,676	2,656	2,667	2,895	2,877
R-squared	0.320	0.313	0.330	0.304	0.286	0.284
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust z-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel C: Poisson Pseudo Maximul Likelihood Estimation

Independent variables:	Dependent variable: Cross-border ratio $i,j$				
	(1)	(2)	(3)	(4)	(5)
$\Delta$ GDP per capita $j-i$	2.579 (1.59)	1.126 (1.01)	1.233** (2.18)	1.459** (2.26)	1.453** (2.27)
$\Delta$ GDP per capita growth (%) $j-i$	0.034 (0.16)	0.070 (0.34)	-0.026 (-0.30)	-0.072 (-0.69)	-0.074 (-0.71)
$\Delta$ Governance $j-i$	-4.711* (-1.73)	-1.820 (-0.82)	-0.208 (-0.38)	-0.541 (-0.76)	-0.650 (-0.95)
$\Delta$ Bank concentration $j-i$	2.317** (2.38)	1.487 (1.01)	-0.410 (-0.85)	-0.246 (-0.58)	-0.207 (-0.49)
$\Delta$ Bank credit to GDP $j-i$	-1.390 (-1.56)	-1.089 (-1.58)	-0.039 (-0.09)	0.051 (0.11)	0.089 (0.19)
Bilateral trade	1.720*** (5.06)	1.280*** (4.45)	0.747*** (4.17)	0.785*** (3.58)	0.811*** (3.62)
Distance	0.705* (1.67)	0.219 (0.53)	-0.214 (-0.94)	-0.285 (-1.09)	-0.255 (-0.92)
Contiguous	-0.112 (-0.19)	-0.256 (-0.51)	0.168 (0.56)	0.149 (0.34)	0.178 (0.41)
Same language	2.248*** (4.22)	1.565*** (2.66)	1.028*** (3.30)	1.235*** (3.74)	1.393*** (3.76)
$\Delta$ Regulation $j-i$	-1.049* (-1.67)	-0.685 (-1.15)	-0.007 (-0.03)	-0.074 (-0.28)	-0.106 (-0.40)
$\Delta$ Real stock market return $j-i$	-1.696 (-1.14)	-1.233 (-1.07)	-0.235 (-0.53)	0.095 (0.19)	0.113 (0.23)
$\Delta$ Real exchange rate return $j-i$	7.114*** (3.97)	4.913*** (2.26)	0.725 (1.31)	1.023* (1.87)	1.034* (1.82)
<i>Culture distance overall:</i>					
WVS - Jensen-Shannon (PCA)	0.376 (1.52)				
WVS -Mean-based (PCA)		-0.283 (-0.67)			
Kogut and Singh			-0.249** (-2.30)		
Hofstede (PCA)				-0.184* (-1.84)	
Cultural distance overall (PCA)					-0.053 (-0.53)
Observations	895	1,059	2,854	2,551	2,496
R-squared	0.632	0.425	0.290	0.327	0.327
Target country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes
Year country fixed effects	Yes	Yes	Yes	Yes	Yes

Robust z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5. Two-stage least square (2SLS) regression estimates analysis of the determinants of cross-border bank M&A.**

The table shows the two-stage least square (2SLS) of cross-border bank M&A by country pair and years over the period 1990-2015. The dependent variable is the annual cross-border ratio of each country pair. Which is the number cross-border bank acquisitions in target country  $i$  from acquiring country  $j$  ( $i \neq j$ ) in year  $t$  divided by the total number of bank acquisitions in country  $i$  in year  $t$ . I exclude targets  $i$  for which there is no cross-border bank acquisition activity in year  $t$ . Independent control variables are either the differences  $\Delta(j-i)$  or the absolute difference between acquiring country  $j$  and target country  $i$ . The independent cultural distance variables are absolute differences between acquiring country  $j$  and target country  $i$ . This table includes three different sets of cultural distance variables. In panel A, I include the Jensen-Shannon and Euclidean distances of cultural variables obtained from the World Value Survey (WVS). In panel B, I include the Euclidean distances of all six cultural dimensions of Hofstede (1980,2001). Finally, in panel C, I include overall cultural distance indices based on individual cultural value distances. Additionally, I control with differences  $\Delta(j-i)$  between acquiring country  $j$  and target country  $i$  in the; log of GDP per capita, percentage growth of GDP per capita, governance index of all six Kaufman et al (2009) governance indicators, the assets of the top three banks as a share of all commercial banks, private credit provided by the banking sector as a percentage of GDP, annual real stock market return, annual real exchange return. Beside differences between country pairs, I proxy for the bilateral trade link by log of imports from the acquiring country  $j$  to the target country  $i$ . Furthermore, I include indicator variables for whether a country pair share the same language, have a common border or have had a colonial link. Finally, I control with the geographic distance of weighted distance from Mayer and Zignago (2011). Regarding endogeneity concerns, I instrument the cultural distance variables using religious distance from Spolaore and Wacziarg (2016). Detailed information of each variable can be found in the variable description list. I include acquiring country, target country and year fixed effects in all estimates and cluster standard errors by target country. I report the R-squared, the number of observations, the first stage coefficient of religious distance with its robust  $t$ -statistics, the F statistic of the first stage regression and its corresponding p-value, the partial R squared. Finally I report the endogeneity test of Woolridge (1995). This test determines whether endogenous regressors in the model are in fact exogenous. If the Woolridge test is significant then the variables being tested are endogenous. Heteroskedasticity robust  $z$ -statistics are reported in parentheses. With respect to significance levels at 10%, 5% and 1% level I indicate it with \*, \*\*, \*\*\*.

Panel A: 2SLS regressions with instrumental variables						
Independent variables:	Dependent variable: Cross-border ratio $i,j$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta$ GDP per capita $_{j-i}$	0.012 (0.99)	0.032 (0.60)	0.063 (0.27)	0.010 (0.85)	-0.002 (-0.02)	0.024 (0.33)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.001 (0.39)	0.004 (0.34)	0.012 (0.41)	0.001 (0.41)	-0.003 (-0.14)	0.000 (0.02)
$\Delta$ Governance $_{j-i}$	-0.036* (-1.87)	-0.013 (-0.18)	-0.033 (-0.43)	-0.027* (-1.73)	-0.151 (-0.31)	-0.095 (-0.62)
$\Delta$ Bank concentration $_{j-i}$	-0.001 (-1.62)	0.000 (0.00)	0.000 (0.43)	-0.000 (-1.52)	-0.001 (-0.33)	-0.000 (-0.22)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.000 (-0.59)	-0.000 (-0.37)	0.000 (0.24)	-0.000 (-0.56)	-0.000 (-0.34)	-0.001 (-0.57)
Bilateral trade	0.002 (0.33)	-0.007 (-0.19)	0.020 (1.19)	0.003 (0.75)	0.016 (0.30)	0.011 (1.10)
Distance	-0.002 (-0.19)	-0.098 (-0.39)	-0.003 (-0.07)	0.000 (0.01)	0.027 (0.25)	-0.012 (-0.38)
Contiguous	0.007 (0.45)	0.019 (0.19)	0.065 (0.45)	0.005 (0.29)	-0.221 (-0.21)	0.056 (0.87)
Same language	0.045 (0.57)	-0.141 (-0.31)	0.202 (0.29)	0.050 (0.66)	0.821 (0.26)	-0.126 (-0.79)
Colonial link	0.057*** (3.04)	0.105 (0.82)	-0.006 (-0.03)	0.053*** (2.81)	0.037 (0.16)	0.109 (1.25)
$\Delta$ Regulation $_{j-i}$	0.006 (1.40)	0.026 (0.56)	0.023 (0.87)	0.007 (1.55)	0.019 (0.41)	0.013 (0.97)
$\Delta$ Real stock market return $_{j-i}$	0.001 (0.19)	0.045 (0.42)	0.021 (0.32)	0.001 (0.08)	-0.061 (-0.26)	-0.015 (-0.47)
$\Delta$ Real exchange rate return $_{j-i}$	0.004 (0.14)	0.075 (0.42)	-0.005 (-0.04)	0.000 (0.01)	0.088 (0.27)	-0.094 (-0.45)
<i>Jensen-Shannon distances:</i>						
Trust	-0.219** (-2.04)					
Individualism		4.055 (0.42)				
Hierarchy			-2.400 (-0.36)			
<i>Euclidean distances:</i>						
Trust				-0.174** (-2.15)		
Individualism					-9.162 (-0.25)	
Hierarchy						1.457 (0.62)
Observations	1,615	1,621	600	1,707	1,707	711
R-squared	0.121	-5.767	-1.806	0.114	-24.051	-0.879
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage Religious distance	0.280**	-0.014	0.025	0.356***	0.06	-0.03
T-statistic	2.64	-0.41	0.45	2.64	(0.23)	-0.66
F-statistic	(6.97)	(0.17)	(0.20)	(7.20)	(0.06)	(0.51)
P-value	0.012	0.68	0.65	0.01	0.81	0.47
partial R-squared	0.07	0.00	0.00	0.07	0.00	0.01
Woolridge test (P-value)	0.05	0.40	0.31	0.04	0.03	0.40

Robust z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: 2SLS regressions with instrumental variables

Independent variables:	Dependent variable: Cross-border ratio $i, j$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta$ GDP per capita $_{j-i}$	0.009 (0.84)	-0.077 (-0.14)	-0.004 (-0.09)	0.010 (0.77)	0.015 (1.01)	0.075 (0.24)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.002 (0.79)	0.004 (0.30)	0.003 (0.53)	0.002 (0.78)	0.001 (0.66)	0.007 (0.24)
$\Delta$ Governance $_{j-i}$	-0.036* (-1.70)	0.063 (0.10)	-0.077 (-1.07)	-0.048** (-2.41)	-0.038** (-2.25)	-0.024 (-0.29)
$\Delta$ Bank concentration $_{j-i}$	-0.000 (-1.17)	0.000 (0.04)	-0.001 (-0.92)	-0.000* (-1.79)	-0.001** (-2.22)	0.000 (0.09)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.000 (-0.35)	0.000 (0.13)	-0.000 (-0.01)	0.000 (0.08)	-0.000 (-0.63)	0.000 (0.17)
Bilateral trade	0.005 (0.90)	-0.047 (-0.14)	0.003 (0.25)	0.002 (0.45)	0.000 (0.05)	-0.072 (-0.19)
Distance	-0.000 (-0.02)	-0.039 (-0.15)	0.002 (0.11)	-0.003 (-0.35)	-0.023 (-1.39)	-0.052 (-0.19)
Contiguous	0.002 (0.10)	-0.176 (-0.16)	0.070 (0.74)	0.025 (1.09)	0.016 (0.82)	0.024 (0.14)
Same language	0.086 (0.72)	0.180 (0.27)	0.115 (0.58)	0.099 (0.91)	0.052 (0.95)	0.009 (0.03)
Colonial link	0.040*** (2.62)	-0.336 (-0.15)	0.113 (1.20)	0.023 (1.33)	0.077*** (3.06)	-0.017 (-0.05)
$\Delta$ Regulation $_{j-i}$	0.006 (1.26)	-0.011 (-0.10)	0.014 (1.42)	0.005 (1.16)	0.008* (1.65)	0.008 (0.67)
$\Delta$ Real stock market return $_{j-i}$	-0.001 (-0.15)	0.016 (0.12)	-0.002 (-0.18)	0.003 (0.38)	-0.001 (-0.17)	-0.011 (-0.16)
$\Delta$ Real exchange rate return $_{j-i}$	0.017 (0.73)	-0.003 (-0.03)	0.001 (0.02)	0.010 (0.44)	-0.012 (-0.41)	0.096 (0.21)
Power distance index	-0.027* (-1.93)					
Individualism		-0.439 (-0.17)				
Masculinity			0.137 (0.63)			
Uncertainty avoidance index				-0.019* (-1.72)		
Long term orientation					0.062* (1.80)	
Indulgence versus restraint						-0.420 (-0.21)
Observations	1,543	1,548	1,541	1,539	1,684	1,679
R-squared	0.105	-11.939	-0.967	0.127	-0.084	-15.516
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage Religious distance	2.10*** (2.71)	0.119 (0.17)	-0.37 (-0.62)	2.64*** (3.64)	-1.05** (-2.37)	0.14 (0.2)
t-statistic	7.37	0.03	0.38	13.29	5.62	0.04
F-statistic	0.01	0.86	0.54	0.001	0.03	0.84
P-value	0.03	0.01	0.01	0.07	0.01	0.00
partial R2	0.09	0.13	0.09	0.08	0.02	0.02
Endogeneity test (p-value)						

Robust z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel C: 2SLS regressions with instrumental variables

Independent variables:	Dependent variable: Cross-border ratio $i,j$				
	(1)	(2)	(3)	(4)	(5)
$\Delta$ GDP per capita $j-i$	-0.042 (-0.80)	-0.011 (-0.26)	0.011 (0.87)	0.010 (0.82)	0.014 (1.08)
$\Delta$ GDP per capita growth (%) $j-i$	-0.001 (-0.12)	0.000 (0.03)	0.002 (0.82)	0.002 (0.75)	0.002 (0.69)
$\Delta$ Governance $j-i$	0.006 (0.13)	0.007 (0.26)	-0.025 (-1.44)	-0.042* (-1.93)	-0.047** (-2.17)
$\Delta$ Bank concentration $j-i$	0.000 (0.33)	0.000 (1.23)	-0.000 (-1.22)	-0.000 (-1.41)	-0.000* (-1.68)
$\Delta$ Bank credit to GDP $j-i$	-0.000 (-0.38)	-0.000 (-0.18)	-0.000 (-0.29)	0.000 (0.26)	0.000 (0.21)
Bilateral trade	0.014 (1.26)	0.003 (0.28)	0.004 (0.82)	0.002 (0.39)	0.003 (0.52)
Distance	0.019 (0.83)	-0.006 (-0.42)	0.000 (0.02)	-0.002 (-0.30)	-0.001 (-0.14)
Contiguous	0.001 (0.03)	0.054 (1.04)	0.011 (0.65)	0.016 (0.61)	0.019 (0.79)
Same language	-0.024 (-0.64)	-0.031 (-1.18)	0.071 (0.66)	0.093 (0.87)	0.081 (0.73)
Colonial link	0.031 (0.76)	0.036 (1.62)	0.040*** (2.78)	0.018 (0.84)	0.035*** (2.08)
$\Delta$ Regulation $j-i$	0.012* (1.66)	0.004 (0.69)	0.007 (1.43)	0.005 (0.98)	0.005 (0.94)
$\Delta$ Real stock market return $j-i$	-0.012 (-0.69)	0.002 (0.19)	-0.000 (-0.03)	0.002 (0.32)	0.003 (0.40)
$\Delta$ Real exchange rate return $j-i$	0.038 (1.01)	0.029 (1.03)	0.016 (0.69)	0.010 (0.48)	0.010 (0.46)
<i>Culture distance overall:</i>					
WVS - Jensen-Shannon (PCA)	-0.065 (-1.27)				
WVS -Mean-based (PCA)		-0.037 (-1.04)			
Kogut and Singh			-0.017* (-1.89)		
Hofstede (PCA)				-0.019 (-1.56)	
Cultural distance overall (PCA)					-0.013* (-1.77)
Constant	-0.706 (-1.62)	-0.109 (-0.34)	-0.052 (-0.27)	0.006 (0.03)	-0.041 (-0.20)
Observations	600	711	1,635	1,474	1,433
R-squared	0.041	0.113	0.132	0.135	0.142
Target country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
First stage Religious distance	0.94 (1.47)	1.43 (1.27)	3.00*** (4.94)	2.37** (2.48)	3.69*** (3.02)
T-statistic					
F-statistic	2.17	1.61	24.44	6.15	9.12
P-value	0.15	0.215	0.00	0.02	0.00
partial R2	0.01	0.02	0.07	0.03	0.07
Endogeneity test (p-value)	0.38	0.43	0.09	0.37	0.08

Robust z-statistics in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6. Ordinary least square regression of Cumulative abnormal returns for acquiring banks.**

The table shows the results of OLS regressions of cumulative abnormal returns for acquiring banks over the period 1990-2015. The dependent variable is the cumulative abnormal return two trading days prior and two trading days after the announcement of the acquisition of acquiring banks. Abnormal returns are the real returns adjusted with by the expected returns. The expected returns are estimated with a market model using the MSCI world index as the return of the market. The independent cultural distance variables are absolute differences between acquiring country  $j$  and target country  $i$ . This table includes three different sets of cultural distance variables. In panel A, I include the Jensen-Shannon and Euclidean distances of cultural variables obtained from the World Value Survey (WVS). In panel B, I include the Euclidean distances of all six cultural dimensions of Hofstede (1980,2001). Finally, in panel C, I include overall cultural distance indices based on individual cultural value distances. Additionally, I control with differences  $\Delta(j-i)$  between acquiring country  $j$  and target country  $i$  in the; log of GDP per capita, percentage growth of GDP per capita, governance index of all six Kaufman et al (2009) governance indicators, the assets of the top three banks as a share of all commercial banks, private credit provided by the banking sector as a percentage of GDP, annual real stock market return, annual real exchange return. Beside differences between country pairs, I proxy for the bilateral trade link by log of imports from the acquiring country  $j$  to the target country  $i$ . Furthermore, I include indicator variables for whether a country pair share the same language, have a common border or have had a colonial link. Finally, I control with the geographic distance of weighted distance from Mayer and Zignago (2011). ). Detailed information of each variable can be found in the variable description list. I include acquiring country, target country and year fixed effects in all estimates and cluster standard errors by target country. I report the R-squared and the number of observations. Heteroskedasticity robust  $t$ -statistics are reported in parentheses. With respect to significance levels at 10%, 5% and 1% level I indicate it with \*, \*\*, \*\*\*.

Panel A: OLS regression Acquiring banks							
Independent variables:	Dependent variable: Cumulative abnormal return Acquiring banks						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\Delta$ GDP per capita $_{j-i}$	0.025 (1.58)	0.026 (1.49)	0.025 (1.50)	0.033 (1.28)	0.027 (1.62)	0.022 (1.33)	0.017 (0.76)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.001 (0.44)	0.001 (0.31)	0.001 (0.28)	0.002 (0.78)	0.001 (0.40)	0.001 (0.46)	0.003 (1.64)
$\Delta$ Governance $_{j-i}$	0.047** (2.40)	0.045** (2.16)	0.047** (2.32)	0.124 (1.21)	0.044** (2.26)	0.050** (2.27)	0.105 (1.36)
$\Delta$ Bank concentration $_{j-i}$	0.000 (1.18)	0.000 (0.55)	0.000 (0.90)	0.000 (0.32)	0.000 (0.81)	0.000 (1.19)	-0.000 (-0.08)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.000 (-0.55)	-0.000 (-0.27)	-0.000 (-0.55)	-0.000 (-0.48)	-0.000 (-0.42)	-0.000 (-0.39)	-0.000 (-0.26)
Bilateral trade	-0.02*** (-4.15)	-0.024*** (-5.02)	-0.021*** (-3.76)	-0.039** (-2.41)	-0.023*** (-4.82)	-0.022*** (-4.05)	-0.068*** (-4.52)
Distance	-0.019* (-1.91)	-0.024** (-2.44)	-0.020* (-1.85)	-0.005 (-0.57)	-0.021* (-2.01)	-0.019* (-1.86)	-0.078*** (-3.81)
Contiguous	0.025 (1.64)	0.024 (1.69)	0.022 (1.54)	0.025 (0.93)	0.026* (1.81)	0.026 (1.68)	-0.013 (-0.55)
Same language	-0.005 (-0.54)	-0.004 (-0.41)	-0.003 (-0.37)	-0.004 (-0.30)	-0.006 (-0.70)	-0.002 (-0.19)	0.042*** (4.11)
Colonial link	-0.056 (-1.40)	-0.083* (-1.97)	-0.059 (-1.27)	-0.061 (-1.25)	-0.070 (-1.67)	-0.076 (-1.51)	-0.065 (-1.30)
$\Delta$ Regulation $_{j-i}$	0.006 (1.06)	0.008 (1.60)	0.007 (1.45)	0.006 (0.38)	0.006 (1.09)	0.005 (0.95)	0.002 (0.17)
$\Delta$ Real stock market return $_{j-i}$	-0.013 (-0.67)	-0.011 (-0.57)	-0.013 (-0.68)	-0.002 (-0.04)	-0.012 (-0.61)	-0.014 (-0.72)	0.011 (0.24)
$\Delta$ Real exchange rate return $_{j-i}$	-0.037* (-1.93)	-0.045** (-2.48)	-0.043** (-2.31)	-0.075 (-1.07)	-0.040** (-2.21)	-0.036* (-1.90)	-0.095 (-1.41)
<i>Jensen-Shannon distances:</i>							
Trust		-0.060 (-1.10)					
Individualism			-0.040 (-0.50)				
Hierarchy				-0.219 (-1.26)			
<i>Mean based distances:</i>							
Trust					-0.047 (-1.27)		
Individualism						0.080 (0.80)	
Hierarchy							0.606 (0.89)
Observations	225	221	221	88	225	225	90
R-squared	0.324	0.318	0.315	0.597	0.329	0.327	0.602
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes



Panel B: OLS regression Acquiring banks						
Independent variables:	Dependent variable: Cumulative abnormal return Acquiring banks					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta$ GDP per capita $_{j-i}$	0.028 (1.43)	0.026 (1.43)	0.022 (1.02)	0.028 (1.48)	0.024 (1.54)	0.024 (1.50)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.001 (0.35)	0.001 (0.33)	0.001 (0.42)	0.001 (0.34)	0.001 (0.45)	0.001 (0.43)
$\Delta$ Governance $_{j-i}$	0.039* (1.88)	0.046** (2.20)	0.052* (2.03)	0.039* (1.72)	0.046** (2.37)	0.052** (2.26)
$\Delta$ Bank concentration $_{j-i}$	0.000 (0.23)	0.000 (0.87)	0.000 (1.26)	0.000 (0.54)	0.000 (1.26)	0.000 (1.12)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.000 (-0.28)	-0.000 (-0.45)	-0.000 (-0.48)	-0.000 (-0.26)	-0.000 (-0.56)	-0.000 (-0.57)
Bilateral trade	-0.022*** (-3.39)	-0.022*** (-4.26)	-0.018*** (-2.79)	-0.025*** (-5.15)	-0.023*** (-3.94)	-0.021*** (-4.23)
Distance	-0.018 (-1.53)	-0.022** (-2.14)	-0.015 (-1.30)	-0.025** (-2.56)	-0.022* (-1.92)	-0.018* (-1.83)
Contiguous	0.023* (1.90)	0.020 (1.43)	0.027* (1.79)	0.020 (1.64)	0.027* (1.74)	0.026 (1.68)
Same language	-0.007 (-0.78)	-0.005 (-0.37)	-0.011 (-1.03)	-0.009 (-0.79)	-0.006 (-0.71)	-0.004 (-0.52)
Colonial link	-0.055 (-1.16)	-0.067 (-1.59)	-0.037 (-0.92)	-0.077* (-1.85)	-0.057 (-1.45)	-0.059 (-1.44)
$\Delta$ Regulation $_{j-i}$	0.008 (1.60)	0.008 (1.48)	0.008 (1.42)	0.008 (1.48)	0.006 (1.15)	0.007 (1.40)
$\Delta$ Real stock market return $_{j-i}$	-0.009 (-0.47)	-0.011 (-0.60)	-0.011 (-0.62)	-0.009 (-0.47)	-0.012 (-0.62)	-0.013 (-0.67)
$\Delta$ Real exchange rate return $_{j-i}$	-0.049** (-2.52)	-0.042** (-2.23)	-0.038** (-2.22)	-0.046** (-2.21)	-0.036* (-1.88)	-0.036* (-1.94)
Power distance index	-0.009*** (-2.92)					
Individualism		-0.001 (-0.17)				
Masculinity			-0.007 (-0.75)			
Uncertainty avoidance index				-0.007 (-1.02)		
Long term orientation					0.004 (0.76)	
Indulgence versus restraint						0.002 (0.60)
Observations	213	217	214	215	222	220
R-squared	0.339	0.315	0.331	0.317	0.326	0.328
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel C: OLS regression Acquiring banks					
Independent variables:	Dependent variable: Cumulative abnormal return Acquiring banks				
	(1)	(2)	(3)	(4)	(5)
$\Delta$ GDP per capita $_{j-i}$	0.020 (0.97)	0.030 (0.96)	0.032* (1.86)	0.025 (1.04)	0.022 (0.97)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.003 (1.19)	0.002 (0.72)	0.001 (0.55)	0.001 (0.32)	0.000 (0.27)
$\Delta$ Governance $_{j-i}$	0.116 (1.22)	0.119 (0.89)	0.033* (2.01)	0.049* (1.73)	0.053* (1.96)
$\Delta$ Bank concentration $_{j-i}$	0.000 (0.12)	0.000 (0.58)	0.000 (0.39)	0.000 (0.85)	0.000 (0.80)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.000 (-0.10)	-0.000 (-0.39)	-0.000 (-0.00)	-0.000 (-0.36)	-0.000 (-0.40)
Bilateral trade	-0.066*** (-4.53)	-0.009 (-0.55)	-0.026*** (-3.89)	-0.024*** (-3.39)	-0.024*** (-3.44)
Distance	-0.028* (-2.02)	0.012 (0.17)	-0.025** (-2.15)	-0.019 (-1.58)	-0.017 (-1.42)
Contiguous	0.076 (1.49)	-0.071 (-1.58)	0.030* (2.02)	0.023* (1.74)	0.027* (1.99)
Same language	0.030 (1.01)	0.025 (1.21)	-0.022** (-2.06)	-0.025*** (-2.77)	-0.020** (-2.13)
$\Delta$ Regulation $_{j-i}$	0.003 (0.19)	0.003 (0.14)	0.006 (1.16)	0.006 (0.96)	0.006 (1.01)
$\Delta$ Real stock market return $_{j-i}$	0.003 (0.07)	0.009 (0.16)	-0.009 (-0.49)	-0.009 (-0.47)	-0.010 (-0.55)
$\Delta$ Real exchange rate return $_{j-i}$	-0.081 (-1.22)	-0.062 (-1.06)	-0.038* (-1.90)	-0.041** (-2.08)	-0.043** (-2.20)
<i>Culture distance overall:</i>					
WVS - Jensen-Shannon (PCA)	0.040 (1.30)				
WVS -Mean-based (PCA)		0.039 (0.59)			
Kogut and Singh			-0.014*** (-2.82)		
Hofstede (PCA)				-0.007** (-2.10)	
Cultural distance overall (PCA)					-0.008*** (-2.81)
Observations	88	90	221	205	204
R-squared	0.603	0.579	0.352	0.350	0.353
Target country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7. Ordinary least square regression of cumulative abnormal returns (CAR) of target banks.**

The table shows the results of OLS regressions of cumulative abnormal returns of target banks over the period 1990-2015. The dependent variable is the cumulative abnormal return two trading days prior and two trading days after the announcement of the acquisition of acquiring banks. Abnormal returns are the real returns adjusted with by the expected returns. The expected returns are estimated with a market model using the MSCI world index as the return of the market. The independent cultural distance variables are absolute differences between acquiring country  $j$  and target country  $i$ . This table includes three different sets of cultural distance variables. In panel A, I include the Jensen-Shannon and Euclidean distances of cultural variables obtained from the World Value Survey (WVS). In panel B, I include the Euclidean distances of all six cultural dimensions of Hofstede (1980,2001). Finally, in panel C, I include overall cultural distance indices based on individual cultural value distances. Additionally, I control with differences  $\Delta(j-i)$  between acquiring country  $j$  and target country  $i$  in the; log of GDP per capita, percentage growth of GDP per capita, governance index of all six Kaufman et al (2009) governance indicators, the assets of the top three banks as a share of all commercial banks, private credit provided by the banking sector as a percentage of GDP, annual real stock market return, annual real exchange return. Beside differences between country pairs, I proxy for the bilateral trade link by log of imports from the acquiring country  $j$  to the target country  $i$ . Furthermore, I include indicator variables for whether a country pair share the same language, have a common border or have had a colonial link. Finally, I control with the geographic distance of weighted distance from Mayer and Zignago (2011). ). Detailed information of each variable can be found in the variable description list. I include acquiring country, target country and year fixed effects in all estimates and cluster standard errors by target country. I report the R-squared and the number of observations. Heteroskedasticity robust  $t$ -statistics are reported in parentheses. With respect to significance levels at 10%, 5% and 1% level I indicate it with \*, \*\*, \*\*\*.

Panel A: OLS regression Target banks					
Independent variables:	Dependent variable: Cumulative abnormal return target banks				
	(1)	(2)	(3)	(4)	(5)
$\Delta$ GDP per capita $_{j-i}$	-1.206** (-2.50)	-0.138 (-0.24)	-1.619*** (-3.06)	-0.636** (-2.77)	-0.907*** (-4.79)
$\Delta$ GDP per capita growth (%) $_{j-i}$	-0.027* (-1.73)	0.075* (2.03)	-0.055 (-1.15)	0.032 (1.01)	-0.001 (-0.05)
$\Delta$ Governance $_{j-i}$	1.115 (1.29)	-0.086 (-0.10)	0.946 (0.98)	-0.087 (-0.10)	-0.029 (-0.04)
$\Delta$ Bank concentration $_{j-i}$	0.026* (1.91)	-0.019 (-1.36)	0.044 (1.48)	0.009** (2.51)	0.018*** (4.75)
$\Delta$ Bank credit to GDP $_{j-i}$	-0.013 (-1.66)	0.016 (1.69)	-0.021 (-1.44)	-0.001 (-0.53)	-0.008*** (-3.41)
Bilateral trade	-0.320 (-1.10)	0.199 (0.97)	-0.551 (-1.29)	-0.290* (-2.03)	-0.357** (-2.49)
Distance	-0.874* (-1.72)	0.776 (1.55)	-0.824** (-2.49)	-0.545* (-1.82)	-0.860*** (-2.98)
Contiguous	-0.934* (-1.94)	0.742 (1.20)	-0.294 (-0.39)	-0.577 (-1.16)	-0.864** (-2.35)
Same language	-0.100 (-0.49)	0.030 (0.17)	-0.262 (-1.38)	0.253 (1.56)	-0.001 (-0.01)
Colonial link	-1.519 (-0.95)	2.109 (1.68)	-0.123 (-0.05)	-0.481 (-0.46)	0.719 (0.62)
$\Delta$ Regulation $_{j-i}$	0.066 (0.69)	-0.295* (-1.81)	0.129 (1.16)	-0.150*** (-3.17)	0.025 (0.45)
$\Delta$ Real stock market return $_{j-i}$	-0.958** (-2.43)	0.232 (0.58)	-1.305** (-2.38)	-0.316* (-1.90)	-0.586*** (-5.01)
$\Delta$ Real exchange rate return $_{j-i}$	-2.031** (-2.62)	1.204 (1.06)	-3.269 (-1.63)	-1.079*** (-3.19)	-1.774*** (-5.99)
<i>Jensen-Shannon distances:</i>					
Trust		-5.325** (-2.52)			
Individualism			-3.830 (-0.71)		
<i>Mean based distances:</i>					
Trust				-2.778** (-2.76)	
Individualism					-6.509*** (-3.87)
Observations	65	64	64	65	65
R-squared	0.804	0.814	0.806	0.818	0.821
Target country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: OLS regression target banks

Independent variables:	Dependent variable: Cumulative abnormal return target banks					
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta$ GDP per capita $_{j-i}$	-0.031 (-0.06)	-1.714*** (-13.91)	-0.313 (-0.49)	-1.180*** (-1.97)	-1.288*** (-3.37)	-1.188** (-2.39)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.085 (1.45)	-0.023*** (-3.05)	0.025 (0.45)	-0.064*** (-6.92)	-0.032 (-1.63)	-0.025 (-1.08)
$\Delta$ Governance $_{j-i}$	-0.172 (-0.16)	-0.752*** (-2.93)	0.947 (1.24)	0.059*** (4.53)	0.675 (0.75)	0.765 (0.78)
$\Delta$ Bank concentration $_{j-i}$	-0.010 (-1.40)	0.025*** (6.43)	0.011 (0.57)	0.036*** (7.81)	0.039** (2.54)	0.019 (1.09)
$\Delta$ Bank credit to GDP $_{j-i}$	0.013* (2.05)	-0.014*** (-6.73)	-0.001 (-0.08)	-0.016*** (-6.14)	-0.015*** (-2.89)	-0.009 (-0.95)
Bilateral trade	-0.018 (-0.14)	-1.392*** (-11.36)	0.245 (0.42)	-0.204*** (-4.98)	-0.297 (-1.41)	-0.452 (-1.17)
Distance	-0.089 (-0.18)	-3.325*** (-13.79)	0.537 (0.36)	-1.103*** (-8.87)	-0.457 (-1.37)	-1.308 (-1.53)
Contiguous	-1.056* (-1.99)	-2.702*** (-26.64)	-0.624 (-0.74)	-1.114*** (-1.73)	-0.229 (-0.59)	-1.211* (-1.96)
Same language	0.479 (1.58)	1.710*** (14.49)	0.600 (1.03)	0.168*** (5.09)	-0.214 (-1.65)	0.118 (0.38)
Colonial link	-0.432 (-0.35)	-3.952*** (-8.46)	-0.091 (-0.07)	0.168*** (3.30)	-0.280 (-0.30)	-2.108 (-0.88)
$\Delta$ Regulation $_{j-i}$	-0.472** (-2.59)	0.219*** (5.96)	-0.248 (-0.87)	0.132*** (4.86)	-0.067 (-0.41)	0.077 (0.70)
$\Delta$ Real stock market return $_{j-i}$	0.194 (0.66)	-0.712*** (-6.06)	-0.471 (-0.94)	-1.098*** (-7.10)	-1.098*** (-4.70)	-0.800 (-1.59)
$\Delta$ Real exchange rate return $_{j-i}$	0.536 (0.66)	-3.082*** (-11.57)	-0.605 (-0.39)	-2.591*** (-8.81)	-2.607*** (-3.75)	-1.681 (-1.50)
Power distance index	-0.603** (-2.10)					
Individualism		0.422*** (14.09)				
Masculinity			0.368 (1.18)			
Uncertainty avoidance index				0.622*** (9.38)		
Long term orientation					-0.208 (-1.23)	
Indulgence versus restraint						0.073 (1.33)
Observations	60	62	61	60	63	63
R-squared	0.808	0.817	0.801	0.818	0.802	0.801
Target country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel C: OLS regression target banks

Independent variables:	Dependent variable: Cumulative abnormal return target banks				
	(1)	(2)	(3)	(4)	(5)
$\Delta$ GDP per capita $_{j-i}$	-0.219*** (-1.37)	-0.219*** (-7.01)	-1.630*** (-5.73)	-1.607*** (-5.13)	-11.18*** (-7.70)
$\Delta$ GDP per capita growth (%) $_{j-i}$	0.086*** (1.18)	0.086*** (4.27)	-0.050*** (-3.85)	-0.041*** (-1.64)	-1.082*** (-7.06)
$\Delta$ Governance $_{j-i}$	-0.279*** (-1.28)	-0.279*** (-1.94)	-0.213 (-0.58)	-1.694*** (-2.75)	-3.19*** (-6.03)
$\Delta$ Bank concentration $_{j-i}$	-0.032*** (-5.83)	-0.032*** (-1.80)	0.045*** (5.13)	0.013*** (1.32)	0.332*** (6.25)
$\Delta$ Bank credit to GDP $_{j-i}$	0.008*** (1.62)	0.008*** (2.96)	-0.014*** (-4.00)	-0.010*** (-1.23)	-0.274*** (-6.88)
Bilateral trade	0.255*** (1.22)	0.255*** (2.26)	-0.579*** (-4.96)	-1.237*** (-3.04)	-7.12*** (-7.06)
Distance	0.859*** (1.20)	-1.669*** (-3.45)	-1.805*** (-7.19)	-3.272*** (-3.60)	-21.88*** (-7.32)
Contiguous	-0.480*** (-7.82)	-0.652*** (-3.52)	-3.483*** (-6.20)	-2.084*** (-6.07)	-10.69*** (-7.94)
Same language	1.132*** (6.97)	-0.701*** (-1.14)	3.471*** (5.48)	1.409*** (4.22)	1.31*** (7.9)
$\Delta$ Regulation $_{j-i}$	0.399*** (7.19)	0.399*** (3.64)	-0.113 (-1.54)	0.455*** (2.34)	6.77*** (7.6)
$\Delta$ Real stock market return $_{j-i}$	0.160*** (1.86)	0.160*** (3.21)	-1.162*** (-7.13)	-0.580*** (-2.86)	-9.69*** (-7.28)
$\Delta$ Real exchange rate return $_{j-i}$	2.101*** (1.81)	2.101*** (7.28)	-2.969*** (-6.11)	-2.174*** (-2.10)	-29.91*** (-6.99)
<i>Culture distance overall:</i>					
WVS - Jensen-Shannon (PCA)	0.402*** (2.75)				
WVS -Mean-based (PCA)		-0.843*** (-1.64)			
Kogut and Singh			1.154*** (5.29)		
Hofstede (PCA)				0.520*** (4.08)	
Cultural distance overall (PCA)					5.731*** (7.45)
Observations	25	27	63	58	58
R-squared	0.813	0.815	0.812	0.817	0.817
Target country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

Robust t-statistics in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 8. Statistical and economic significance of cultural distance variables**

This table shows the statistical significance in panel A. The table reports the coefficients of all the cultural value distances for all different models. The ordinary least square regression (OLS), the Poisson-Pseudo maximum likelihood estimator (PPML), the two stage least square regression with instrumental variables (2SLS). CAR is the cumulative abnormal return for 2 trading days before and after the announcement date of the merger. The coefficients are significant at \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Panel B reports the economic magnitude of all the cultural value distances for all different models. The percentages are calculated by the following equation:

$$Magnitude = \frac{\beta_i * SD_i}{SD_y}$$

In which  $\beta_i$  is the robust coefficient of independent variable  $i$ .  $SD_i$  is the standard deviation of independent variable  $i$ . And  $SD_y$  is the standard deviation of the dependent variable is the standard deviation of the dependent variable  $y$ . Distances of cultural values are the independent variable and the cross-border ratio or the target of acquiring bank's cumulative abnormal return. The magnitudes can be compared within models (vertically) but not between models (horizontal)

Panel A: Statistical significance		CBR <i>Cross-border ratio i,j</i>			CAR target	CAR Acquirer
	Model:	OLS	PPML	2SLS	OLS	OLS
<b>Cultural value</b>	<b>Measurement</b>					
Trust	Jensen-Shannon	-0.047**	-1.826	-0.426***	-5.42**	-0.052
	Euclidian	-0.045**	-2.156**	-0.325***	-0.148**	0.000
Individualism	Jensen-Shannon	0.054**	5.237***	4.055	-4.359	-0.033
	Euclidian	0.001	0.002	0.298	0.139	0.001
Hierarchy	Jensen-Shannon	0.071	5.277	-2.400	N/A	N/A
	Euclidian	0.002	-0.046	0.056	N/A	N/A
<b>Hofstede</b>						
Power Distance	Euclidian	-0.000	0.015	-0.039***	-0.579*	-0.009**
Individualism	Euclidian	-0.001	-0.306**	-0.035***	0.419***	-0.001
Masculinity	Euclidian	-0.005	-0.231**	-0.126	0.336	-0.006
Uncertainty avoidance	Euclidian	-0.001	-0.079	-0.033**	0.622***	-0.005
Long term orientation	Euclidian	0.002	0.141	-0.044	-0.207	0.004
Indulgence	Euclidian	-0.001	-0.122	-0.106	0.073	0.002
<b>Culture overall</b>						
Culture JS	PCA	-0.001	0.375	-0.062	0.402	0.039
Culture mean	PCA	-0.003	-0.282	-0.035	-0.843	0.039
Hofstede	Kogut & Singh	-0.004	-0.249**	-0.032***	1.196***	-0.013**
Hofstede 6	PCA	-0.001	-0.184*	-0.020***	0.520***	-0.007**
All values	PCA	-0.001	-0.053	-0.021**	5.731***	-0.008***

Panel B: economic significance (magnitudes)		CBR <i>Cross-border ratio i,j</i>		
	Model:	OLS	PPML	IV
<b>Cultural value</b>	<b>Measurement</b>			
Trust	Jensen-Shannon	-5.19%		-44.81%
	Euclidian	-15.1%	-5.12%	-45.60%
Individualism	Jensen-Shannon	5.14%	12.51%	
	Euclidian			
Hierarchy	Jensen-Shannon			
	Euclidian			
<b>Hofstede</b>				
Power Distance	Euclidian			-39.46%
Individualism	Euclidian		-5.25%	-33.39%
Masculinity	Euclidian		-4.21%	
Uncertainty avoidance	Euclidian			-32.29%
Long term orientation	Euclidian			
Indulgence	Euclidian			
<b>Culture overall</b>				
Culture JS	PCA			
Culture mean	PCA			
Hofstede	Kogut & Singh		-5.31%	-38.73%
Hofstede 6	PCA		-4.53%	-26.10%
All values	PCA			-27.49%



## Appendix D: Variable list

Dependent Variables:	Definition:
Cross-border ratio $ij$ :	the total number of majority cross-border bank acquisitions in year $t$ in which the target is from country $i$ and the acquirer from country $j(i \neq j)$ , as a proportion of all majority domestic and cross-border bank acquisitions in target country $i$ in year $t$ .
Cumulative abnormal return:	Cumulative abnormal returns two days prior and two days after the announcement of the acquisition. We obtain abnormal returns by estimating a market model using a world market index from 260 to 3 days prior to the announcement of the acquisition.
Control variables:	Definition:
GDP per capita	Logarithm of real GDP (current U.S. \$) divided by the average population. Source: World Development Indicators
GDP per capita growth	Annual percentage growth in real GDP. Source: World Development Indicators.
Governance index	The average of all six Kaufmann et al. (2009) governance indicators: political stability; voice and accountability; government effectiveness; regulatory quality; control of corruption, and rule of law. Each of the indices ranges from -2.5 to 2.5, with higher values indicating better governance.
Bank concentration:	Assets of the three largest banks as a share of all commercial banks' assets. Source: Beck and Demirgüç-Kunt (2009). Updates obtained from the World Bank's Global Financial Development Database described in Čihák et al. (2012).
Bank credit to GDP:	Private credit by deposit money banks as a percent of GDP. Source: Beck and Demirgüç-Kunt (2009). Updates obtained from the World Bank's Global Financial Development Database described in Čihák et al. (2012).
Bilateral trade:	Maximum of bilateral imports, exports between two countries. Bilateral imports (exports) are calculated as the total value of imports (exports) by a target's country from an acquirer's country as a proportion of total imports by the target's country. Source: IMF's Direction of Trade Statistics.
Distance:	Log of the circle distance (in km) between the countries' capitals. Source: Mayer and Zignago (2011).

Language:	Indicator variable equal to 1 when a country pair shares the same language. Source: Mayer and Zignago (2011).
Contiguous:	Indicator variable equal to one if a country pair shares a border. Source: Mayer and Zignago (2011).
Colonial link:	Indicator variable equal to one when a country pair ever had a colonial link. Source: Mayer and Zignago (2011).
Regulation:	An index of overall regulatory quality based on the first principal component of activity restriction, capital regulation, supervisory power and private monitoring. (Karolyi and Taboada., 2015). Source: Barth et al. (2013)
Real exchange rate returns:	Annual real bilateral U.S. dollar exchange return. The nominal exchange rate is corrected by the 2000 constant dollar consumer price index. Source: Thomson financial's Datastream.
Real stock market returns:	Annual real stock market return. Local currency country stock market return indices are corrected by the 2000 constant dollar consumer price index. Source: Thomson financial's Datastream

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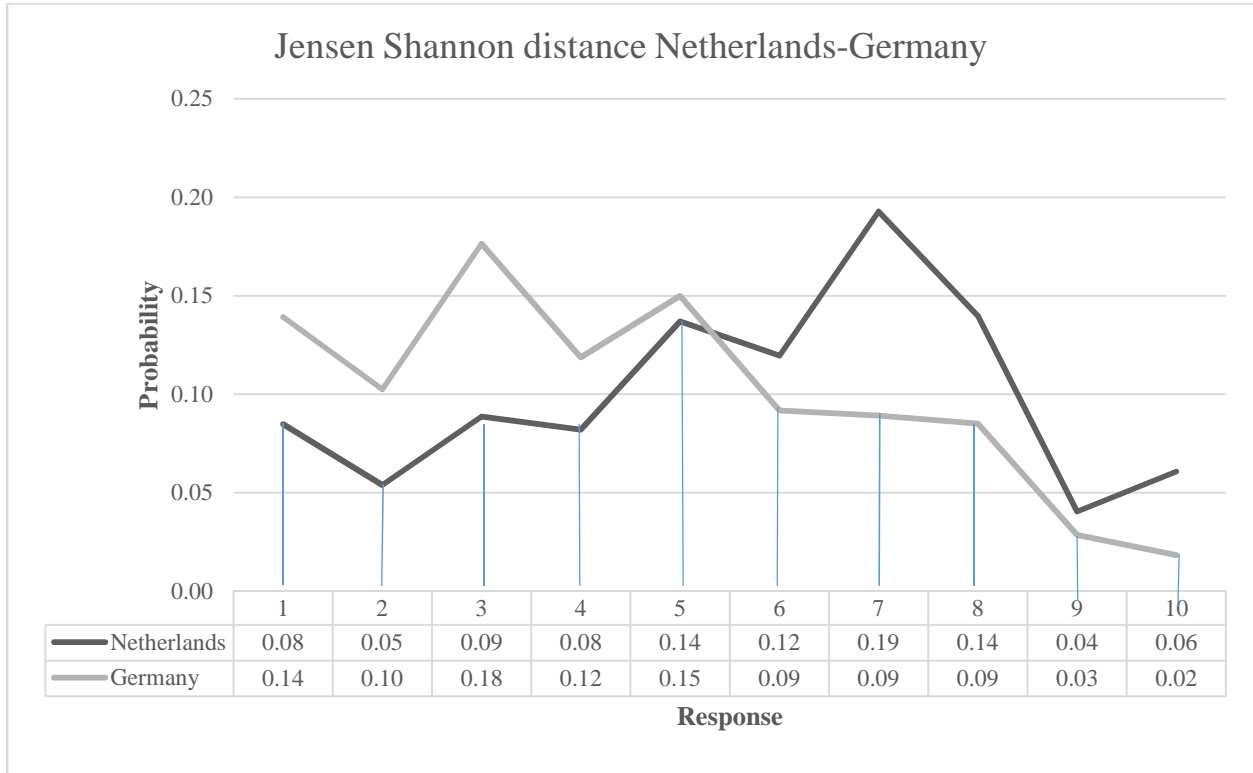
Cultural variables	Definition:
WVS:	
Trust(WVS):	The degree to which people in a country think they can trust other persons in their country. Source: The world value survey
Individualism (WVS)	The degree to which people in a country thing that there needs to be larger income differences as incentive for individual effort. Source: The world value survey
Hierarchy (WVS)	The degree to which people in a country have to be convinces to follow instructions of their superior. Source: The world value survey
Hofstede	Definition:
Power distance index	The degree to which the inequality of power is accepted by less powerful members of a society. Source Hofstede(1980)
Individualism versus collectivism:	The degree of an individualistic society. Members of an individualistic society only take care of themselves and their relatives. On the other hand, members of a collective society are integrated in a cohesive group which protects and helps them in exchange for loyalty. Source Hofstede(1980)

Masculinity versus femininity:	To which extent a society is more masculine or feminine. Masculinity represents heroism, achievement, assertiveness and a more competitive society. A Feminine society prefers cooperation modesty, caring for the weak and quality of life. Source Hofstede(1980)
Uncertainty avoidance:	The degree of uncomfortability of a society towards ambiguity and uncertainty. Source Hofstede(1980)
Long term orientation:	The level of thrift and the education as a way to prepare for the future. Source Hofstede(2001)
Indulgence versus restraint:	The level of free gratification of enjoying live and having fun. Source Hofstede(2001)
Overall Cultural distance	Definition:
Jensen-Shannon index:	The first principal component (PCA) of the Jensen- Shannon distances (equation XX) of trust, individualism and hierarchy (WVS).
Euclidean index:	The first principal component (PCA) of the Euclidean distances of trust, individualism and hierarchy (WVS)
Kogut and Singh index:	The Kogut and Singh (1988) cultural distance index. Based on the power index, individualism, masculinity and uncertainty avoidance of Hofstede (1980)
Hofstede six index:	The first principal component of all six cultural dimensions of Hofstede (1980, 2001)
All cultural values index:	The first principal component of the Jensen-Shannon distances of trust and individualism and all six Hofstede (1980, 2001) cultural dimensions.
Religious distance weighted:	Distance among countries based on their religion. Spolaore and Wacziarg (2016) use an approach based on religious trees to measure the distance between major world religions.

## Appendix E. Jensen-Shannon distance versus Euclidean distance

**Figure 2. Jensen-Shannon distance the Netherlands Germany:**

This Figure shows the Jensen-Shannon (J-S) distance between The Netherlands and Germany for the question of individualism in wave 5 of the World Value Survey (WVS). The J-S distance in this figure is 0.19. While the Euclidean distance is 0.12. The blue lines indicate the surface that overlaps both graphs. If this surface is larger the J-S distance is smaller.



**Table 9. Jensen-Shannon distance versus Euclidean distance**

This table shows the descriptive statistics of the Euclidean and Jensen-Shannon distances of the cultural values obtained from the WVS. Namely: trust, individualism and hierarchy. I report the mean, standard deviation and number of observation per cultural value distance. Moreover, I test whether the cultural value distances are significantly different using a *t*-test. I report the p-value between bracelets.

	Jensen-Shannon distance			Euclidean distance			T-test
	Mean	Sd	N	Mean	Sd	N	
Trust	0.155	0.001	15,072	0.199	0.001	15,072	(0.00)
Individualism	0.227	0.001	15,379	0.125	0.001	15,379	(0.00)
Hierarchy	0.131	0.001	6,523	0.134	0.001	6,523	(0.02)