Country risk in cross-border acquisitions

Evidence from global acquisition premiums

Ouren T. Schipperus

Student ID 321589

Written under the supervision of Dr. Sebastian Gryglewicz at the

Erasmus School of Economics

Burgemeester Oudlaan 50, 3062 PA Rotterdam

Email: 321589os@student.eur.nl

Abstract

Deal premiums are premiums paid on top of a target company's market value in mergers & acquisitions and represent the expected additional value the combination of two companies has to shareholders. This research investigates the hypothesis that the deal premium is not only influenced by company- and deal specific conditions, but also by country specific characteristics. The term country risk captures all relevant country specific risks for foreign investors and consists of political, economic and financial components. In this thesis I use a sample of 19,542 global transactions of which 5,727 are cross-border from 2002 to 2012. To investigate the effect of country risk on deal premiums I use for panel data techniques and a test of percentile differences. I find that country risk variables partly explain the deal premiums in cross-border transactions and that their effect is even stronger for low-income, high risk countries. Furthermore, I find evidence that of the cross-border effect, which means that foreign acquirers pay more than domestic ones. Finally, acquisitions premiums are not different between countries that differ in their level of country risk.

Key words: cross-border acquisitions, deal premium, country risk

Erasmus University Rotterdam, Department of Financial Economics

Introduction

This thesis investigates the effect of country risk on cross-border mergers & acquisitions (M&A) pricing. Some literature suggests the presence of a cross-border effect for M&A transactions that affects returns while others point out the relationship between country risk and foreign direct investments. Using a broad set of country risk indicators, I analyse price differences of domestic and cross-border M&A transactions by comparing deal premiums.

The term country risk is used to refer to risk that is country specific, influences investments made in that country and for which a multinational corporation (MNC)[1] is not able to diversify it away. Country risk can be comprised into three categories: political risk, economic risk and financial risk. In some literature, the term country risk refers to sovereign debt risk, which in many ways captures the same type of risk, but has just as much differences as similarities and hence is fundamentally different. The probability that a country will no longer be able to pay its debt obligations and consequently collapses into a default is what we call sovereign debt risk. This probability is most commonly measured by the three largest credit rating agencies the world knows: Moody's, Standard and Poor's (S&P) and Fitch. Country risk on the contrary, although often subject to various definitions, includes above all the crucial fact of the risk of investing or doing business across national borders. When an organisation makes an investment abroad, the risk of the country where the money is deployed finds itself in a default is only part of the total spectrum of country specific risks an MNC faces. Furthermore, despite the never slandering attention for sovereign debt ratings and its obvious connection to country risk, credit rating agencies did not accurately identify the political, economic and/or financial factors that contributed to the recent global economic crisis (San-Martín-Albizuri & Rodríguez-Castellanos, 2012).

Risk management is always important to anyone aiming for financial benefits with his/her investments and the preceding points out a possible gap in current risk assessment. Whether it concerns a multinational company, a hedge fund, entrepreneur or private investor, whichever risk preferences present, unknown risks are never desirable. It is therefore not

---

[1] A private equity investor or hedge fund can in this case be considered to be exposed to country risk in the same way an MNC is. This applies to the remainder of this paper.

surprising that some of the world's largest consultancy firms provide their client with services related to the topic of country risk. PWC for example has a department solely concerned with advisory on country specific risk and Baker and McKenzie extensively discuss it in their analysis on M&A trends. In a time of globalisation, cross-border investments are crucial for companies to grow and have caused a strong increase of foreign direct investments (FDI) over the past two decades. The utilised possibilities of doing business on a multinational or even supranational scale have unquestionably changed our world. The focus of this thesis is on whether or not it changed the way multinationals value their acquisitions targets abroad. If it did, we should be able to observe this in the deal premium paid in acquisitions. The deal premium is the percentage paid on top of the target's market value and generally represents a combination of (1) the deal benefits for shareholders caused by a higher market value of the two companies combined than the sum of them separately and (2) the negotiation strength of bidder and target. The hypothesis is that, if country risk affects deal prices, this deal premium should be lower for high risk countries than it is for the ones with low risk, controlling for other premium driving factors.

When traditional valuation techniques were developed in the 1970's and 80's, the gross of all company takeovers took place within national borders. Internationalisation was far from the magnitude it has evolved to nowadays and production was usually closely located to the customers. For financial economists this meant that a risk assessment of potential acquisition targets was done under equal macro-economic conditions and i.e. legal, cultural and political differences were only relevant on a regional level. The term market risk was developed as a term capturing all the relevant risk that could not be diversified away. In other words, diversification causes a more profitable risk-return ratio. From an investor's perspective, international markets (later in time repeated but for emerging markets) could be just as much part of a properly diversified market portfolio as categories including equity, bonds, real estate, commodities etc. However, international diversification and asset class diversification are not the same thing and stepping into the market of another country could mean exchanging market risk for locally present risks; for example an unstable economic environment, political unrest or the absence of shareholder rights. These are examples of what we call 'country risk' in this paper.

Just as globalisation expresses itself in an increase of cross-border investments, takeovers and mergers, it just as well does so in the activities of companies. Most of today's most known companies sell their products or services (almost) worldwide and deal with all sorts of national issues in countless countries. From an asset management perspective, investing in e.g. Coca Cola would not only mean an exposure to the soft drinks industry in the United States but also, or even more so, an exposure to changing demand for soft drinks in Brazil, Norway, Indonesia, etc. Because of this, some literature suggests the use of a country risk premium in addition to the market risk premium (among others Damodoran, 2004). Main argument in defence of a country risk premium is that a single market risk premium will not be able to capture the diverse forms and levels of risk exposure in the countries a company does its business. The existence of country risk however, does not necessarily imply there is need to incorporate a country risk premium in valuations. There is only need for this when country risk is a form of market risk that cannot be diversified away. Stulz, 1999, argues that because markets are segmented, investors are unable to optimally diversify among countries. Damodoran, 2004, gives a similar reason and states that countries are, despite the pace of globalisation, are not very much correlated, country risk is a form of market risk. Based on their argument I assume country risk is idiosyncratic risk for investors and even more relevant in M&A transactions, because MNCs lack the asset liquidity to withdraw or move their foreign investments that are 'locked' in entities and subsidiaries.

Summarising the above we define country risk and its relevance in financial economics as "country specific risks that are not captured by the benchmark risk factor but are increasingly becoming relevant for adequate valuation of cross-border assets". The goal of this thesis is to answer the following questions.

1. How do country specific risks influence the deal premiums paid in cross-border M&A transactions? With a sub-question;
   - Does the data sample confirm previous observations in literature of a cross-border effect?
2. Do acquirers pay different prices for targets in countries with different levels of country risk?

To answer these questions I collect an eleven year global dataset with both acquirers and target companies from many different countries. Both time-varying and cross-sectional effects are studied in a panel data model. To my understanding, the effects of country risk on M&A prices have not been studies at this magnitude and with defined focus until now. Hence, this thesis puts the composition of deal premiums (and prices in general) into a new perspective and adds value to the existing research on cross-border M&A transactions by taking many different country characteristics into consideration and by using a global dataset for both acquirers and targets. The test results mainly show that political risk factors influence deal premiums in M&A transactions. This effect is stronger for cross-border deals and becomes even more relevant for targets in developing countries. Economic and financial risk factors appear to be less relevant. Furthermore a test on differences in premiums between high- and low country risk (ranked on the characteristics used in the previous regressions) gives no significant evidence of different premiums for targets in high risk countries. The remainder of this thesis is organised as follows: in the next section I will describe the components of country risk and the current status quo in literature on cross-border M&A pricing. Section 3 discusses the dataset and methodology, together with some descriptive statistics. In section 4 I set out the panel data model used. Section 5 discusses the main results and section 6 concludes.

2. Background and existing literature

2.1. Acquisition motivations

A deal premium, or acquisition premium, is a premium paid in M&A transactions on top of the target's market value. The premium represents the additional value shareholders receive from the combined companies, which can be caused by one or a combination of the following situations.[2]

---

[2] Source: Aswath Damodoran, Stern School of Business at New York University.
http://people.stern.nyu.edu/adamodar/pdfiles/AcqValn.pdf

1. The acquirer believes the target company is undervalued. In an efficient market however this should be exploited more quickly by portfolio investors than M&A seeking firms.

2. The acquirer initiates the acquisition for diversification purposes and believes the post-merger company will have more stable cash flows and lower risk. Also access to new markets could be a motivation for an acquisition. It is unlikely that this motive will add value to shareholders if two publicly traded firms are involved. After all, markets are considered to be efficient enough to construct a diversified portfolio. It might however be a driver of deal premiums when private of closely held companies are targeted.

3. Synergy. Perhaps the most important driver of the deal premium. Synergies reflect additional value from the combined companies that arise because of:
   - Operational synergy that comes from an increase in operational performance due to increased growth or cost reduction
   - Financial synergy that includes tax benefits, increased debt capacity or cash slack.

4. The value of control. The restructuring of poorly managed firm can be an argument for the new owners to pay a premium on the market value. If so, they will be willing to pay a premium to gain control over the target company and start pressing reforms. A common stockholder will almost never be able to improve the company this way. But even if the acquirer is able to increase the operational performance with superior management, they will most likely not pay the full amount of this potential benefit to the existing shareholders of the target.

5. Managerial self-interest and ego. A motive hardly quantifiable, but probably understated in most transactions.

2.2. From motivations to acquisition premiums

Besides the assessment of potential increased earnings from an acquisition, we also need to consider the fact that not all of these benefits are expressed by the premium paid. The potential buyer will ideally pay a premium as low as possible and keep most of the benefits to itself. This is basically a matter of who receives the added value of the acquisition, the target's shareholders or the acquirer's. The outcome of this competition depends on the negotiation power of both firms. When there are for example multiple bidders for one

company, the one with the highest bid will most likely make the deal. Such a situation works like an auction and if we assume bidders will never pay a premium higher than the projected bidder gains, the bidder with the highest acquisition benefits will be able to pay the highest price and win the auction. If combined with asymmetric information between target and acquirer and prestige, an auction might even result in a payment that is higher than the intrinsic value of the target. This is what is called the 'Winner's curse'. In the end, the premium paid will depend not only on potential benefits for the acquirer but also on a combination of amount of information buyer and seller have and their negotiation strength.

2.3.   Drivers of premiums in cross-border transactions

The previous section has set out the motives for an acquisition and the reason these motives will express themselves in a deal premium. We now need to ask the question "which motives do acquirers actually pay for?" Sonenshine & Reynolds (2014) analysed these drivers and were mainly concerned with the question if more control over a firm, measured by the percentage of shares of the foreign entity acquired in the transaction, increases the deal premium. Their research showed that firms are willing to pay a higher premium to obtain more control over the target company abroad. The effect was even stronger for target in emerging economies. Next to their main factors of interest 'control', Sonenshine & Reynolds found that challenged deals, i.e. when multiple bidders are competing for the target, have higher deal premiums and that a strong currency of the target country increases the price as well[3]. Two similar studies but both with a different focus were performed by Rustige & Grote (2011)[4]. Their first paper focuses on the question why foreign acquirers pay more than domestic bidders in acquisitions In a univariate setting Rustige & Grote (1) find significant differences in average and median deal premiums between domestic and cross-border acquisitions, a phenomenon known as the 'cross-border effect'. The cross-border effect could indicate two processes at work in the market. It could mean that (1) buyers expect a higher added value from cross-border acquisitions due to e.g. new market access or synergies, (2) targets abroad are better able to exploit the deal profits to their own shareholders, or (3) a combination of the two. The existence of a cross-border effect feeds

---

[3] Sonenshine & Reynolds explain this observed exchange rate effect, which is opposite to what many previous scholars found, as that a high target country exchange rate converts into a higher premium in the acquires home currency. The sign of the result however changes for deals above $250 million.

[4] These papers were submitted by Marc Rustige in May 2011 as part of his PhD Thesis at the Frankfurt School of Finance & Management and were written with the support of Prof. Michael H. Grote.

the hypothesis that country specific characteristics influence pricing of acquisitions. The authors of this paper however did not look at country specific characteristics as an explanation for the cross-border effect, but explained the effect in the univariate setting with higher growth opportunities of foreign targets. When translating their results to the main objective of this thesis, we can say that acquirers pay a premium for the growth opportunities of foreign targets. In a multivariate regression the Rustige & Grote again find evidence of the cross-border effect. On average, foreign acquirers pay more than their domestic opponents. In line with Sonenshine & Reynolds, the outcomes show that challenged deals cause higher deal premiums. Additionally, deal premiums are significantly higher if the offer is a tender offer and if the deal is eventually completed. Diversifying deals and hostile bids cause lower bid premiums. Strikingly they did not find significant effects for the number of shares acquired (which was the main proxy for control in Sonenshine & Reynolds, 2014) but did so for the percentage held *before* announcement. All the results from Rustige & Grote (1) are robust for different deal premiums, calculated over other time spans than the initial 30 days window. Finally, they find that the cross-border effect remains after excluding financial investors as acquirer and deals paid in equity. In their second work in this sequence, Rustige & Grote attempt to clarify the cross-border effect a little more. Although they ascertain themselves of the fact that bid premiums in the acquisition of public firms depends on the target's location and confirm my previous observation that little research on the reason of this has been done, they solely focus on differences in investor protection between countries in Europe and the United States. With this they conclude that these country specific regimes of investor protection do not explain the differences in deal premiums. Most of the variables used in their previously discussed work were added as control variables and their effect remained unchanged.

The above discussed research on cross-border deal premiums gives valuable insights in the basic mechanisms working behind the prices paid in cross-border M&A transactions. It however does not explain the differences in deal premiums between countries, and neither gives it strong explanations for the cross-border effect. None of the models managed to obtain an explanatory power (measured by R^2) higher than 25%. Hence there are still many questions unanswered.

Moeller and Schlingemann (2005) also made an attempt to explain the cross-border effect. In their empirical study on over 4000 transactions between 1985 and 1995, they use announcement stock returns for the acquiring company as dependent variable. Basically, this analyses the cross-border effect one step further, as announcement returns are the market's response to acquisitions and their prices. Moeller and Schlingemann find evidence that cross-border acquisitions give the acquirer approximately 1% lower announcement returns than domestic transactions. This can be aligned with other research that found evidence for cross-border deals to increase deal premiums. Possibly, financial markets consider many cross-border deals to be too expensive, or think the promised synergy profits cannot be fully exploited. More specific; valuations of abroad targets could be done under equal assumptions as domestic targets but with higher expected profits from synergies/diversification/control etc., causing higher deal premiums. Cultural differences, distance and a different social/political environment could then result in a downward correction that is not discounted in the transaction price but is anticipated for by the market. Naturally, this hypothesis assumes that markets are efficient and decision makers at MNC are not hence the final answer on it is yet beyond the scope of this research. Moeller and Schlingemann explain the cross-border effect with several country characteristics. Announcement returns are lower if the target company is located in a country with a more restrictive institutional environment or has a French civil-law system. Other country specific conditions like the liquidity of the takeover market and geographical diversification did however not provide consistent conclusions among different countries.

In many ways, the work of Moeller and Schilingemann is closely related to the purpose of this thesis. They are one of the few that attempt to explain the distribution of deal profits with country specific characteristics. The allocation of these acquisitions profits are at the essential difference between their research and mine. Where they focus on bidder gains, measured by announcement stock returns of the acquiring company, my dependent variable is the deal premium itself. It is undetermined to which of the involved parties' benefit the premium will come, since the ratio between potential gains and exploited gains is unknown.

2.4.   Foreign direct investments

Foreign direct investments (FDI) are direct investments of one company into another company abroad. This can be by the acquisition of a foreign company or by expanding

current holdings abroad. It includes mergers & acquisitions, the creation of new facilities and plants, reinvesting overseas profits and intra company loans. In other words, cross-border M&A transactions are a sub category of foreign direct investments. Much research has been done into FDI and the drivers of these capital flows, mainly with purpose to find answers to the questions 'what does' and 'what does not' attract foreign direct investments. In this paragraph, I will set out some of the publications made on the topic in an attempt to shed more light on the mechanisms at work behind cross-border deals. After all, this research investigates pricing differences in M&A transactions that are driven by country risk and FDI and country risk appear to be related.

Despite the fact that many scholars investigated the relationship between country risk factors, none of them developed a workable model on what drives FDI in the first place. As far as my knowledge on the subject is concerned, all of them investigate one or a few country specific risk factors that are to be of influence for foreign direct investments. One of the first cross-section regression analyses of a political risk index on FDI inflows has been done by Jun & Singh, 1996, who found statistically evident indications that countries with lower political risk attract more foreign capital. Gastanaga, Nugent, & Pashamova, 1998 came with evidence that higher contract enforcements, lower corruption, and low expropriation risk can lead to higher FDI inflows. The effect of corruption on FDI was examined by both Wei, 2000 and Habib & Zurawicki, 2002, who both found a negative relation. On the contrary, a positive relation between corruption and FDI was found by Egger & Winner, 2005. They argued that corruption could act as a "helping hand" that encourages FDI. There has been much discussion on the relation between democracy and FDI, with scholars giving evidence for both a positive as a negative relationship. Where (Li & Resnick, 2003) assign the positive effect of democracy to an increase in property rights and claim that apart from this indirect impact democracy reduces FDI in a country, most scholars contest this idea. Harms & Ursprung, 2002, Jensen, 2003, and Busse M., 2004 all provide evidence of the claim that democracy does attract investments of multinational corporations. The most comprehensive research on political risk and FDI has been done by Busse & Hefeker, 2007. They examined the effect of the PRS componential political risk index[5] together with some economic and financial characteristics on FDI flow in the cross-

---

[5] More explanation on this index will follow in section 2.5.

section and time series. They found that not many of the political risk factors used provides a satisfactory explanation of FDI streams in the cross-section, but argue that this is mainly because of changing conditions over time. Using a fixed-effects model, a generalised methods of moments estimator with fixed country effects, they confirmed the predicted effects of political risk factors on FDI. Financial risk and its effect on FDI and portfolio investments has been examined by Harms, 2002, using a panel dataset including 55 developing countries and an 8 years period. He found that lower financial risk is associated with an increase in these capital flows.

2.5.   Country risk

The topic of country risk has been introduced already, but this section will discuss the issue and its components in more detail. A definition of country risk is given by Shapiro (2010, p. 226): "Country risk is the potential risk associated with making investments and doing business in a country". Country risk can be divided into the three categories 'political risk' 'economic risk' and 'financial risk'. Naturally, those three are related to each other through what is called 'political economy'. Note that as the acquirers in the data sample used later on will be mainly multinational corporations, country risk is here described from the perspective of MNC. Country risk could have a different impact on for example banks. The hypothesis again is that country specific political, economic and financial risk influences transaction prices in cross-border M&A transactions. To give proper interpretation of the results found in the statistical analyses, the exact composition of the different forms of country risk are set out below.

Political risk

In general, political risk refers to the risk that a government will unexpectedly change "the rules of the game" (Butler & Joaquin, 1998). The most extreme form of political risk is expropriation (nationalisation). In our case this would be the government of a country taking foreign property. Other examples of political risk include trade controls, tax and labour law changes, regulatory restrictions, war or the risk of a terrorist attack. These examples might sound reasonable to many, but the list of components and subcomponents of political risk can become very long. Furthermore, the changes affecting the value of foreign activities the most are often very unpredictable and difficult to anticipate on. The gain a little more insight in the concept of political risk an example is written down below.

"In the beginning of the '90s Argentina decided to link their currency, the Argentine peso (ARS), to the US dollar (USD) in order to ensure a stable purchasing power for the Argentines. Years of political unrest, the rise of populism, economic mismanagement by the government (at one point in time Argentina experienced three presidents in one week) led to a sudden end of the ARS-USD link, causing the ARS to fall about 100% and pushing Argentina in the biggest recession since decades. Many Argentines lost most of their savings and a foreign investment or loan settled in ARS were halved in USD."

Clearly, the impact of the decision to drop the fixed currency was immense. Not only for the national residents but also for foreign firms with investments deployed in the country. Within a very short period of time Argentina turned from a safe country to invest in (due to the fixed ARS-USD rate) into a very risky and unpredictable one.

Next to the some easily observable characteristics such as laws and regulatory actions, more subjective measures of political risk exist. Shapiro (2010 p. 230) refers to a "a countries attitude toward the private enterprise: whether private enterprise is considered a necessary evil to be eliminated as soon as possible or whether it is actively welcomed". This way of thinking can be considered as a little out-dated and more relevant in a time where a larger part of the world was under a communist regime, but nevertheless large differences in attitude toward foreign companies and investors are present. The existence of these differences are supported by an article placed on the website of the Wall Street Journal on the 3th of January 2014 and was written by D. Lunhow. The article pictures a divided Latin American continent with basically two types of countries: the ones that are open to trade and free markets (the 'Pacifics') and the ones that distrust globalisation and are protectionists (the 'Atlantics'). Like the name says, the Pacifics are the countries on the pacific side of the continent and include Chile, Colombia, Mexico and Peru. The Atlantics are mainly Brazil, Argentina and Venezuela.[6] The article observes and predicts an economic outperformance of the Pacifics over the Atlantics. The divide is delicacy for economist, because it allows the analysis of two economic models in a region that is historically, geographically and culturally speaking very homogeneous. However, to investors and MNCs with substantial

---

[6] The choice for this divide between countries on the Atlantic side and Pacific side is most likely a generalisation for commercial purposes of the newspaper. Uruguay is known to have a relative open economy and the small countries in the northwest of South America are not mentioned, neither are the ones in the central without coastlines.

investments in the Atlantics, these projections will be received with less enthusiasm. An example of how a country's attitude toward foreign enterprises can suddenly affect the value of activities a MNC has in that country is set out here below.

"In the 1980's, Venezuela discovered large amounts of natural resources, mainly oil, on its lands. The government, by then led by president Carlos Perez, decided upon the discovery the country no longer needed foreign investments. The country, so one thought, now became rich enough to buy production equipment abroad and start building an industry with national companies. Foreign companies were discouraged to make in Venezuela and quickly abandoned the country. After a few years, unemployment skyrocketed in Venezuela and industrial activity was nothing like it had been before. Reason for this was that even though the country was now able to make investments in machinery for production, it did not yet own the knowledge needed to properly operate plants and manage organisations. Foreign activity proved to be most important for this production factor, but was now absent."

This example makes clear how quickly and rigorous national governments can turn the business climate in a country upside down. This action, in contrast to the one in Argentina, was specifically aimed for foreign companies and their activities in Venezuela. Nationalism and populism can give fuel to a negative opinion against foreign enterprises and although those changes can often be foreseen, not all investments are liquid enough to withdraw. This is for example the case with cross-border acquisitions made, which are less easily reversed than portfolio investments.

Despite a consensus in the field of economics on the existence of political risk, there are no guidelines about what constitutes to that risk and neither are there clear tools to measure its existence. A number of organisations that model political risk ratings aim to quantify political stability in a country for comparable means. A good measurement of political risk captures political and social components that influence stability in a country, as well as type of law, shareholder protection, conflict and level of democracy. Some of the most known include PWC, Eurasia Group, Business Environment Risk Intelligence (BERI), Economist Intelligence Unit, Euromoney and PRS Group. The political risk measures of the last

mentioned, the PRS Group[7], will be used in the analysis later on, with the subcomponents as explanatory variables. Some of these components however may not prove to have to expected effect. Democracy for example is regarded as the most preferable government option in the western world but may not always lower political risk. For example, a country coming out of a period of dictatorship or non-democratic ruling often shows a decrease in government stability once democracy starts. A detailed description of the components of political risk that are used as variables in the analysis will follow in the methodology section. For now I will limit myself to an brief explanation of what the PRS Group is and my motivation to use their political risk index. After that, the PRS Group political risk index will be referred to with only by the term 'political risk factors'.

The political risk services department of the PRS Group delivers basically the service to which the company thanks its name. For commercial purposes the company has developed a model with 11 types of government intervention that could affect investments and that covers 100 countries. For each component a country receives a score on a scale of 0-12 or 0-6, where a higher score means less risk. I chose to include the index as a measure for political risk, mainly because it is the only political risk-rating agency that provides consistent, monthly scores over a large period of time. Collecting the necessary information myself would not only be very time consuming but also very error prone. Finally, the PRS political risk index is to my knowledge one of the most common measures for political risk used in academic research.

Economic and financial risk

The economic weaknesses and strengths existent in a country can be highly diverse. The overall purpose of the measures for economic risk is to assess the total sum of these weaknesses and strengths at a certain moment in time. Generally speaking will a country present low economic risk when its strengths outweigh its weaknesses, vice-versa means a high risk. Among the examples of economic risk are inflation, government deficit/surplus and GDP growth (per capita). Not only do these indicators relate to the the potential stream of cash flows in a country in a sense that a company will most likely sell more in an economically blossoming country. They also determine whether an economy needs a fix by

---

[7] PRS Group, ICRG methodology, 2014.

the government, e.g. by expropriation or tax increases. Here the link between economic and political characteristics becomes clear and like mentioned before the two are obviously connected. The better a country's economic outlook, the smaller the chance is that a national government will intervene. On the other hand, like we saw before in the examples, political decisions often have an impact on the economic situation of a country as well. Financial risk is close to economic risk, but mainly concerns a country's debt position. Countries might, even if economic conditions already improved, still collapse under their sovereign debt or interest obligations.

3. Data and methodology

3.1. Sample design

The data on the acquisitions are collected through Reuters Thomson One Banker and covers all deals from 2002 through 2012 with a deal value of $5 million or more and where at least 5% of the target company's shares were acquired in a transaction. Note that this sample does not only include cross-border deals but also domestic ones and it is a worldwide sample. Reason for the inclusion of domestic deals is that a cross-border variable can be measured. The data collection resulted in a sample of 19,542 transactions of which 5,727 are cross-border. Transaction prices in an unmodified form are not very useful for the purpose of this paper, because they are subject to differences in company size. More appropriate is the use of deal premiums that capture the synergy value to the acquirer. To calculate the deal premiums, market values (share price*#shares) of the targets are collected through Thomson Reuters Datastream. Next, the acquisition premiums are calculated by taking the difference between deal price and the market value of the target company 4 weeks prior to the announcement offer and divide this difference by the same market value of the target. All premiums are corrected for the percentage of shares acquired. A window of 4 weeks between the announcement offer and market capitalisation level is chosen to rule out the possibility of takeover rumours leaking into the market and causing a share price increase.[8]

---

[8] A window of four weeks is considered to be the standard in economic research, although some studies have shown that upcoming bids can cause stock price movements as early as 42 days prior to the announcement (Schwert, 1996).

Erasmus University Rotterdam, Department of Financial Economics

Finally, a handful of implausible bid premiums are left out. For this purpose, rather arbitrarily, all deal premiums higher than 6000% are eliminated.

Country risk, as explained before, expresses itself as political risk, economic risk and financial risk. The political risk factors are collected through PRS Group, an organisation that makes monthly quantifications of political risk based on several sources and experts.[9] The total political risk score has a maximum of 100 points and is constructed of twelve components. Five of those components contribute with twelve points to the total, six of them give six points and one has four points. PRS Group uses this methodology as of May 2001, having different components and weights before that time. Hence, together with the fact that most economic and financial risk factors are only available on an annual basis this led to the main data sample limitation of this research. Below I describe all the components of political risk. The top five, up until external conflict, have a weight of twelve points, the subsequent ones six points and the last one (bureaucracy quality) four points. Together these points can sum up to the maximum score of 100. A similar approach will be used to create a score for economic risk.

Political risk variables

Government Stability

Determined by the government's ability to carry out programmes and stay in office. A stable government manages to form policies in unity, has legislative strength and is supported by a large part of society.

Socioeconomic conditions

These conditions include unemployment, consumer confidence and poverty. If the conditions are unfavourable, it might destabilise the government. This is also one of the political factors in which economic problems in a country will show themselves in an early stage, before actual conflicts arise.

---

[9] For more a more detailed description of the PRS Group if refer to chapter 2.

Erasmus University Rotterdam, Department of Financial Economic

Investment profile

Most of the conditions for investment are covered by financial and economic risk factors, leaving the risk of expropriation, profits repatriation and payment delays as forms of political risk. The term 'shareholder rights' is often used in other literature when referring to this type of political risk. A low degree of shareholder rights indicates a high risk of above-mentioned actions. Moeller & Schlingemann, 2005 use different types of legal systems to proxy for shareholder rights and the degree of corporate governance[10].

Internal conflict

An internal conflict can greatly influence the government, e.g. through a civil war, terrorism/political violence or civil disorder.

External conflict

Naturally, external conflicts include an all-out war, but it just as well includes foreign pressure, sanctions and trade restrictions. Where war destabilises a country completely, foreign pressure can influence optimal allocation of resources.

Corruption

Corruption expresses itself in financial corruption and what I call 'relational corruption'. Financial corruption can make it difficult to conduct business because of special payments and bribes to be paid. Relational corruption however forms a bigger treat to foreign investors. Patronage, nepotism, job reservations, favour-for-favours, secret party funding and close ties between politics and business might cause such a strong public dissatisfaction when suddenly revealed that it results in an overthrow of the government. Habib & Zurawicki (2002) investigated the relationship between foreign direct investments and corruption and used the publicly available Corruption Perceptions Index from Transparancy International. Transparancy International basically combines thirteen different data sources that provide perceptions of business people and country expert of the level of corruption in

---

[10] The legal systems include; English, French, German, and Scandinavian. "English or common-law based systems are considered to the highest degree of shareholder rights, whereas French civil-law based systems are considered to provide the weakest rights" (Moeller & Schlingemann, 2005), pp. 552

Erasmus University Rotterdam, Department of Financial Economics

the public sector and combine it into a 0-100 score on corruption.[11] The research gave evidence of a negative relationship between FDI and corruption.

Military in politics

History proved us that military influence can cause undesirable outcomes, mainly because it undermines democracy in a country. Strong military involvement can be caused by internal or external conflicts and an unstable government gives opportunity to military takeover. A country's inhabitants might even support the last situation if democratically chosen leaders systematically fail.

Religious tension

Religious tension can vary from suppression of religious freedom, a single religious group trying to dominate the government or replace civil laws by religious laws to the desire of religious group to express their identity from religion rather than from their country.

Law and order

A country is less risky for foreign investments if it has both a strong legal system and can maintain order based on the laws. From a business perspective, one would prefer an acquisition target in a country with clear laws concerning employees' strikes combined with strong compliance and actions against infringement. Several studies on FDI and M&A transactions make use of measurements for legal protection of (intellectual) property and shareholder rights, as it often proves to be of great importance for the allocation of capital. Examples of such measures are the Ginarte and Park Index of intellectual property (Park, 2008) and the legal system of a country to proxy for shareholder rights, developed by La Porta et al (see LLSV 1997 and 2000).

Ethnic tension

Opposing groups of different ethnic backgrounds that demonstrate intolerance based on racial, nationality or language divisions are a political risk of a country. Ethnic tension is often closely related to the threat of a terrorist attacked or an outbreak of large-scale public

---

[11] 2013, Transparancy International, CPI

disorder. It can also express itself in less violent manners, e.g. in Belgium the divide between a French and a Dutch speaking part has repeatedly caused tension in the country.

Democratic accountability

Although the concept is often used for the level of democracy we experience in North America and Western Europe, a country can be democratic to many extends. The time a government serves, the degree to which elections are fair, the presence and number of active political parties/opposition, protection of personal liberties etc. determines the level of democracy. Jensen (2003) debates the fact that democracy decreases political risk, as is the consensus among scholars. According to his work, some dissidents however challenge this thought and argue that governments that minimize political risk attract multinational firms and democracy does not necessarily do so. Jensen his research however concludes that democracy does attract foreign capital and PRS Group thus far comes to the same conclusion.

Bureaucracy quality

If the institutions in a country are able to function without political steering it relaxes situations of political unrest, i.e. a timespan without a stable government. PRS Group uses the term 'cushion', which clearly indicates this component can only temporarily stop an increase in country risk.

Economic and financial risk variables

Most of the known macro-economic indicators to measure a country's performance are economic risk factors that contribute to country risk. While in this research quantified as a degree of risk, many investors turn this methodology around and value country characteristics on the advantages they provide for their investments. For example, in terms of country risk high GDP growth means low risk, but business people normally consider high growth countries as a good place to earn some nickels, discretely said. High GDP growth means high cash flows and thus high return on investments. The development of a model that includes all the relevant economic and financial characteristics of a country would result in an extensive model and to my best knowledge such a model has not been developed before. I limit myself to the most obvious indicators of economic performance, which results in the following five country risk variables. For comparative means later on in

this paper, I created a total score for economic/financial risk using a method comparable to the one used to sum political risk factors. First, all the individual economic and financial risk variables listed below are ranked from low to high and divided by the total number of observations, multiplied by 100. This is their score for economic risk, where a higher score indicates better conditions and hence, lower risk. For the factor inflation, the optimum is set to 2%, which will receive the highest score of 100 point. All of these scores are then averaged to come to a total score for economic risk on a scale from 0-100. For simplicity I have chosen not to distinguish between economic characteristics and value them as equally important.[12] This method is basically equal to the one used for political risk, but that total score already came turnkey with the data on political risk. The economic/financial score and the political one are then averaged to create a total country risk score.

GDP per head

National income per citizen, also called purchasing power per capita, indicates the amount of money a person in a country has to spend. It is a far more useful measure when looking at risk than just GDP, as it says something about the wealth of citizens. Having a large customers market is helpful if you are a company planning to do business abroad, but they also need money to spend. Countries with high income per head are usually less risky, some exceptions barring of course. Most countries that score well on political risk will be likely to have a high GDP per capita, but visa-versa not necessarily. Qatar for example has the highest purchasing power per capita in the world, but this is mainly because of the combination of a few extremely rich and a small population.

Real GDP growth

This component was quickly debated above and is known to strongly affect investment decisions worldwide. High GDP growth usually attracts the attention of investors and firms that desire to benefit from the growth. Economies with high GDP growth are most commonly known as ' emerging markets'.

---

[12] PRS Group for example assigns different weight to the economic and financial risk factors they use. However, because their reason for this remain unclear to me, I decided to value each of the factors equally.

Annual inflation

High inflation makes a country an unattractive business location. Inflation close to or below 0 on the other hand is maybe just as undesirable because it discourages consumption. The European Central Bank usually aims for a stable inflation of 2%. It is for that reason that an inflation of 2% receives the highest score for this component.

Current account as % of GDP

The higher this indicator, the more open an economy is. Many studies pointed out the importance of an open economy for economic development, especially with smaller countries. Moeller & Schlingemann (2005) used the World Bank's index for Economic Free of the World (EFW) as a measure for economic freedom.

Foreign debt as % of GDP

A large debt to other countries means a high risk that one creditor will claim the concerning country's default if payments come due. Obviously, these countries will most likely also experience other economic and/or political problems and an actual default rarely happens only because of high debts but also on for example the government's ability to construct a trustable restructuring plan. Nevertheless limits a high foreign debt the country's strength to overcome economic problems. An example of this was seen in some European countries during the Euro crisis when countries had to increase their expenditures but already had debt levels above 100% of their GDP.

Control variables

Following Sonenshine & Reynolds, 2014, I check if the variable 'control' influences deal premium. Control is measured by the percentage of shares acquired in the transaction. Since a number of studies (Sonenshine & Reynolds 2014; Harris & Ravenscraft 1991; Swenson 1993; Dewenter 1995; Froot & Stein 1991) found evidence that exchange rates influence prices paid in cross-border mergers and acquisitions I include the deal exchange rate[13] between target and acquirer as a control variable. More specific, it is expected that there exist a positive relationship between the target country's exchange rate and the deal price.

---

[13] This is the exchange rate at the time when the bid was made and is reported as deal characteristic in the Thomson One Banker deal section. The exchange rate represent the ratio of acquirer currency/target currency.

This means that a strong foreign currency causes a price increase for the acquirer if the deal price is transformed to his home currency. One could of course argue that the exchange rate is a form of financial country risk, because it is a country specific characteristic expected to influence the deal premium. However, I chose to include it as a control variable because I consider the exchange rate to be a result of many other conditions presents in a country and not a solid characteristic by itself. Next, market sector Standard Industrial Classification (SIC) codes are added as control variable to capture the level of synergies resulting from horizontal integration. This control variable is likely to contain a fair degree of bias, caused by the presence of investment firms among the acquirers, e.g. private equity firms and hedge funds. These type of acquirers do strive for synergies in their deal, but as they are classified by their SIC code as a financial investor and their target rarely are, no sector integration is signalled. To fully control for synergies in M&A transaction we would need knowledge of the portfolio companies of financial investors and adjust for vertical integration synergies. The first mentioned adjustment is not possible because of data limitations. To allow a certain degree of vertical integration synergies into the control variable I use the first two digits of the SIC code, which represent the companies major group. A dummy variable measures if target and acquirer are part of the same major group. Because with pure mergers an acquirer and target firm are absent, we expect that deal premiums are lower for those type of acquisitions. A merger dummy variable that flags deals that are a merger is added as a control variable. Finally, as both Sonenshine & Reynolds, 2014 and Rustige & Grote found, 2011(1) found statistically significant effects of the deal value and challenged deals on risk premiums, I include the principle announcement offer and a 'challenged deal' flag as control variables. A positive sign for both of these variables is expected, indicating higher premiums for large and/or challenged deals.

3.2. Sample description

Table I displays the summary statistics for the full sample. What stands out are the standard deviations of the political risk factors, they are specifically small, indicating sticky risk factors. Also for many political risk components, the lowest score of 0 is never assigned. For external conflict no country received a lower score than 4.5 out of 12 over the eleven-year period. Possible explanation for this observation is the relative small amount of acquisitions in high-risk countries. As will be described in the next paragraph, most of the acquisitions were done is developed countries in Western-Europe or North America and very few beheld

a country in an emerging region, even leaving out the most high-risk countries. The deal premiums show large standard deviations and high positive extremes, but minima just below zero. The same pattern holds for the deal values. This indicates an asymmetric distribution for the deal premiums and transaction prices. Looking more closely at the distribution of these time series we indeed observe a positive skew distribution with kurtosis for both variables. This occurrence is rather normal with financial data and the most straightforward solution is a natural logarithm transformation. Such a transformation is also applied to the economic risk variables that are not yet scaled to GDP. To deal with negative values in the ln transformation I copied the formula used in Busse & Hefeker (2007).

$$y = \ln(x + \sqrt{x^2 + 1})$$
(1)

This method is preferred over other transformation for zero's or negative value, because the sign of x is maintained. All numeric values of x are now useful in a regression but without losing the information their negative values contain. The transformed values for deal premium and deal value show a much more normally distributed, although the deal premiums still show particularly high kurtosis. Furthermore, the differences in distribution between domestic and cross-border deals are small as shown by graphs I and II. The actual values however do differ. Keeping one of the purposes of this thesis in target, namely the presence of a cross-border effect in M&A transactions, I performed a two-sample T-test on the average deal premiums for domestic and cross-border deals. The outcome of this test is shown in Table II. We observe that cross-border deal values are significantly higher than their domestic counterparts. This could indicate a difference of the effects of country risk variables between domestic and cross-border deals. Finalising the summary statistics, the maximum percentage of shares acquired is 200%, which might appear odd at first but includes 100% mergers between two companies. The deal value reported by Thomson One Banker is based on a 200% shares acquisition, so for proper interpretation of the deal premium in those cases the variable 'shares acquired' are set to 200%.

Table I: Summary statistics

Variable	Mean	Standard deviation	Min	Max
Deal premium	2.4	77.3	-1.0	7900.0
GDP growth	4.1	4.2	-33.1	54.2
GDP per capita	17451.3	19918.8	1.9	111913.2
Inflation	4.8	7.6	-32.8	142.5
Current account %GDP	-0.1	8.7	-65.1	48.2
Budget balance %GDP	-1.4	5.2	-30.7	40.3
Foreign debt % GDP	107.3	311.8	0.0	5319.6
Deal size	556.1	2630.2	5.0	98189.2
Shares acquired	47.3	38.1	3.0	100.0
Industy dummy	0.7	0.5	0.0	1.0
Exchange rate	0.6	0.6	0.0	3.8
Government stability	8.3	1.7	2.0	25.5
Socioeconomic conditions	6.9	2.5	0.0	11.0
Investment profile	9.8	2.3	0.0	12.0
Internal conflict	9.7	1.4	0.0	12.0
External conflict	9.7	1.4	0.0	12.0
Corruption	3.1	1.2	0.0	6.0
Military in politics	4.3	1.5	0.0	6.0
Religious tension	4.9	1.2	0.0	6.0
Law and order	4.3	1.5	-5.0	65.5
Ethnic tension	4.3	1.2	0.0	6.0
Democratic accountability	4.6	1.6	0.0	6.0
Bureaucracy quality	2.8	1.2	0.0	4.0

This table displays the statistic summary of the variables includes in the analysis. Averages, standard deviations, maximums and minimums are taken over the entire sample period without differentiation on countries.

Figure I: Histogram of the deal values by cross-border. The left hand panel shows the distribution for domestic deals, the right hand one the cross-border deals.

Distribution of deal values
Domestic deals

Distribution of deal values
Crossborder deals

All values are natural logarithms
Mean = 4.849
Std. dev. = 1.822
Skewness = 0.749
Kurtosis = 2.993

All values are natural logarithms
Mean = 5.285
Std. dev. = 1.829
Skewness = 0.467
Kurtosis = 2.595
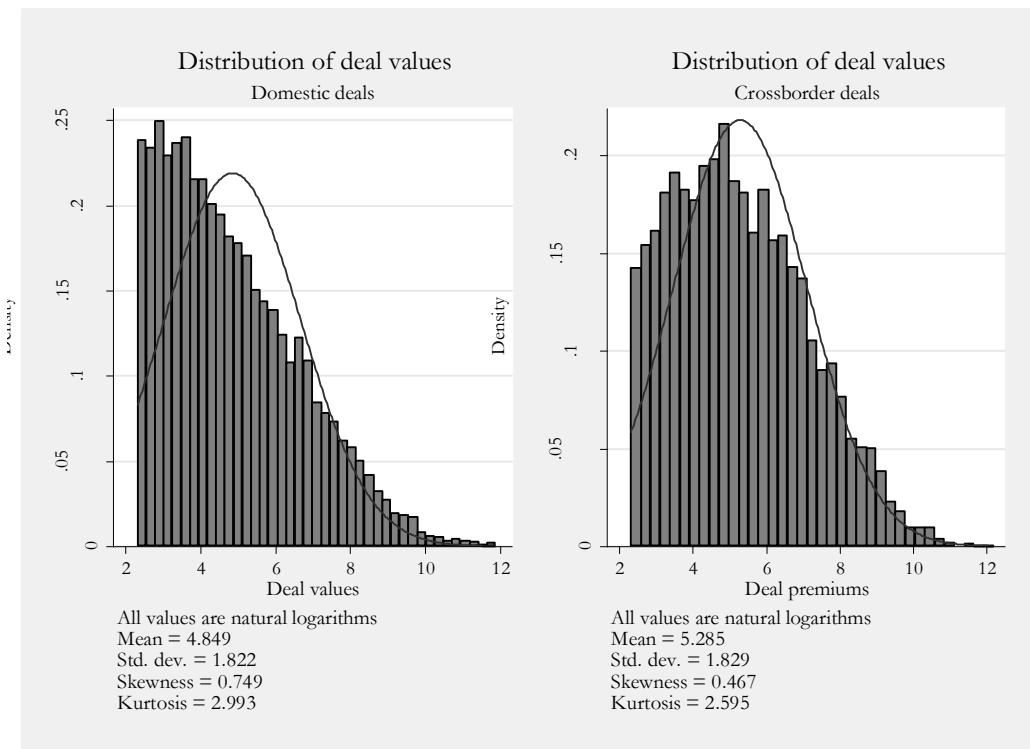
Figure II: Histogram of the deal premiums by cross-border. The left hand panel shows the distribution for domestic deals, the right hand one the cross-border deals.

Distribution of premiums
Crossborder deals

Distribution of premiums
Domestic deals

All values are natural logarithms
Mean = 0.103
Std. dev. = 0.395
Skewness = 7.958
Kurtosis = 115.237

All values are natural logarithms
Mean = 0.337
Std. dev. = 0.762
Skewness = 4.132
Kurtosis = 30.081
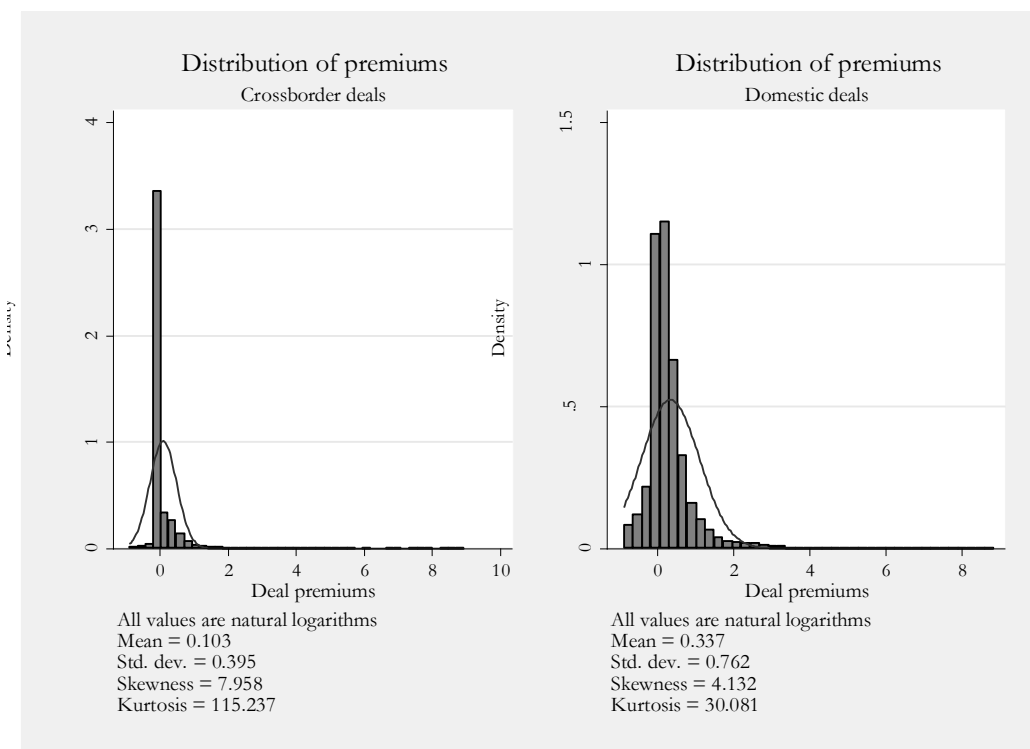
Table II: Deal values

	Mean	Standard error	Min	Max
Domestic	526.63	22.36	5.00	72671
Cross-border	627.34	34.51	5.00	98189
Combined	556.13	18.77		
Difference	-100.72	41.23		
Two sample T-test on means	T(19639) =	-2.44		
H0: difference in means = 0				
H1: difference in means ≠ 0	p =	0.0146		
H1: difference in means < 0	p =	0.0073		

Deal activity and premiums

As pointed out above, most of the mergers and acquisitions took place in developed countries, mainly the United States, Canada, Australia, the United Kingdom, France and South Korea. About 60% of all transactions involved a target company in one of those seven countries. Nevertheless, a fair amount of deals concerned targets in emerging economies of the last two decades, including China and India, or the Asian 'tigers' of older times Singapore, Hong Kong and Taiwan. At first sight, no clear differences in deal premiums appear themselves between the developed countries and the emerging or recently emerged ones. Deal values do appear to be slightly lower for lesser-industrialised countries though. A summary of the 25 target countries with the most acquisitions can be found in panel A of Table III.[14] It displays the number of transactions and average premiums of the 25 target countries with the highest deal activity in the sample period. In panel B of the same table we find an overview of the acquisitions per year. Although it is hard to identify a pure pattern over the years, the very low premiums in pre-crisis year 2007 stand out. Possibly, stock prices are high or even overprices in times of economic peaks, causing low premiums. Maybe even more interesting is the absent recovery of deal premiums for cross-border deals in the crisis years 2008 and 2009 while domestic deal premiums go up quickly. Furthermore we can see that over the years, cross-border premiums are more volatile and on average

---

[14] A table with deals and premiums for all the countries in the sample can be found in the appendix

higher than domestic ones.[15] This observation can be both confirmed and explained by Figure III, which is a scatter of the deal premiums for domestic versus cross-border deals. We see that, the premiums for domestic deals are more focussed towards their mean, while cross-border premiums are more spread and with higher extremes. A two-sample T-test, similar to the one performed before on deal values, shows however that the means of cross-border premiums are not significantly different from domestic ones.

Figure III: Two boxplots of the deal premiums against the cross-border dummy variable. We observe a high clustering of premiums around 0 for the domestic sample (most upper graph) and a wider spread cross-border sample below.

---
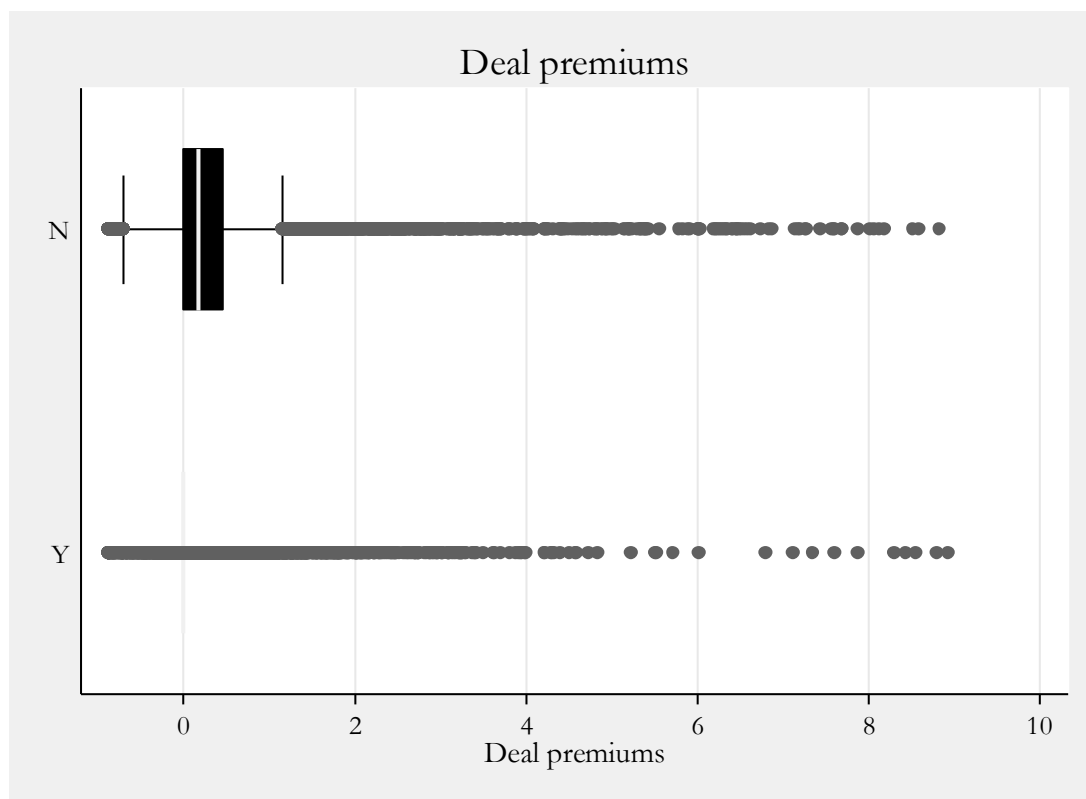
[15] The attentive reader will notice that in Table III the total average deal premiums are different in the two panels. This is solely due to the fact that panel A shows a small sample of the total and the values in panel B are equal to the ones in the continues version of Table III in the appendix.

Erasmus University Rotterdam, Department of Financial Economics

Table III: Summary statistics on domestic and cross-border deals

Country	# Total deals	# CB deals	Mean pr.	Mean pr. CB	Year	# Total deals	# CB deals	Mean pr.	Mean pr. CB
	Panel A: Overview of the transactions by target country					Panel B: Overview of all transactions by year			
United States	4091	691	7.63	6.64	2002	1233	296	4.41	1.29
Japan	3281	298	0.52	0.34	2003	1447	356	8.58	3.28
Canada	1391	536	4.45	2.66	2004	1499	399	6.96	18.68
Australia	1154	513	3.45	0.44	2005	1827	545	3.50	4.19
United Kdom	937	424	0.94	0.68	2006	2026	607	2.08	5.35
Korea, Rep.	931	98	2.75	7.01	2007	2412	810	0.66	0.47
China, P. Rep.	811	140	-0.16	0.21	2008	2132	679	3.12	0.45
Hong Kong	712	259	0.86	0.53	2009	1880	478	4.90	0.81
France	558	205	0.32	0.43	2010	1788	592	2.13	2.57
India	544	280	5.67	9.79	2011	1668	485	1.05	1.37
Germany	399	233	0.64	0.48	2012	1628	480	3.35	9.14
Singapore	370	203	0.42	0.54	Total	19540	5727	3.45	3.87
Malaysia	344	93	1.20	0.30					
Norway	270	114	1.44	0.41					
Italy	262	72	0.35	0.14					
Spain	254	70	0.56	1.50					
Thailand	239	72	2.72	0.36					
Taiwan	207	48	4.89	0.43					
Sweden	189	92	11.02	21.98					
Indonesia	183	124	5.07	7.22					
Brazil	174	76	27.19	44.25					
South Africa	149	49	1.03	0.98					
Switzerland	149	58	0.48	0.21					
Russia	148	42	3.64	1.67					
Netherlands	140	75	0.50	0.29					
Total	17887	4865	3.50	4.38					

Panel A of this table shows the 25 target countries with the highest amount of transactions in the sample period and the premiums paid. The amount of deals and average premiums for cross-border transactions are specified separately. Panel B displays transactions by year, again together with average premiums and a specification for cross-border deals.

4. Model

"In the case of time-series cross-sectional data the interpretation of the beta coefficients would be "...for a given country, as X varies across time by one unit, Y increases or decreases by β units" (Bartels, Brandom, 2008).

4.1. Panel data

The starting point is a linear regression model under the GLS assumptions with the deal premium as dependent variable and the ones mentioned above as independent variables. Important to note is that we are dealing with a non-continues time series combined with cross sectional components. As mergers and acquisitions happen randomly over time and independently to each other (at least that is the assumption for now), we observe points in time were no dependent variable exists and some points (days) with multiple transactions. Countries of the target company are cross-sectional components. Due to the nature of this dataset, I will use panel data, also called longitudinal data, techniques for the analysis such that both the time series components and cross-sectional components will come to their right. Traditional regression techniques could also work on panel data, but come with the risk that the estimates of coefficients are subject to omitted variable bias. Panel data techniques allow us to control for some of this bias, e.g. if variables differ between groups but are constant over time for these groups.

A panel data model basically comes in three different forms: the 'fixed-effects model', the between-effects model' and the 'random-effects model'. The difference between the three solely concerns the question 'what is being measured in the panel data?' The fixed-effects model explores the within entity variation, in other words the time-varying difference between predictor and outcome variables. It includes the effects of omitted variables that affect the dependent variable cross-sectional but do not vary over time. All the cross-sectional units, in this case the target countries, do then all get a different intercept. A 'natural' difference between countries that makes one more profitable for acquirers than another could be present. For example, one might be culturally or historically more closely related to the other in such a way that synergies of the transaction are higher, or a country could just be popular for whichever reason so. The fixed-effects model corrects for this possibility by estimating dummy variables, which is termed the least squares dummy

variable approach (LSDV). A LSDV approach is similar to using country dummies in a regular OLS regression and hence it takes one degree of freedom for each cross-sectional entity in the sample.

Instead of the usual equation for pooled least squares

$$y_{it} = \alpha + \beta x_{it} + v_{it} \tag{2}$$

Which has y_{it} as dependent variable, α as intercept and β is a *k x 1* vector of parameters that has to be estimated on y_{it}, we use a transformed version that allows for fixed-effects

$$y_{it} = \beta x_{it} + \mu 1\, D1_i + \mu 2\, D2_i + \cdots + \mu N\, DN_i + v_{it} \tag{3}$$

where D1 is the dummy variable for the first target country, D2 for the second target country, and so on. Important to note is that the intercept of formula (1) has been removed to avoid the dummy variable trap. The country risk variables and control variables as described in section 3 are still all captured by the first term, βx_{it}. To understand the nature of a fixed-effect regression model, it is important to distinguish between 'within', time-varying effect and 'between', time fixed effect. Because all the differences between countries will be soaked up by the country dummies, the effect of the independent variables *x* will only include the changes within the countries. The model does however show how much of the total variance is due to differences across entities, which is represented in the results by *rho*.

The between-effects model captures the variation between entities but assumes these effects do not vary over time. It is therefore the counterpart of the fixed-effects model and its results can usefully be combined with the fixed-effect results. Basically, the between-effects model is equal to averaging all variables over time and running a regression on a collapsed dataset of means, because time-varying effects are assumed to be constant, and purely estimates cross-sectional information in the panel. Formula 4 shows how the formula of such a model would look like.

$$y_i = \beta x_i + v_i \tag{4}$$

We can see that the time-series components *t* are now dropped and the model only takes differences in *x* when *x* changes between countries.

Working with different incept terms for different entities which do not vary over time, as in the fixed-effects model, and combine this with a cross-sectional analyses like in the between-effect model can also be accomplished with an alternative; known as the 'random-effects model'. Basically those two alternatives are alike, only differing in the fact that under the random-effects model, the intercepts per unit arise from an intercept term α plus a random variable ϵ that is constant over time. In a way, the random-effects model is actually the standard for panel data analysis as it makes fewer assumptions on the correlation between entities constants and error terms. More simply formulated, the random-effects model is a matrix weighted average of the other two results. A panel model with random-effects looks as follows

$$y_{it} = \alpha + \beta x_{it} + \omega_{it} \quad \text{with } \omega_{it} = \epsilon_i + v_{it} \tag{4}$$

Heterogeneity in the cross-section between countries is in this case captured by the ϵ terms. The choice for one of the panel data models depends on whether the cross-sectional varying variables (the ones not measured by beta) are correlated with the other, time varying, explanatory variables. If this is the case then a random-effects model would create something similar to serial correlation and thus biased coefficients.

The fact that the random-effects model is essentially a weighted combination of the fixed- and between-effects models gives the impression that it is a superior one. Not all cases suit the model though. To explain this mechanism, I will continue with an example. We know that:

1. *Beta* from the between-effects model is used to answer the question "What is the expected difference in premiums between Uruguay and Germany if they differ in *x* by 1?"
2. *Beta* from the fixed-effects model is used to answer the question "What is the expected change in premiums for targets in Uruguay if their *x* changes with 1?"

It is possible that the answers to those two questions are the same and the effect of *x* is the equal in both situations. In that case a random-effects model is appropriate, but the opposite might also be true.[16]

To test which model to use we can employ a Hausman test[17] with the null hypothesis that assumes no correlation between the different intercepts and the explanatory variables, which means that a random-effects model is the one assumed under the null hypothesis. A rejection of the null hypothesis justifies only the use of parallel tests with between- and fixed-effects models. The results of the Hausman test and consequent regression estimations will follow in the next section.

"The slope coefficient on X is the same from one 'entity' to the next. The 'entity'-specific intercepts in a fixed-effects model and the binary regressors in the random-effectss have the same source: the unobserved variable Zi that varies across states but not over time." (Stock and Watson, 2003, p.280)

4.2. Test for differences between countries

All the methodology above concerns models that explain the deal premiums paid in M&A transactions with country specific risks. The results of the regression model will be very useful for our understanding of the drivers behind acquisition premiums, but they give us little information about the actual differences in premiums that exist between countries. To answer the question "Do acquirers pay different premiums for risky countries and safe countries?" I ranked all transactions on their scores for political risk (the total rating) and economic risk (GDP per capita, GDP growth, inflation and current account) and executed a T-test on the differences in premiums between highest and lowest percentiles. This high-minus-low analysis can show us if country risk really comes with lower premiums or not.

---

[16] Besides other sources mentioned much information on panel data models was taken from Princeton University website: http://dss.princeton.edu/online_help/stats_packages/stata/panel.htm. All of the writing on that page is based on Stock and Watson, 2003.

[17] Hausman, J. A. (November 1978). "Specification Tests in Econometrics". Econometrica 46 (6): 1251–1271.

5. Results

5.1. Hausman test

To test if a fixed-effects model is appropriate or that we should use a random-effects model, a Hausman test is executed. The Hausman test was developed by James Durbin, De-Min Wu and Jerry Hausman as a test for exogeneity of variables. It can also be used to test whether or not the country fixed parameters in the model are necessary or not. Under the null hypothesis the Hausman test assumes a random-effects model is preferred and the alternative hypothesis is consequently the fixed-effects model. This again indicates the initial preference for a random-effects model because it makes fewer assumptions and is more efficient as a result. As explained before, to apply a random-effects model the composite error term needs to be uncorrelated with the explanatory variables. Hence, the null hypothesis in the Hausman test assumes they are.

$$H0: all \; \mu i = 0 \tag{5}$$
$$H1: all \; \mu i \neq 0$$

The most common way the perform a Hausman test is to calculate a random and a fixed-effects model and use a chi-square test under F-distribution on the differences between the two models.[18] When performing this test on the data we get the following result.

Table IV: Hausman test

H0: all u_i=0	chi2(24)	(b-B)'[(V_b-V_B)^(-1)](b-B)
H1: all u_i≠0		$\chi2 = 21.68$
		p = 0.5981

A result that does not reject the null hypothesis and justifies the use of a random-effects model. Continuing, a Breusch-Pagan Lagrange multiplier (LM) test for random-effects should be performed to find out if a random-effects model gives additional value over a regular pooled OLS regression. However, another look at the data sample first could be useful. Table III in the previous section shows that nearly half of the countries in the sample

---

[18] From Brooks, 2008

contain less than 10 transactions and many of them include less than 5 deals. If entity (country) fixed or random-effects are included in the analysis, this would leave very few observations left for time varying within group variation and thus create spurious results. A rule of fist is that each group in these panel data analyses should at least include as many observations as there are groups. For this reason, I exclude all countries with less than 40 deal observations over the full sample period, leaving 29 groups with an average of 227 deals and a total sum of 6709 observations for analysis. Although still not fully balanced, I believe a panel dataset like this will provide more useful results than the previous one. Again a Hausman test if performed, resulting in the following

Table V: Hausman test		
H0: all u_i=0	chi2(24)	(b-B)'[(V_b-V_B)^(-1)](b-B)
H1: all u_i≠0		$\chi 2 = 69.47$
		p = 0.000

Based on these outcomes we can reject the null hypothesis and conclude the fixed-effects model is the preferred model. Additionally, a joint test on year dummies under the null hypothesis that the coefficients for all years are jointly equal to zero was executed. The test rejected the null hypothesis, confirming the conclusion drawn from the Hausman test that a fixed-effects model is the rightful one for this dataset.[19] In the next paragraphs this fixed-effects model will be used to analyse the effect of country specific variables and deal specific characteristics on the deal premium.

5.2. Fixed-effects model

The goal here is to identify country specific risks that drive M&A prices, with a specific interest to cross-border transactions. To achieve this, the first test includes all deals, domestic and cross-border, with an additional dummy variable for cross-border deals. To analyse the hypothesis that country risk affects deal prices in cross-border transactions in more detail, a fixed effect GLS regression purely for cross-border deals will follow. Finally, because country risk is assumed to be mostly present in developing countries, the same

---

[19] For simplicity, the results of this tests are not shown in the text, but the results of the joint test were F $(10, 36) = 9.32$ with p = 0.0000

techniques are applied for cross-border deals in low-income target countries.[20] The sample is tested for heteroskedasticity and serial correlation using a modified Wald test for panel data with fixed-effects and a Woolridge test for autocorrelation.[21] These tests show significant presence of heteroskedasticity but no serial correlation in the sample. Hence, all test results are made heteroskedasticity robust. For the statistical results of these tests I refer to the appendix of this thesis.

A first step is to consider a model that includes a total country risk score, constructed from all separate factors following the method set out in section 3. This, together with a slightly more detailed regression that includes two different score for political and economic/financial risk, is the two-step preparation for more detailed analyses on country risk effects. The results of both models are displayed in table VI. The total country risk measure in Panel A shows a significant but very small negative effect on deal premiums. When differentiating between political and economic risk the magnitude of the previous coefficient almost perfectly splits in half and loses it significant T-value. There are numerous possible reasons for these weak, preliminary results. One of them is the possibility that not all of the individual components of country risk have an effect on the dependent variable. When collapsed into one (or two) variables, the effect of these premium drivers is unobservable and the important drivers lose their strength against less relevant components. Another explanation could lie in the chosen proxies for economic and financial risk. As discussed before, most economic variables are ranked under the assumption that 'more' means less risk. For example, it is assumed that high GDP per capita indicates low risk; an assumption that puts a country like Qatar in the very low-risk group. It is questionable whether this is correct and it might have biased the risk scores. Because of the disadvantages of using summed country risk measures, the next paragraphs will use individual variables for all the discussed risk indicators.

---

[20] This classification of developing countries is based on the World Bank Developing Countries methodology. Countries are categorised as developing when their GDP per capita is lower than $1,035.

[21] For both statistical tests a STATA user written code is freely available to be installed in-programme. The outcomes of these tests are shown in table XII and XIII of the appendix

Table VI: Fixed effects GLS regression

Variable	Coefficient	Standard Error	T statistic	P value	
Panel A: Total country risk score					
Cross border dummy	0.050	0.024	2.04	0.051	***
Shares acquired	0.003	0.001	4.11	0.000	*
Industry dummy	-0.048	0.026	-1.85	0.075	*
Deal Value	0.006	0.006	0.97	0.343	
Deal is merger	-0.364	0.062	-5.89	0.000	***
Challenged	0.132	0.021	6.16	0.000	*
Country risk score	-0.007	0.003	-2.61	0.015	**
			#		
R2	0.089		observation	9834	
R2 adjusted	0.086		# groups	28	
Corr(u_i, Xb)	-0.821				
F statistic	48.73				
ρ (rho)	0.199				
Panel B: Political and economic/financial risk scores					
Cross border dummy	0.050	0.024	2.05	0.050	****
Shares acquired	0.003	0.001	4.10	0.000	*
Industry dummy	-0.048	0.026	-1.88	0.071	*
Deal Value	0.006	0.006	0.97	0.341	
Deal is merger	-0.364	0.061	-5.94	0.000	***
Challenged	0.132	0.021	6.26	0.000	***
Political risk	-0.004	0.003	-1.32	0.198	
Economic/financial risk	-0.003	0.002	-1.46	0.156	
			#		
R2	0.089		observation	9834	
R2 adjusted	0.085		# groups	28	
Corr(u_i, Xb)	-0.831				
F statistic	43.89				
ρ (rho)	0.206				

This table shows the regression output of the country risk scores regressed on the deal premium for the sample 2002-2012. For this panel analysis a fixed effects model is used with the countries as 'fixed' group variable. Variables marked with a * are significant on the 10% confidence level, ** on the 5% level and *** on 1%.

Table VII shows the results of a GLS regression with fixed-effects and countries as groups, but this time with more variables that measure country risk. As expected based on the literature on deal premiums, most deal specific variables appear to be significant and with the expected sign. The percentage of shares acquired, a proxy for control, is positive and

significant on the 1% level. The same holds for the deal value and the dummy that tells if an acquisition was challenged. As predicted by previous research, all of these deal specific characteristics increase the deal premium positively. Mergers prove to decrease deal premiums paid in transactions significantly on a 1% confidence level, which is also expected. In mergers, both parties agree to join forces and the synergy profits will come to the newly formed entity. In this context there is no need for high premiums over the current market value because there is no seller and no buyer. Transactions within or across industries do not differ in their prices, as shows by the insignificant coefficient of the Major group dummy. This does not come as a big surprise because many other forms of industry integration synergies can appear next to the ones gained in horizontal integrations. From the six economic and financial country risk factors, only the exchange rate and the current account appear to be of significant influence on deal premiums. The exchange rate has a relatively large, negative effect on the premium. This means a weak currency in the target country decreases the final price paid for the target. As discussed previously, a stronger currency makes the target more expensive to the acquirer. The level of the current account of a target country in a given year influences the deal premium negatively. This can be explained by the fact that relative open economies provide more alternative foreign direct investments. Surprisingly, we observe three significant political risk factors on the 5% level and two on 10%, but with inconsistent signs. As a higher political risk score must be interpreted as lower country risk and this risk is assumed to find its way into the discount factor, the sign should be always negative. Only two of the political risk coefficients have a negative effect on the deal premium, which makes their interpretation doubtful. The most likely explanation for this arises from the previously made observation that these risk scores are very sticky. Combining this with the fact that the most risky countries (e.g. Bangladesh or Mozambique) had very few or no deals at all in the sample period and hence were excluded from the regression. The extremely small coefficients for the political risk factors support this explanation. Finally, the outcome of the cross-border dummy indicates a difference in deal pricing between domestic and cross-border deals to be present. This coefficient is positive and significant on the 5% confidence level, in accordance with previous studies on cross-border acquisitions. More specific, foreign acquirers pay more than domestic ones. To analyse this observation in more detail, I will use a model with only cross-border deals in the next paragraph.

Some additional conclusions can be drawn from the regression output. First of all, the R^2 and adjusted-R^2 are remarkably low. Only about 5% of the variance of the deal premium is explained by the model. R^2 should however be judged with care, as it can usually be easily manipulated. Secondly, the Greek letter rho on the bottom of the table measures the amount of variation explained by the differences across countries. In this case this would mean that 36% of the variance in deal premiums is due to country fixed-effects.

Table VII: Fixed effects GLS regression

Variable	Coefficient	Standard Error	T statistic	P value	
Cross border dummy	0.033	0.014	2.30	0.029	**
Shares acquired	0.072	0.012	6.03	0.000	***
Industry dummy	-0.038	0.023	-1.67	0.106	
Deal Value	0.017	0.005	3.12	0.004	***
Deal is merger	-0.285	0.053	-5.37	0.000	***
Challenged	0.139	0.031	4.56	0.000	***
GDP per capita	0.006	0.006	1.08	0.289	
GDP growth	-0.015	0.014	-1.06	0.298	
Inflation	-0.005	0.016	-0.30	0.766	
Exchange rate	-0.326	0.119	-2.73	0.011	**
Current account	-0.028	0.013	-2.19	0.037	**
Foreign debt	0.118	0.116	1.02	0.315	
Government Stability	0.001	0.001	1.37	0.181	
Socioeconomic conditions	-0.005	0.002	-2.24	0.033	**
Investment profile	-0.001	0.003	-0.51	0.614	
Internal conflict	-0.001	0.002	-0.25	0.805	
External conflict	0.007	0.003	2.57	0.016	**
Corruption	-0.002	0.001	-1.46	0.154	
Military in politics	0.000	0.002	0.18	0.856	
Religious tension	-0.003	0.002	-1.79	0.084	*
Law and order	0.000	0.000	-1.80	0.083	*
Ethic tension	0.005	0.002	2.23	0.034	**
Democratic accountability	0.003	0.002	1.85	0.075	
Bureaucracy quality	0.000	0.001	-0.32	0.751	
R2	0.049		# observation	6709	
R2 adjusted	0.041		# groups	29	
Corr(u_i, Xb)	-0.975				
F statistic	358.32				
ρ (rho)	0.356				

This table shows the regression output of the deal and country characteristics regressed on the deal premium for the sample 2002-2012. For this panel analysis a fixed effects model is used with the countries as 'fixed' group variable. Variables marked with a * are significant on the 10% confidence level, ** on the 5% level and *** on 1%.

5.3. Fixed-effects model on cross-border deals

Table VIII displays the regression output of the fixed-effects model on cross-border deal premiums. The results are basically equal to the ones of the full model, but the effects got a little stronger. For just cross-border deals, the country specific risk variables and deal specific control variables together hold more explanatory power. Something that could indicate that country risk factors are more relevant to foreign than to domestic acquirers. This supports the hypothesis that country risk is mostly relevant to foreign acquiring companies as they have to deal with a new business environment. Furthermore, the magnitude of the deal is not a relevant factor in the pricing of deals when it concerns cross-border acquisitions. This coefficient changed from highly significant to insignificant. A possible explanation for this sudden change could be a strong, cross-border diversification effect that creates synergies and hence raises the deal premiums. Large deals than do no longer cause high premiums, large synergy benefits do. An economically plausible explanation, yet unproven and inconsistent with literature. Hence, it is at this point not justified to draw far-reaching conclusions on the observed differences between domestic and cross-border deals, but the observation is noteworthy.

Table VIII: Fixed effects GLS regression for cross-border deals

Variable	Coefficient	Standard Error	T statistic	P value	
Shares acquired	0.111	0.018	6.08	0.000	***
Industry dummy	0.001	0.016	0.06	0.956	
Deal Value	0.007	0.008	0.78	0.442	
Deal is merger	-0.287	0.097	-2.96	0.006	***
Challenged	0.087	0.034	2.58	0.016	**
GDP per capita	0.006	0.005	1.09	0.286	
GDP growth	-0.013	0.010	-1.33	0.195	
Inflation	-0.011	0.011	-1.04	0.307	
Exchange rate	-0.504	0.164	-3.07	0.005	***
Current account	-0.070	0.016	-4.44	0.000	***
Foreign debt	0.133	0.126	1.06	0.300	
Government Stability	-0.001	0.001	-1.31	0.201	
Socioeconomic conditions	-0.003	0.003	-1.01	0.321	
Investment profile	-0.003	0.004	-0.72	0.476	
Internal conflict	-0.003	0.002	-1.65	0.110	
External conflict	0.009	0.003	3.13	0.004	***
Corruption	-0.001	0.003	-0.20	0.844	
Military in politics	0.002	0.003	0.66	0.513	
Religious tension	-0.005	0.002	-2.70	0.012	**
Law and order	0.000	0.000	0.15	0.882	
Ethic tension	0.005	0.002	2.44	0.022	**
Democratic accountability	0.005	0.001	3.43	0.002	***
Bureaucracy quality	-0.001	0.001	-0.89	0.384	
R^2	0.090		# observation	2439	
R^2 adjusted	0.071		# groups	28	
Corr(u_i, Xb)	-0.974				
F statistic	186.17				
ρ (rho)	0.592				

This table shows the regression output of the deal and country characteristics regressed on the deal premium of cross-border deals for the sample 2002-2012. For this panel analysis a fixed effects model is used with the countries as 'fixed' group variable. Variables marked with a * are significant on the 10% confidence level, ** on the 5% level and *** on 1%.

5.4. Fixed-effects model on cross-border deals in low-income target countries

Last test done with the fixed-effects model includes only cross-border transactions in low-income countries. The hypothesis is that country specific risk factors influence future profits more strongly in less stable countries. More developed countries are unlikely to fall into some of the crisis examples discussed in the methodology section. Investments in low-income countries on the other hand come with more substantial risk, especially political ones. Country specific economic risks also provide upward potential in terms of growth and development, but high political risk has no clear sunny side other than possibly a corrupt regime that can grant a monopolistic market position. The latter however has not been proven so far, despite relatively severe research on corruption. The results of this regression are shown in table IX. As expected, the political risk factors now have a larger magnitude than before, indicating more relevance for country risk in developing countries, and six of them are significant on at least the 5% level. *Socioeconomic conditions, Religious tension, Military in politics and Democratic accountability* all are positively related to deal premiums in cross-border deals in low-income countries. Again, this result confirms the expectation that lower political risk, thus a higher score, increases expected profits from an acquisition in the concerning country. On the contrary, the variables *Investment profile* and *External conflict* show negative signs in this regression. Although these results are opposing to the hypotheses, we should not rule out the possibility that some expressions of country risk could actually have an inverse effect on deal premiums. We should also keep in mind the nature of our dependent variable, which is constructed by taking the ratio between offer price and market value. Countries with a bad investment climate (and thus a bad score on *Investment profile*) might have an illiquid equity market due to low accessibility for foreign investors. Potential future cash flows are consequently not adequately priced by the market which causes lower market values. A foreign MNC could be able to exploit this inefficiency with an acquisition, bypassing the unattractive investment climate and absorbing all the potential of the target as synergies. A situation like this increases the gap between market values and bid prices and hence, the deal premium. A similar effect can be present in countries enduring substantial external conflict, resulting in inefficient market prices. Naturally, these are just possible explanations for the observed effects and further research would be required to confirm them. It does however make clear that inverse relationships between risk factors and deal premiums do not necessarily have be classified as spurious.

When looking at the remaining country risk factors, we notice that *GDP growth* is significant and of large magnitude. The effect of this economic risk variable however, is negative. At first this might appear as confusing, but in a way, the same mechanism might be at work as discussed above when it concerned the political risk factors. High GDP growth is one of the main drivers of future cash flow predictions. Hence, a high GDP growth will already be priced by the market. Equity in high growth regions or countries (often referred to as emerging economies) can thus be considered to be expensive, soaking up much of the synergy profits for foreign acquirers. The reason this effect did not present itself in the previous models is that those emerging markets deals form only a small part of the total number of transactions. Finally, although the economic risk factor was highly significant in the previous two models, here the *Current account* has no observable effect on deal premiums anymore. An academically substantiated reason for this is lacking, though low-income countries and unstable current accounts might be two sides of the same coin and hence it gives no causal effect.

Table IX: Fixed effects GLS regression for cross-border deals in developing countries

Variable	Coefficient	Standard Error	T statistic	P value	
Shares acquired	0.137	0.045	3.05	0.012	**
Industry dummy	0.099	0.063	1.57	0.146	
Deal Value	-0.045	0.021	-2.10	0.062	**
Deal is merger	-0.684	0.210	-3.26	0.009	***
Challenged	0.148	0.160	0.92	0.379	
GDP per capita	0.119	0.081	1.46	0.175	
GDP growth	-0.512	0.163	-3.15	0.010	***
Inflation	0.036	0.128	0.28	0.783	
Exchange rate	-0.244	0.165	-1.48	0.170	
Current account	-0.003	0.069	-0.05	0.961	
Foreign debt	-0.570	0.632	-0.90	0.388	
Government Stability	-0.009	0.006	-1.46	0.176	
Socioeconomic conditions	0.016	0.005	3.14	0.011	**
Investment profile	-0.054	0.005	-11.14	0.000	***
Internal conflict	0.009	0.007	1.41	0.188	
External conflict	-0.039	0.004	-9.26	0.000	***
Corruption	-0.026	0.034	-0.77	0.460	
Military in politics	0.024	0.011	2.23	0.038	**
Religious tension	0.028	0.005	6.26	0.000	**
Law and order	-0.313	0.337	-0.93	0.375	
Ethic tension	0.007	0.062	0.11	0.918	
Democratic accountability	0.060	0.026	2.31	0.044	**
Bureaucracy quality	0.123	0.198	0.62	0.548	
R2	0.121		# observation	854	
R2 adjusted	0.043		# groups	20	
Corr(u_i, Xb)	-0.998				
F statistic					
ρ (rho)	0.592				

This table shows the regression output of the deal and country characteristics regressed on the deal premium of cross-border deals in low-income countries for the sample 2002-2012. For this panel analysis a fixed effects model is used with the countries as 'fixed' group variable. Variables marked with a * are significant on the 10% confidence level, ** on the 5% level and *** on 1%.

5.5. Between-effects model

Where the results from estimations with a fixed-effects model already gave evidence of country specific risks that influence deal premiums when they vary over time, we are also interested in the variation of deal premiums between countries. The nature of a between-effects model has already been discussed and so has its limited value to research question of this thesis, because the regression estimates the effects of means by group. It is expected that pure cross-sectional estimation will not give satisfying results. To illustrate this, the

heteroskedasticity of the distribution of premiums across countries is shown in figure IV.[22] Although the individual premiums within countries have large differences, the means across years are very much equal to each other. After observing this, it seems unlikely that the between-effects model will give reliable estimations of the differences between countries. Running a between-effects regression on the dataset indeed produces highly insignificant variables. For more details on the results of this estimation I refer to the appendix of this thesis.

Figure IV: Heterogeneity of deal premiums across all countries presents in the data sample. The transparent dots represent single premiums while the grey connected dots represent the averages per country.
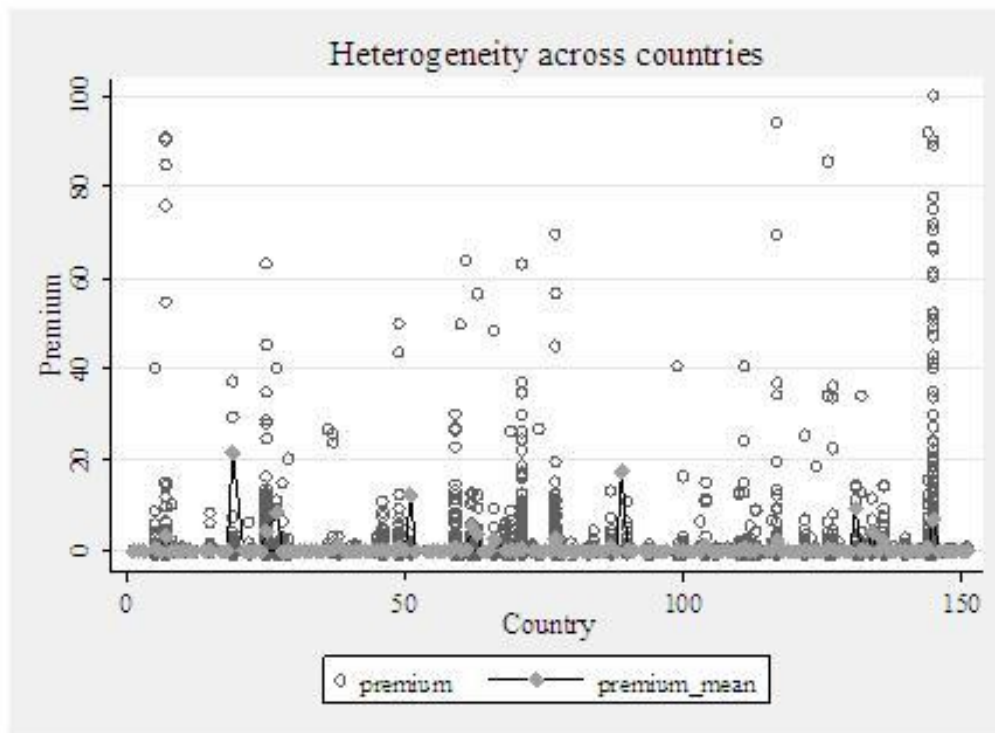
5.6. Test for equality of premiums

To test if countries that express high levels of country risk experience lower acquisition premiums paid for targets inside their border than low-risk countries do, a high-minus-low T-test is performed. The results of this test are displayed in Table IX. We can observe a positive difference for the 5% percentile, but negative ones for the respective 10% and 20%

---

[22] This graph shows premiums up to 100%. Clearly, much higher premiums exist in the data sample, but the large scale on the y-axis would make the figure difficult to read.

groups. These results, together with the insignificant T-statistics in all three of the tests, leads to the conclusion that there are be no observable differences in the premiums of high- and low risk countries. The averaging of premiums across percentiles could have biased the results of this test. To answer the question of this paragraph completely, one should identify similar transactions in different countries and then perform the same test. Another argument against this test can be the averaging over years in the percentiles.

Table X: Differences in premiums - High versus low

Percentiles	# observations	Mean differences	T statistic	p value for diff $\neq$ 0
5%	1950	13.43	1.15	0.252
10%	910	-2.39	-1.01	0.314
20%	535	-4.16	-1.07	0.283

Output of three two-sample T-tests on mean differences between the group of countries with the lowest risk and the group with the highest risk. Percentiles are taken at 5%, 10% and 20% level. All tests are done with a correction for unequal variances between the groups.

6. Conclusion and remarks

This thesis aimed to identify country specific characteristics as country risk and investigate their relationship with deal premiums paid in mergers and acquisitions. The hypothesis was that more country risk lowers the deal premium paid and that the effect of country risk on deal premiums is mainly relevant in cross-border transactions. Because no workable model exists to test this hypothesis, I created a model with political and economic/financial country risk factors and controlled for deal specific factors. A fixed-effects model in a panel data setting is used for the analysis of time-varying effects, while cross-sectional effects are studied using a between-effects model and a high-minus-low T-test on percentiles.

In a full model that includes both domestic and cross-border deal I find that openness to trade of a country (measured as a ratio of the current account to GDP), the socioeconomic conditions and religious tension all negatively influence the deal premiums. Less external and ethnic tension however increases premiums. In this setting, a cross-border dummy shows that on average 3.3% higher premiums are paid in cross-border transactions. A univariate analysis already indicated the existence of significant differences in deal

premiums between domestic and cross-border deals. The magnitudes of the mentioned country risk factors in this model are very small and the explanatory power is low.

I next investigate the effect of country risk on only cross-border deals. Here I find that again the openness to trade and religious tension in a country lower the deal premiums. Lower external conflict and ethnic tension raise premiums again and so does democratic accountability. The magnitudes of the variables are larger now, which feeds the hypothesis that country risk is mainly relevant for cross-border transactions.

Because country risk factors can be irrelevant for stable, high income countries I again used the same techniques for deals that are cross-border and in a low-income country. Indeed, I find that country risk effects are stronger for these transactions as the observed magnitudes of the risk variables have strongly increased compared to the previous model and explanatory power is higher as well. Here, high GDP growth decreases deal premiums, so do high scores for investment profile and external conflict. Good values on socioeconomic conditions, military in politics, religious tension and democratic accountability increase deal premiums.

The analyses on differences in premiums between countries with different levels of country risk gave less satisfying results. A between-effects model was used to observe time-fixed effects of country risk on premiums, but none of the variables used was significant. The most likely reason for this is the disadvantage of a between-effects model that it takes means across the years for each entity. Premiums are heteroskedastically distributed within countries, but are on average almost equal. Next, a test on the difference in premiums between countries with large differences in country risk gave no evidence of unequal premiums.

Overall I conclude that there seems to be a role for country risk in the build-up up deal prices in M&A transactions and this role is stronger for cross-border deals and even more relevant for transactions in low-income countries. The results however are not always consistent and no evidence of different premiums caused by country risk differences across countries was found. Future research can build on these results and attempt to explain the drivers behind acquisition premiums in more detail.

Suggestions for further research: How to incorporate a country risk premium in valuation

A hitherto unaddressed issue is how to, once the drivers of country risk are identified, incorporate this knowledge in valuation. Literature and empirics can give evidence of deal and/or country specific characteristics that affect deal premiums, but this does not help us so much in creating a risk premium from them. Like most issues concerning country risk, this is a rather unexplored area of research and to my best knowledge there is no methodology on how to transform political and economic risk country risk factors into premiums. Developing such a technique goes beyond the scope of this research, but I do feel the urge to elaborate a little on the topic. To do this, we first of all need to understand the connection between country risk and sovereign debt risk. This has been addressed quickly before in the introduction of this thesis and could be helpful to create a country risk premium. As an alternative to commercial companies that measure country risk, we could make use of the more widely available credit ratings, provided by the worlds' biggest and most respected credit rating agencies: Standard & Poors (S&P), Moody's and Fitch. With their risk assessments on debt ratings they assist politicians, business people, bankers, lawyers, scholars and many others analysing the economic or financial conditions of companies and countries. Their sovereign debt ratings give insight in the solvency of countries and the likeliness of them falling into default. Although clearly different from the country risk applicable for MNCs, there underlying factors pushing a country into default and the ones making company's cash flows plunge are likely to overlap. Intuitively we would say that sovereign debt risk is a part of country risk, but not the other way around. According to the methodology of S&P[23] sovereign debt ratings are, just like country risk, created by an aggregation of political, economic, fiscal and monetary scores. The debt ratings in their turn influence the interest on government bonds. Shortly said, the market 'prices' default risk of a country and sovereign debt ratings is one of the market's main sources of information. Damodoran (2003) uses these interest rates on government bonds to create country risk premiums and proposes a few different techniques to implement them. First of all, three approaches to measure country risk are discussed, followed by different approaches to measure company exposure to country risk.

---

[23] http://www.standardandpoors.com/ratings/sovresearch/en/us

3 approaches to measure country risk premium

Default spread

For comparable means bond interest rates should be denominated in the same currency, usually euros or dollars. Most countries issue dollar denominated bonds, which allows us to compare their interest rates to the U.S. bonds. One can add the default spread between dollar denominated bonds to the cost of equity or add it to US risk premium and multiply with the market beta.

Relative equity markets standard deviations

Calculate relative standard deviations of two countries' main equity index (e.g. Brazil/US) and multiply this scalar with the US equity premium. This US premium can be calculated with historical data. One disadvantage of this approach is that low market liquidity in emerging markets might cause unreliable standard deviations. A second problem can be the different currencies.

Default spread and relative standard deviations

In this case we combine the first two approaches such that

country risk premium = default spread * (σ equity/σ bond).

Default risk of a country is captured by the default spread, the risk on equity investments by the relative standard deviations.

The third approach gives the highest measures of country risk while the second one gives us the lowest. Because countries mature over time and become less risky with the years, we can use the highest estimate for country risk for the immediate future, degrading it over time to the lower estimates.

Asset exposure to country risk

Final question is whether all companies active in a country with country risk are equally exposed to it. Again, we have 3 options to add country risk to the asset valuation equation.

All companies are equally exposed

This seems to be the least accurate approach, but it is easily applicable and a step up from not adjusting for country risk at all.

Beta approach

All premiums are multiplied by the market beta. This approach feels more instinctive than the previous one, but has the main disadvantage that beta is designed for the market premium and companies might behave differently related to country risk.

Lambda measure for country risk

A new factor, i.e. lambda, is estimated by looking at the amount of revenues a company generates in a country, or by regressing a company's stock return against country bond returns.

The above summary can be a guideline for future research that elaborates on the results I found on country risk and deal premiums. One could for example test the correlation between one of the three measurement approaches and a balanced country risk score that contains both political as economic/financial components. If a high correlation exists, the bond spreads or relative standard deviations of equity could be used to get a country risk premium per country.

7. Bibliography

Bartels, B. (2008). *Beyond fixed versus random effects: A framwork for improving substantive and statistical analysis of panel, time-series cross-sectional, and multilevel data.* Working paper: Stony Brook Univerisity.

Brooks, C. (2008). *Introductory Econometrics for Finance.* New York: Cambridge University Press.

Busse, M. (2004). Transnational corporations and repression of political rights and civil liberties: an empirical analysis. *Kyklos, 57*, 45-66.

Busse, M., & Hefeker, C. (2007). Political risk, institutions and foreign direct investment. *European journal of political economy, 23*, 397-415.

Butler, K., & Joaquin, D. (1998). A note on political risk and the required return on foreign direct investment. *Journal of International Business Studies, 29*, 599-608.

Damodaran, A. (2003). Measuring company exposure to country risk: theory and practice. *Stern School of Business*.

Egger, P., & Winner, H. (2005). Evidence on corruption as an incentive for foreign direct investment. *21*, 932-952.

Gastanaga, V., Nugent, J., & Pashamova, B. (1998). Host country reforms and FDI inflows: how much difference do they make? *World development, 26*, 1299-1314.

Habib, M., & Zurawicki, L. (2002). Corruption and foreign direct investments. *Journal of international business studies, 33*(2), 291-307.

Harms, P. (2002). Political risk and equity investment in developing countries. *Applied economic letters, 9*, 377-380.

Harms, P., & Ursprung, H. (2002). Do civil and political repression really boost foreign direct investment? *Economic inquiry, 40*, 651-663.

Jensen, N. M. (2003). Democratic Governance and Multinational Corporations: Political Regimes and Inflow of Foreign Direct Investment. *International Organization*(57), 587-616.

Jun, K., & Singh, H. (1996). The determinants of foreign direct investment in developing countries. *Transnational Corporations, 5*, 67-105.

Li, Q., & Resnick, A. (2003). Reversal of fortunes: democratic institutions and foreign direct investment inflows to developing countries. *International organization, 57*, 175-211.

Lunhow, D. (2014). *Wall Street Journal*. Retrieved January 3, 2014, from http://online.wsj.com/news/articles/SB100014240527023033709045792963529514 36072

Moeller, S. B., & Schlingemann, F. P. (2005). Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions. *Journal of banking & finance, 29*, 533-564.

Pereiro, L. E. (2001). The valuation of closely-held companies in Latin America. *Emerging markets review, 2*, 330-370.

Ramcharran, H. (1999). Foreign direct investment and country risk: further empirical evidence. *Global Economic Review: Perspectives on East Asain Economies , 28*(3), 49-59.

Rustige, M., & H., G. M. (2011). Differences in takeover premiums across countries, Investor protection matters less than you think. PhD Thesis at Frankfurt School for Finance & Management.

Rustige, M., & H., G. M. (2011). Why do foreign acquirers pay more? Evidence from European cross-border Acquisition premiums. PhD Thesis at the Frankfurt School of Finance & Management.

(2010). In A. C. Shapiro, *Multinational financial management* (9th edition ed.). New Jersey, United States: John Wiley & Sons.

Sonenshine, R., & Reynolds, K. (2014). Determinants of cross-border merger premia. *Review of world economics, 150*(1), 173-189.

Stock, J. H., & Watson, M. W. (2003). Introduction to Econometrics.

Stulz, R. (1999). Globalization, corporate finance, and the cost of capital. *Journal of applied corporate finance, 12*(3), 8-25.

Wei, S.-J. (2000). How taxing is corruption on international investors? *Review of economics and statistics, 82*(1), 1-11.

8. Appendix

Table XI: Political risk scores by country

Country	A	B	C	D	E	F	G	H	I	J	K	L
Argentina	7	5	6	9	10	2	4	6	2	6	5	3
Australia	9	10	12	10	10	5	6	6	6	4	6	4
Austria	8	9	12	12	12	5	6	5	6	4	6	4
Bangladesh	6	2	6	7	9	3	3	3	2	3	4	2
Belgium	8	9	11	12	12	4	6	5	5	3	6	4
Brazil	8	6	7	10	11	3	4	6	2	3	5	2
Bulgaria	9	6	12	11	10	2	5	5	3	5	6	2
Canada	8	9	12	11	11	5	6	6	6	3	6	4
Chile	8	8	11	10	9	4	4	6	5	5	4	3
China	8	7	7	9	9	2	3	5	4	4	2	2
Colombia	8	4	8	5	9	3	2	5	2	5	4	2
Cyprus	9	11	12	11	10	4	5	4	5	3	6	4
Czech Republic	7	7	12	11	11	3	6	6	5	3	5	3
Denmark	8	10	10	9	9	6	6	6	6	4	6	4
Finland	9	9	12	11	12	6	6	6	6	6	6	4
France	8	8	12	10	10	4	5	4	5	3	6	3
Germany	8	8	12	11	10	5	6	6	5	4	6	4
Greece	8	7	10	9	10	2	5	5	4	5	6	3
Hong Kong	9	9	12	11	11	4	5	5	5	5	3	3
Hungary	7	7	10	11	10	3	6	6	4	4	6	3
India	8	5	9	7	10	2	4	2	4	2	6	3
Indonesia	7	6	9	9	11	3	3	1	3	2	5	2
Ireland	8	9	11	11	11	4	6	5	6	6	6	4
Israel	7	7	10	7	7	3	3	3	5	2	6	1
Italy	7	8	11	10	11	3	6	5	4	5	5	3
Japan	7	9	12	11	10	3	5	5	5	6	5	4
Jordan	11	5	10	10	11	3	5	4	4	5	4	2
Korea, Rep.	7	9	10	10	8	3	4	6	5	6	6	3
Lebanon	8	5	9	7	7	1	2	3	4	5	5	2
Lithuania	7	6	9	11	10	2	5	5	4	5	3	2
Luxembourg	10	10	12	12	11	5	6	6	6	5	6	4
Malaysia	9	10	9	11	10	3	5	4	4	4	5	3
Mexico	8	8	11	9	11	2	4	5	2	3	6	3
Morocco	8	6	9	7	10	2	4	5	5	5	5	2
Netherlands	7	10	11	11	12	5	6	4	6	5	6	4
New Zealand	7	9	12	11	11	6	6	6	6	4	6	4
Norway	7	11	11	11	11	5	6	5	6	4	6	4

Table XI continued

Variable	A	B	C	D	E	F	G	H	I	J	K	L
Oman	11	7	12	10	10	3	5	4	5	5	1	2
Pakistan	7	5	8	6	9	2	2	1	4	1	3	2
Panama	10	6	10	10	11	2	5	5	3	5	6	2
Papua New Guinea	6	4	8	10	10	1	5	5	3	2	5	2
Peru	7	5	8	8	10	2	5	5	3	4	4	2
Philippines	7	5	9	7	11	2	3	3	2	5	5	3
Poland	6	6	11	10	10	2	6	5	4	6	6	3
Portugal	8	8	12	3	11	4	6	6	5	6	6	3
Romania	9	5	9	10	11	2	5	5	4	4	6	1
Russia	11	7	9	9	10	2	5	6	4	3	4	1
Singapore	10	9	12	11	11	4	5	5	5	6	3	4
Slovenia	7	7	8	12	11	3	6	6	5	4	5	3
South Africa	6	5	10	10	11	3	5	5	3	4	5	2
Spain	8	7	11	9	10	4	5	5	5	4	6	3
Sweden	8	9	12	11	11	5	6	6	6	5	6	4
Switzerland	9	10	12	12	11	5	6	5	5	4	6	4
Taiwan	6	10	12	11	8	3	4	6	5	5	5	3
Thailand	9	6	8	8	10	2	3	4	3	3	4	1
Togo	9	3	8	9	10	2	0	5	3	2	2	0
Turkey	9	7	8	8	8	3	3	4	4	3	5	2
United Kingdom	8	9	11	10	7	4	6	6	6	4	6	4
United States												
Venezuela	10	5	3	9	9	1	1	4	2	5	4	1
Vietnam	10	5	8	10	12	2	3	4	4	5	1	2
Total	8	8	11	10	10	4	5	5	5	4	5	4

Table XII: Modified Wald test for heteroskedasticity

	chi2	$\chi 2 =$
H0: $\sigma i^2 = \sigma^2$ for all i	(29)	2365.57
H1: $\sigma i^2 \neq \sigma^2$ for all i		p = 0.000

Table XIII: Woolridge test for autocorrelation

H0: no first order autocorrelation	$F(1,10) = 0.048$
H1: first order autocorrelation	p = 0.831

present

Table XIV: Transactions summary of target countries, ranked on the amount of deals

Country	# total deals	# cross-border deals	Mean premium	Mean premium cross-border
United States	3544	605	4.79	1.32
Japan	2261	208	0.82	0.54
Canada	1153	462	4.11	3.11
Australia	887	407	1.38	0.61
United Kdom	814	374	1.12	0.81
Korea, Rep.	703	81	3.71	8.54
Hong Kong	488	195	1.40	0.80
France	444	173	0.45	0.54
India	426	234	1.20	0.63
Singapore	317	180	0.53	0.64
Malaysia	308	80	1.36	0.40
Germany	307	189	0.89	0.64
China, P. Rep.	219	66	0.44	0.72
Italy	201	61	0.52	0.22
Norway	199	88	2.02	0.60
Spain	170	42	0.93	2.64
Thailand	170	54	3.90	0.53
Sweden	156	71	0.57	0.37
Taiwan	128	42	7.99	0.51
Indonesia	127	92	7.39	9.80
Brazil	116	45	1.37	1.75
Netherlands	114	64	0.67	0.37
Russia	114	32	4.81	2.28
Switzerland	110	45	0.73	0.35
South Africa	102	34	1.58	1.48
New Zealand	98	42	0.53	0.44
Israel	92	43	0.74	0.60
Belgium	69	42	0.56	0.59
Greece	69	40	0.43	0.31
Denmark	67	36	3.76	3.72
Philippines	65	24	1.83	0.93
Turkey	63	37	0.51	0.48
Poland	58	40	0.45	0.35
Finland	55	30	0.41	0.31

| Chile | 51 | 24 | 1.50 | 2.00 |

Table XIV continued

Country	# total deals	# cross-border deals	Mean premium	Mean premium cross-border
Croatia	3	3	0.08	0.08
Lebanon	3	2	0.80	0.99
Papua N. G.	3	3	0.54	0.54
Saudi Arabia	3	1	0.19	0.29
Barbados	2	2	4.63	4.63
Cayman Islands	2	2	0.32	0.32
Ecuador	2	2	0.71	0.71
Ghana	2	2	0.89	0.89
Latvia	2	1	0.33	0.37
Namibia	2	1	0.10	0.04
Qatar	2		0.43	-
Ukraine	2		0.31	-
United Arab	2	1	0.58	0.16
Venezuela	2		0.12	-
Zimbabwe	2		0.87	-
Kazakhstan	1		26.89	-
Monaco	1	1	0.18	0.18
Neth Antilles	1	1	2.88	2.88
Panama	1	1	0.31	0.31
Trinidad & T	1	1	1.15	1.15
Tunisia	1		0.04	-
UAE	1		0.12	-
Total	14917	4668	2.11	1.32

This table describes the number of acquisitions per target country over the period 2002-2012 and their average deal premiums. For both summarising statistics a distinction is made for only the cross-border transactions.

Table XIV continued

Country	# total deals	# cross-border deals	Mean premium	Mean premium cross-border
Croatia	3	3	0.08	0.08
Lebanon	3	2	0.80	0.99
Papua N. G.	3	3	0.54	0.54
Saudi Arabia	3	1	0.19	0.29
Barbados	2	2	4.63	4.63
Cayman Islands	2	2	0.32	0.32
Ecuador	2	2	0.71	0.71
Ghana	2	2	0.89	0.89
Latvia	2	1	0.33	0.37
Namibia	2	1	0.10	0.04
Qatar	2		0.43	-
Ukraine	2		0.31	-
United Arab	2	1	0.58	0.16
Venezuela	2		0.12	-
Zimbabwe	2		0.87	-
Kazakhstan	1		26.89	-
Monaco	1	1	0.18	0.18
Neth Antilles	1	1	2.88	2.88
Panama	1	1	0.31	0.31
Trinidad & T	1	1	1.15	1.15
Tunisia	1		0.04	-
UAE	1		0.12	-
Total	14917	4668	2.11	1.32

This table describes the number of acquisitions per target country over the period 2002-2012 and their average deal premiums. For both summarising statistics a distinction is made for only the cross-border transactions.