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US cross-border acquisitions: What effect does the level of development of a target's country have on the announcement effect for US bidders?

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In this paper, over 3500 takeover announcements with a United States acquirer and a foreign target between the 1st of January 2013 and the 31st of December 2018 were used to examine the effect of the target country's development level on the bidder firm's announcement effect. To determine the level of development and to make sure the results were robust against different measuring methods, the Human Development Index, Human Capital Index, Gross National Income per capita and the International Country Risk Guide were used. No significant influence of development as measured in the Human Development Index and Gross National Income per capita was found. However, higher target country development based on the Human Capital Index and the International Country Risk Guide was found to have a negative influence on the bidder's announcement effect. In conclusion, no evidence is found that the target country's development in general has a unified effect on the bidder's announcement effect.

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Contents

Abbreviations

M&A = Mergers and Acquisitions

HDI = Human Development Index

HCI = Human Capital Index

GNI = Gross National Income

ICRG = International Country Risk Guide

AR = Abnormal Return

CAR = Cumulative Abnormal Return

CAAR = Cumulative Average Abnormal Return

1 Introduction

When an acquisition is announced, the buying firm (the 'acquirer' or 'bidder') releases a public statement that it will acquire another firm (the 'target'). If the acquirer is a publicly traded firm, this new information made public will in some way trigger a reaction in the stock price. The development of a stock price is called the "stock return", but in case of new information or an event (like the announcement of an acquisition) the stock return might deviate from what is expected or "normal". The difference between the expected return and the actual return around the event is called the "abnormal return". This abnormal return around the announcement of an event (in this case the event of an acquisition) is called the "announcement effect".

The announcement effect is different for target and bidder firms. Previous research finds unanimous evidence for a positive announcement effect for target firms (McCahery, 2003). McCahery (2003) also finds that the case for the announcement effect for acquirers is more divided. He finds that around half of the papers find small positive abnormal returns for acquirers from the United States (US), but others finds negative abnormal returns and some even no announcement effect for acquiring firms globally. Moeler and Schlingemann (2005) find that there is a difference in the announcement effect for bidders between acquisitions with domestic targets and acquisitions with foreign targets (also called cross-border acquisitions). Furthermore, announcement effects of cross-border acquisitions also differ from each other. A possible explanation for this difference lies in the characteristics of the target's country. Moeler and Schlingemann (2005) find that development-related characteristics of a target's country can influence the bidder's announcement effect. Yet here the existing literature is also divided. La Porta et al. (2000) argue that firms announcing acquisitions with targets from developing countries can yield higher announcement returns because of possible undervaluation of the target while Rossi and Volpin (2004) argue for the possible negative effects for the acquiring firm because of higher information asymmetry with lesser developed target countries. Yet no research has been done on the actual effect of the level of development of the target's nation for the bidder's announcement effect.

This paper aims to create a better insight on the effect of the target country's development level on the announcement effect of the US acquirer. This will contribute to existing literature since current research does not provide a full picture of this effect yet and the results of this paper can help future research in determining more precise factors influencing the cross-border announcement effect. As for practical relevance, according to Bloomberg, cross-border acquisitions of US firms are increasing (Bloomberg, 2019). Research on the factors underlying abnormal returns in cross-border acquisition announcements thus becomes increasingly important for firms considering cross-border acquisitions. I select the US as the acquirer's country since it has the largest number of acquisitions in the world

according to the Institute of Mergers, Acquisitions and Alliances[1]. A larger sample size will increase the power of the tests in event studies (Kothari & Warner, 2006).

To determine the influence of the level of development of the target's nation on the announcement effect of the bidder's stock I will work as follows. First, I will retrieve all deal announcements with a listed US acquirer between 1st of January 2013 until 31st of December 2018 from the Thomson One database. I will then use the Human Development Index (HDI) from the "Human Development Indices and Indicators 2018 Statistical Update" (United Nations Development Programme, 2018), the Human Capital Index (HCI) from the 'Human Capital Project' (World Bank Group, 2018a), the Gross National Income (GNI) per capita and the International Country Risk Guide (ICRG) as published by the PRS Group (2018) as development measures to rank the nations based on their respective score. Subsequently, I will create two subsamples per measurement of development. The first subsample will contain countries with the top 20% scores and the second subsample will contain countries with the lowest 20% scores. The expected returns over 11-, 5- and 3-days event windows will be estimated using the conventional market model (Brown & Warner, 1985) and an estimation window of 252 days, ending 6 days before the announcement. 252 equals the trading days in a year[2] and the conventional market model is often used for determining expected returns. Miroslav (2017), among others, used it when comparing the announcement effect in the UK with continental Europe. The difference between the expected and the actual returns in these event windows equals the abnormal returns and thus the announcement effect. For stock prices and the event study, I will use the DataStream database. After having calculated all cumulative abnormal returns, I will first perform the generalized sign test and the one sample t-test to find if the cumulative average abnormal returns differ significantly from zero. Finally, I will perform the Welch's t-test in STATA to test for any significant differences between the subsamples' mean cumulative abnormal returns.

The acquisitions of firms from countries with relatively low development levels can have multiple disadvantages. Higher agency costs and more asymmetric information might be associated with obstacles experienced when investing in lower developed countries. Moreover, the human capital present in firms from low-development countries is lower than with higher developed countries, which can lead to lower value creation. Therefore, I expect the deals with targets in countries with a lower development scores to generate a lower announcement return for acquirer's stockholders than the acquisitions with targets from more developed countries.

The rest of this paper is organized as follows: First, I will review previous studies on mergers and acquisitions (M&A), announcement effects, the factors affecting the announcement effect and I will formulate the hypothesis. Second, I will elaborate on my method of data gathering, the measures of

[1] https://imaa-institute.org/m-and-a-statistics-countries/
[2] https://www.nyse.com/markets/hours-calendars

development used and the restrictions I applied to obtain the final samples and subsamples. Third, the methodology of event studies used will be substantiated as will the statistical tests used to assess the found announcement effects and to compare the sets of subsamples. Fourth, I will present the results of the event studies and the statistical tests. Fifth and last, I will discuss the results, draw conclusions and review the hypothesis.

2 Theoretical Framework

2.1 Mergers and acquisitions

Mergers and acquisitions in general

When talking about mergers and acquisitions, the merger or acquisition of firms is meant. Both a merger and an acquisition refer to the fusion of two firms. Although they are often used together as one definition, they represent something different. Motis (2007) states that the difference lies in the approach of the target company and the final structure of the new corporation. In a merger, the management of the target company is approached first with an offer but with an acquisition the acquirer approaches the target's owners directly. Moreover, with mergers both corporations fuse completely into one new entity while in case of an acquisition the acquirer can be buying just a majority share in the target firm without obtaining the entire target firm. An example of an acquisition is the takeover of the US food-service distributor Alliant Exchange by the Dutch retailer Ahold (de Jong et al., 2007). Ahold bought all outstanding shares and presumed debt of Alliant Exchange for roughly 2,2 Billion USD and fully incorporated all of Alliant Exchange into the Ahold firm (Ellison, 2001). Hirshleifer (1995) states that both mergers and acquisitions are part of the general concept 'takeovers' and Motis (2007) states that most empirical papers treat mergers and acquisition as one. In this paper I will thus not make a clear distinction between mergers and acquisitions and might refer to both as takeovers. In takeovers, there are generally two parties involved: one firm makes a deal to either merge with, be acquired by or acquire another firm. These parties have different roles: one is the acquirer (buyer) and the other one is the target. The acquirer buys the target and makes it (partially) part of its own organisation. The target is usually the smaller firm of the two. The motivation to engage in a takeover can also differ. Both the acquirer and the target can in theory gain from taking part in a takeover, but in different ways.

Motives for mergers and acquisitions

Takeovers are a popular strategic tool for both targets and acquirers to improve their businesses. Motis (2007) has conducted a study on the possible motives for firms to engage in mergers and acquisitions. Multiple internal advantages for firms can be motives. For acquirers, reducing average costs because of increased scale (economies of scale) or the diversification of productions (economies of scope) are two possible motives for taking over another company. Also, synergy gains can be a

motive when two firms might perform better together than they would do separately. This can be achieved through, for example, diffusion of knowledge or research and development (R&D) capacities. The increase in market share and the possible improved competitive position in the market for the post-takeover firm are examples of more externally focussed motives for acquirers (Motis, 2007). For multinational firms, acquiring foreign targets which operate in their value chain can be an advantage for the multinational if the bidder has a lot of intangible assets. If the acquirer does not want to share these assets with outside firms because of company-secrets or high transaction costs, internalizing a foreign target can solve this problem. This motive is also described in the internalization theory by Buckley and Casson (1976) (Francoeur, 2006). For targets, it can be beneficial to be taken over because they can benefit from the better corporate governance structure present at the acquiring company, according to La Porta et al. (2000). Next to incentives for firms to engage in mergers and acquisitions, managers can also have more personal motives for takeovers. Expanding the organization they lead or 'empire building', as first formulated by Mueller (1969), is one of these possible motives. Next to that, Roll (1986) proposed the Hubris hypothesis that some managers incorrectly believe they can manage other companies better than their current managers. In conclusion, it can be said that firms and managers engage in mergers and acquisitions with the intention to improve the combined firm's future value.

2.2 Announcement effects

Why is there an announcement effect?

Although firms and their managers might believe in the benefits of a takeover, the market's sentiment can differ. The market's sentiment can be observed when a takeover is announced, and the market reacts via trading. The returns generated with this reaction is called 'the announcement effect'. According to semi-strong form of the efficient market hypothesis by Fama (1970), all new public information should be incorporated in the price of a product in an efficient market. The stock-market is a very fast-reacting place of trade. Recent technologic developments have made high-frequency trading possible so traders can react within milliseconds to price movements and new information (Zubulake & Lee, 2012). The moment when information becomes public, both sellers and buyers make up their mind and trade accordingly to their expectation of the newly announced information's effect. The increased trading and stock price movements which deviates from the 'regular' stock price behaviour around the time of announcement of an event represents the announcement effect. The announcement effect exists with the announcement of all kinds of corporate events.

Corporate events and announcement effects

The announcement effects of firm-related events have been studied extensively. Fama et al. (1969) already studied the effect of the announcement of a stock split (when firms split their outstanding stocks) on the stock price of a firm. They found that a stock split might affect the dividend positively

and that the announcement of stock splits thus generates a positive announcement effect. Asquith and Mullins (1986) studied the stock price reactions on the announcement of new stock-issues by a company which already has outstanding stock. This is also called a seasoned equity offering or SEO. They found that the announcement of an SEO yielded significant negative abnormal returns for the firm issuing the statement. This negative reaction can have several reasons. For example, if the proceeds from the SEO are needed to save the firm, shareholders might expect a negative development of the firm and sell their shares. Van Eaton (1999) studied the announcement effects of dividend-policy changes and found a positive announcement effect for dividend increases and a negative announcement effect for dividend decreases. The announcement of takeovers also generates abnormal returns. Take the beforementioned acquisition of Alliant Exchange by Ahold. When this takeover was announced, it generated a small announcement effect of -0,22% for the acquirer Ahold (de Jong et al., 2007).

2.3 Existing literature on mergers and acquisition announcement effects

The announcement effect of mergers and acquisitions is widely researched. Although there are many ways takeovers can be characterized, there is one distinction which must be made before elaborating on any other factors. All the firm-related events which were mentioned earlier had only one firm which directly experienced an announcement effect. For M&A announcements, there is a unique case as there are generally two parties directly involved and affected by this announcement. Therefore, I will first elaborate on the differences in the announcement effect between the two parties involved before covering any other factors related to the takeover announcement effect.

Bidder versus target returns

As the roles of a bidder and a target differs in the takeover, so do their announcement returns. McCahery (2003) and the duo Martynova and Renneboog (2008) review 30 empirical studies analysing announcement effects for US bidders from early 1960s until the early 2000s and conclude that all papers find a positive announcement effect of about 15% to 35% for the target's shareholders. More specifically, Bradley et al. (1988) find a 32% abnormal return for the 237 US targets in their sample. Smith and Kim (1994) find positive cumulative abnormal returns of over 30% when analysing 177 deal announcements occurring between 1980 and 1986. The announcement effect on the bidder's side is quite different. Most empirical studies find that the abnormal returns of the acquirer only deviate from the expected return by about 4% at most. (Martynova & Renneboog, 2008; McCahery, 2003). Not only is the magnitude of the abnormal returns found by previous studies smaller than that for the target's shareholders, but the sign of the announcement effect is not even necessarily positive for US bidders. While McCahery (2003) only reviews papers which find a positive announcement effect for US acquirers (between 1% and 4%), Martynova & Renneboog (2008) conclude that the announcement effect for bidders, also when narrowed down to the United

States, can take on different signs and is in some cases even non-existent. Bradley and Sundaram (2004) for example, found small positive returns of around 1,45% for US bidders when comparing deal announcements between 1990 and 2000. When comparing announcements in the US high-tech market, Kohers and Kohers (2000) also find a positive announcement effect for the bidders. They conclude that the magnitude of the abnormal returns variated between 1,09% and 1,37%, depending on the method of payment. Chang (1998) even finds that for some cases of acquisition announcements, the US bidder firm's stock experiences no significant announcement effect. Moreover, several papers find negative announcement effects for bidder firms in the US. Kaplan & Weisbach (1992) find a small negative announcement effect of -1,49% for US acquirers and Moeller et. al (2004) find a negative return of -1,02% when comparing over 2500 deal announcements form publicly traded US acquirers. In conclusion, there is still no consensus on the announcement effect for bidders and it is therefore even more important to study the possible factors affecting this effect.

2.4 What determines the M&A announcement effect?

Long-term expectations

The market's reaction to a deal announcement generates the announcement effect. As security traders base their trading behaviour on prospects, the long-term expectations for a deal can be defining for the market's reaction (Jensen & Ruback, 1983). If, for example, previous studies find that certain takeovers tend to fail or damage the firms in the long run, the market's reaction to the announcement of such a takeover might be rather negative than positive. The value created by takeovers in the long run is also called the 'long-term wealth effect' of a takeover. The opposite, a 'short-term wealth effect', is another way to describe the announcement effect. Long-term wealth effects depicts the wealth created by an acquisition in the long run and the relevant stock development (Boubaker & Taher, 2014). The expectations of the long-term wealth effect associated with deal-specific characteristics often determines the short-term wealth effect of the takeover announcement, as can be seen when reviewing papers on factors affecting the announcement effect. There are numerous factors which have been found to affect the announcement effect. Since covering them all extensively would not add to the value and readability of this paper, I will only shortly discuss some of the most researched determinants: the size of the acquirer, method of payment, the type of takeover and the state of the M&A market. After that, I will elaborate on factors influencing the announcement effect of cross-border takeovers and development related factors. These are factors which I deem to be relevant when studying the effect of development levels on short-term wealth effects creates by cross-border acquisitions and thus for the understanding of this paper.

Factors affecting the takeover announcement effect

One factor that can influence the announcement effect for both bidders and targets is the size of the acquirer and the public status of the target (Bradley & Sundaram, 2004; Moeller et al., 2004). Moeller

et al. (2004) argue that large companies tend to overvalue targets and thus yield a negative announcement effect. They also argue that the size in combination with the public status of the target can be associated with a certain method of payment. This method of payment (stock, cash, or a mix of both) can have an influence on the announcement effect, as was found by, among others, Mann and Kohli (2009). The method of payment can contain information on the long-term expectations of the acquiring manager for the value of the target and thus can be used to signal information to the shareholders, which in turn react to such information signalling. (Myers & Maljuf, 1984; Travlos, 1987). Moreover, whether the acquirer and target operate in the same industry (a horizontal merger), different stages of a supply chain (a vertical merger) or don't have neither a vertical or horizontal relationship (a conglomerate merger) can also affect the announcement effect (Papadatos, 2011). Horizontal mergers, for example, can generate positive abnormal returns around the announcement date because of the expectation of shareholders that a merger within an industry can increase the market power for the post-takeover firm (Eckbo, 1983). In some cases, shareholders wrongly expect a deal to increase the long-term value of the firm. For instance, during periods when many takeovers occur, the announcement effect for acquirers is higher (Rosen, 2006). But Rosen (2006) also finds that the long-term wealth effects experienced by the acquirers for these takeovers is lower than for deals announced in a period where M&As occur less frequently. Increased activity in the M&A market is associated with market booms and market booms are in turn associated with overoptimism of investors (Jovanovic & Rousseau, 2001). This overconfidence can explain the reversal of the short- and long-term wealth effect, according to Rosen (2006). The period considered in this study falls completely into the most recent merger wave, which started in 2009 (Ching, 2019). As for a characteristic which is more related to this study, international mergers and acquisitions also have a well-studied relation between short- and long-term wealth effects.

Cross-border acquisitions

Whether the target is a domestic (a US firm in this case) or a foreign firm has a proven influence on the announcement effect for bidders. A deal with a foreign target is also called a cross-border acquisition. Black, Carnes and Jandik (2001) find that, also when controlling for other factors, cross-border acquisitions perform worse than domestic takeovers in the 3 to 5 years after the merger. The poor long-term performance is in accordance with a study from Moeller and Schlingemann (2005). In their paper they compare over 4430 acquisitions with US acquirers between 1985 and 1995 and find significantly lower abnormal returns, a difference of around 1%, for the acquirer when the target is not from the United States. But because of the many differences between countries it is almost simplistic to say that all cross-border acquisitions are the same and thus always perform worse than domestic acquisitions, both in the short and long run. The characteristics of the target's or bidder's country can affect the expectations for the long term and therefore, the announcement effect. Francis et al. (2008) focus on the level of integration of the target's financial market with the world financial

market. They find that, when comparing acquisitions with a US acquirer in the late 1990s and early 2000s, a more segmented financial market in the target's country leads to a higher announcement effect for the acquirer. Francis et al. (2008) argue that this announcement effect is driven by the expectation that when a more financially-segmented company is acquired by a firm from a more integrated country, the target firm can exploit the more integrated status of its acquirer and improve the long-run performance of the acquirer. For companies with large R&D expenses and intangible assets, a cross-border acquisition can yield positive long-term wealth effects (Francoeur, 2006). The possibility to internalize foreign firms and avoid high transaction costs and knowledge leakage as a motive for acquirers to engage in takeovers, as described in the internalization theory, explains this effect (Buckley & Casson, 2009). Morck and Yeung (1992) find that these high R&D firms experience also positive short-term wealth effects when announcing a takeover with a foreign target.

2.5 The potential effect of development on M&A announcement effects

Differences between targets' countries and bidders' countries can cause both obstacles and opportunities for the post-merger firms. Not only cultural differences can be of influence but also differences in the level of development of the target's and acquirer's countries in general can be an important factor for long- and short-term wealth creation with cross-border takeovers. Existing literature on the influence of development-related factors on the wealth creation of takeovers is not decisive on whether lower development causes either more opportunities or obstacles for the acquirer. La Porta et al. (2000) argue in favour of the opportunities created by acquiring a lower-developed target. They state that an important mechanism to increase value for a firm is to be acquired by a company with a better regime of corporate governance. Moeller and Schlingemann (2005) argue in turn that this could lead to potential higher returns for bidder firms. Steigner and Sutton (2011) find that larger cultural differences result in better long-term performance, when the acquirer can exploit internalization benefits. Another argument for higher returns on the bidder's side considers the growth-differences between developed and developing countries. Developed countries are often countries with lower economic growth than developing countries. According to Buckley and Ghauri (2002), acquirers are more often from slow-growing economies and targets are more often from an economy with higher growth rates. As higher growth rates might imply higher future growth, acquiring a firm in a developing country with higher economic growth than the acquirer's country creates a possible positive influence on the acquiring firm's prospects. As can be seen, most studies that conclude in favour of the upsides of acquiring lower-developed targets do so because of the possible undervaluation of the target and the growth opportunities this creates for the target when acquired by a firm from a higher-developed country (Moeller & Schlingemann, 2005). While lower-developed countries can create opportunities for acquirers from higher-developed countries, it does not mean that higher-developed targets necessarily cause lower benefits for the acquirer. Moreover, acquiring a target from a lower-developed country can create obstacles rather than opportunities in

some cases. Moeller et al. (2004) find that the level of legal protection of shareholders in the target country has a positive effect on the announcement effect of bidders. Lower level of protection, which is more present in lower-developed countries, would thus generate lower announcement effects for the acquirer. Black et al. (2007) find that differences in accounting standard between the acquirer and target reduces shareholder wealth. This is in part because acquirers find it more difficult to value the target correctly when accounting standards differ. In a study by Richter Quinn (2004), he argues that developing countries have different and less trustworthy accounting practices than developed countries. The mistrust this can create among the acquirer's shareholders can influence their long-term expectations and thus the announcement effect negatively. Also Aybar and Ficici (2009) and Brouthers (2002) argue in favour of the obstacles created when acquiring targets from lower-developed countries. They argue that the institutional infrastructure of developing countries is often corrupt, inefficient, restrictive and shortcoming on ownership protection, which causes additional risk when investing in these markets. Assuming that the acquirer's shareholders are not necessarily risk-seeking, conducting a risky investment will not be perceived as a favourable event for the acquiring firm and hence might generate poor abnormal returns around the announcement date. For targets, the level of development of its country's institutions is found to have a positive effect on the target's announcement effect by Rossi and Volpin (2004). They also argue that a lower level of development related to the target might reduce benefits for the acquirer because of larger information asymmetries and agency costs but they do not give any statistical evidence for this. In conclusion, one can argue that country-related obstacles can also undermine the possible growth-opportunities when acquiring a target from a lesser-developed country. As most studies consider specific country characteristics which can be related to development, conducting a study using multiple different measures of a target's nation development can create a more general and complete picture of the possible influence development can have on the announcement effect for the bidder. Having reviewed these studies, the following hypothesis is constructed: *Acquisition announcements involving targets from lower-developed countries result in lower announcement effects for US bidders than announcements involving targets from higher-developed countries.*

3 Data

3.1 Sample selection

To review the effect of the target country's level of development on the announcement effect of the US acquirer, the Thomson One database is used to create a sample of all announced acquisitions by publicly traded US companies with foreign targets between 1st of January 2013 and 31st of December 2018. I have chosen this recent timeframe to assure the results will be relevant for today's state of the market for mergers and acquisitions. I have chosen the US as the acquiring country because the US has the most M&A activity world-wide, according to the Institute of Mergers, Acquisitions and

Alliances[3]. Moreover, a larger sample size will increase the power of the tests in an event study (Kothari and Warner, 2006). The US belongs to the more developed countries in every measurement used in this paper, considering a higher score indicates a more developed country. As an extra search criterion, I have added that the parent of the acquirer also should be a US firm to make sure the sample only contained pure US acquirers. Having a parent-firm in another country might lead to a bias since the parent's nation might be the same as the target's nation and the deal would not be a cross-border acquisition to its fullest extent. The same logic was applied when excluding deals where the target's parent was a US firm. These criteria resulted in a sample of 3711 deals. To extract the relevant stock-price data from DataStream later, the SEDOL codes of the acquiring companies are needed. SEDOL codes are used to identify securities[4]. As some of the acquirers had no SEDOL-codes available, they have been left out of the sample. This reduces the sample to 3539 announcements. Since I am going to research what effect the level of development of a target has on the bidder's announcement effect, a measure for the development of countries is needed. To make sure the results of this study are robust to different ways of measuring development, multiple rankings are used. For every measure of development, I follow the same logic when creating the subsamples containing the top and bottom 20% countries: As an event study will be performed with the use of stock pricing data from DataStream, only the deal announcements will be selected where the acquirer is a listed firm with enough available data during the estimation window. While performing an event study with daily stock returns, Cowan and Sergeant (1996) eliminated all stocks from their sample which do not have returns for more than roughly 5% of the estimation window. I follow the same method to ensure there is enough data to estimate the normal and abnormal returns. This means all announcements which are missing more than 12 days of stock returns will be eliminated from the subsamples.

3.2 Measures of development

Human Development Index

The United Nations Development Programme (UNDP) created a measure called the "Human Development Index" or HDI in 1990. This index was created to include more social factors into measuring the development of a country. Before 1990, development was predominantly measured using solely economic benchmarks. The Human Development Index is based in three pillars; 'a long and healthy life', 'knowledge' and 'a decent standard of living'. These pillars are indexed based on life expectancy at birth, expected/mean years of schooling and GNI per capita[5]. The United States has a score of 0,924 (on a scale from 0 to 1) and therefore can be seen as a developed country (United Nations Development Programme, 2018). There are 101 different target-countries identified by Thomson One in the sample. After assigning the proper HDI-score to each of them I find that several

[3] https://imaa-institute.org/m-and-a-statistics-countries/
[4] http://www.isin.org/sedol/
[5] http://hdr.undp.org/en/content/human-development-index-hdi

countries do not have HDI-scores readily available from the United Nations Development Programme (United Nations Development Programme, 2018). This is mainly because they are British or US overseas territory. I have modified these deals accordingly (further explained in Appendix A). After these modifications the sample consists of 91 countries and 3532 announcements. As previously said, I will select the top and bottom 20% based on HDI-score. The resulting 36 countries are shown in the tables in Table 1.

Table 1: Selected target countries based on the Human Development Index

20% highest scores		**20% lowest scores**	
Countries	**HDI**	**Countries**	**HDI**
Norway	0.953	Vietnam	0.694
Switzerland	0.944	Bolivia	0.693
Australia	0.939	El Salvador	0.674
Ireland	0.938	Morocco	0.667
Germany	0.936	Guatemala	0.65
Iceland	0.935	India	0.64
Hong Kong	0.933	Ghana	0.592
Sweden	0.933	Equator Guinea	0.591
Singapore	0.932	Kenya	0.59
Netherlands	0.931	Myanmar (Burma)	0.578
Denmark	0.929	Pakistan	0.562
Canada	0.926	Papua New Guinea	0.544
United Kingdom	0.922	Tanzania	0.538
Finland	0.92	Nigeria	0.532
New Zealand	0.917	Rwanda	0.524
Belgium	0.916	Ethiopia	0.463
Japan	0.909	Mozambique	0.437
Austria	0.908	Liberia	0.435

This table presents the countries which have been selected based on their score in the Human Development Index as published by the United Nations Development Programme (2018).

I then extracted the deals with targets from the 36 countries which resulted in two subsamples. The subsample with the deals with target's countries having the highest 20% HDI-score contained 2324 deal announcements and the subsample with the targets from countries with the lowest 20% HDI-scores contained 173 deal announcements. Eliminating all announcements with acquirers who do not have enough stock returns available in DataStream reduces the high-developed sample to 1367 deal announcements and the lower-developed sample to 109 deal announcements.

Human Capital Index

Another measure of development is the Human Capital Index or HCI developed by the World bank. The HCI focusses purely on social factors of development. This index estimates the level of development based on three tiers. The first one is 'survival', which is measured using the under-5 mortality rate of a country. The second tier is 'expected years of learning-adjusted school'. This is measured using the expected number of years of education expected until 18, adjusted for the quality of education in a country. This makes this pillar more sophisticated than the education pillar of the Human Development Index because it acknowledges that 1 year of education does not equal the same amount of knowledge in every nation. The third and last tier called 'health' is measured using a combination of the level of stunting until the age of 5, and the survival rate to the age of 60 (World Bank Group, 2018b). The United States belongs to the top of this index with an HCI-score of 0,76 (on a scale from 0 to 1) and hence is a developed country based on HCI-score. As not every country from the initial sample retrieved from Thomson One has an HCI-score readily available, some modifications were made. For further explanations, see Appendix A. After these modifications the number of countries in the sample is reduced to 84 and the number of announcements from 3539 to 3525. Taking the top and bottom 20% based on the Human Capital Index resulted in a total of 34 countries in the two subsamples as presented in table 2 (World Bank Group, 2018a).

Table 2: selected target countries based on the Human Capital Index

20% highest scores		**20% lowest scores**	
Country	**HCI**	**Country**	**HCI**
Singapore	0,88	El Salvador	0,50
Japan	0,84	Morocco	0,50
South Korea	0,84	Dominican Republic	0,49
Hong Kong	0,82	Egypt	0,49
Finland	0,81	Myanmar (Burma)	0,47
Ireland	0,81	Guatemala	0,46
Australia	0,80	India	0,44
Sweden	0,80	Ghana	0,44
Netherlands	0,80	South Africa	0,41
Canada	0,80	Tanzania	0,40
Germany	0,79	Pakistan	0,39
Austria	0,79	Ethiopia	0,38
Czech Republic	0,78	Papua New Guinea	0,38
United Kingdom	0,78	Rwanda	0,37
Portugal	0,78	Mozambique	0,36
Denmark	0,77	Nigeria	0,34
Norway	0,77	Liberia	0,32

This table presents the countries which have been selected based on their score in the Human Capital Index as published by the World Bank Group (2018a).

Extracting the deal announcements with targets in the countries from table 2 resulted in two subsamples where the subsample consisting of targets from a country with a high HCI-score has 2236 announcements and the other subsample containing the countries within the lowest 20% of HCI-scores contains 188 deal announcements. Excluding all announcements with more than 12 missing returns during the estimation window in DataStream decreases both samples substantially. The sample with top 20% HCI-scores decreases to 1308 announcements and the sample with the 20% lowest HCI-scores decreases to 127 announcements.

Gross National Income per capita

The World bank's index only considers social factors. To create a more complete picture of the influence of development on the announcement effect, I will also test for a difference between top and bottom countries using a solely economy-focussed measure of development. A frequently used method to measure pure economic development is the Gross National Income (GNI) per capita, also used in the HDI[6]. Other macro-economic variables like import, public debt and foreign direct investment can be used as measures for economic development as well. In this paper, I will use the GNI per capita as the economic measure of development as provided by the World Bank[5]. This is because the GNI gives a complete and pure economic measurement while macroeconomic variables only describe a part of the economy as it is. GNI per capita is used to correct for different population sizes of countries. The United States has a GNI per capita of 61.120 USD, which makes it one of the better performing countries[7]. Similar to the alternative measures, some countries do not have a specific GNI per capita readily available and were eliminated or the appropriate modifications were made (specific explanations in Appendix A). The original sample of 101 countries is reduced to 97 countries because of these modifications. The number of deal announcements in the sample was reduced from 3539 to 3536. After ranking the 97 countries, the top and bottom 20% were selected. This resulted in the 40 countries presented in table 3.

The subsamples obtained using the countries from table 3 resulted in a high GNI per capita subsample of 1617 deal announcements and a low GNI per capita subsample of 186 deal announcements. Eliminating the announcements which do not meet the requirement considering stock returns in DataStream reduced the high GNI per capita sample to 942 announcements and the lower GNI per capita sample to 115 announcements.

[6] http://hdr.undp.org/en/content/human-development-index-hdi
[7] https://data-worldbank-org.eur.idm.oclc.org/indicator/ny.gnp.pcap.pp.cd

Table 3: selected target countries based on Gross National Income per capita

Top 20%		Bottom 20%	
Country	**GNI per capita**	**Country**	**GNI per capita**
Monaco	186080	Jordan	9130
Singapore	90760	Ukraine	8930
Kuwait	83490	Morocco	8050
Luxembourg	76300	Guatemala	8020
United Arab Emirates	74570	Bermuda	7550
Switzerland	67220	El Salvador	7540
Norway	64760	Bolivia	7350
Hong Kong	64240	India	6950
Ireland	61120	Vietnam	6460
Saudi Arabia	54820	Myanmar (Burma)	6030
Denmark	54760	Pakistan	5840
Netherlands	54650	Nigeria	5710
Iceland	54140	Ghana	4290
Austria	53740	Papua New Guinea	4040
Germany	53660	Kenya	3260
Sweden	52130	Tanzania	2880
Belgium	49960	Rwanda	2000
Australia	48050	Ethiopia	1890
Finland	46880	Mozambique	1210
Canada	46010	Liberia	1170

This table presents the countries which have been selected based on the National Gross Income per capita, as retrieved from https://data-worldbank-org.eur.idm.oclc.org/indicator/ny.gnp.pcap.pp.cd.

The International Country Risk Guide

As the Human Development Index, Human Capital Index and GNI focus on development from a domestic perspective, I will also use a way of measurement which considers development and its effect on risk faced by foreign investors. The 'International Country Risk Guide' or ICRG, published by the PRS Group is most used to indicate the risk a foreign party faces when conducting business in a country. It measures political, financial and economic risks (PRS Group, 2018). These risks depict a level of development important to foreign investors, which is especially relevant when considering cross-border mergers and acquisitions. The IRCG is measured using three variables, namely 'corruption', 'law and order' and 'bureaucracy quality'. The weighted averages of these variables, scaled 0 to 1, result in a score where higher scores depict lower risk (Dahlberg et al., 2019). I used the Quality of Governance Database to retrieve the IRCG-scores. The United States received a score of 0.861, which puts it among the best performing nations (Teorell et al., 2019). When assigning the proper IRCG-scores to the 101 countries from the Thomson One Sample, some countries were

missing an IRCG-score and I have thus made the proper modifications, as can be seen in Appendix A, to obtain the final sample of 83 countries and 3497 deal announcements. Retrieving the top and bottom 20% based on IRCG-score resulted in the 34 countries shown in table 4.

Table 4: selected target countries based on the International Country Risk Guide

Top 20% scores		**Bottom 20% scores**	
Country	**IRCG**	**Country**	**IRCG**
Denmark	0,972	Romania	0,417
Finland	0,972	South Africa	0,417
Norway	0,972	Thailand	0,417
Sweden	0,972	Belarus	0,399
New Zealand	0,944	Brazil	0,389
Iceland	0,944	El Salvador	0,389
Luxembourg	0,944	Ukraine	0,389
Netherlands	0,944	Mexico	0,375
Austria	0,917	Azerbaijan	0,361
Canada	0,917	Kenya	0,361
Ireland	0,917	Mozambique	0,361
Australia	0,889	Myanmar	0,333
Germany	0,889	Russia	0,333
Switzerland	0,889	Dominican Republic	0,324
United Kingdom	0,889	Paraguay	0,306
Belgium	0,861	Nigeria	0,278
Japan	0,861	Liberia	0,250

This table presents the countries which have been selected based on their scores in International Country Risk Guide as published by PRS Group (2018).

Two subsamples were extracted from the initial Thomson One sample with the countries from table 4. The countries within the 20% highest ICRG range represent a total of 2277 deal announcements. The subsample containing the countries with the lowest ICRG-score from table 4 consist of 222 announcements. Subsequently, the same criteria applied to the other measures of development regarding the stock-return availability in DataStream was also applied to the International Country Risk Guide samples. This modification reduced the sample with the best-performing countries to 1342 announcements and the sample with worst-performing countries to 138 announcements.

The elimination of announcements which do not meet the return-availability requirement also causes some of the countries which were originally included in the subsamples to not be represented in the final subsamples. This does not matter for the results in this paper since the level of development associated with the takeover's target is important, not the target country itself. This is the case for all measurements of developments.

The subsamples obtained using these four alternatives are large enough samples to perform an event study with daily stock returns, given that Brown and Warner (1985) compared subsamples of only 50 events in their paper on event studies with daily stock returns. The top and bottom 20% subsamples differ substantially in size for every measure of development. This is in accordance with the findings of Hur, Parinduri and Riyanto (2011), who find that the number of cross-border takeovers is substantially lower in lower-developed countries than in higher-developed countries. To make sure my results are robust to possible problems being caused by this difference in size, I will perform Welch's t-test instead of the Student's t-test. Welch's t-test is more suitable when comparing samples of different sizes according to Zimmerman (2004).

4 Research methodology

To find any differences in announcement effects for the different subsamples, I first calculate the announcement effect for each deal announcement in the subsamples. To do so, I use the conventional market model (Brown & Warner, 1985), a methodology also used by Miroslav (2017). First, I calculate the expected 'normal' returns for each bidder company of each announcement. I use the DataStream database to extract the stock prices of these acquirers and use the DataStream event study tool to obtain the normal and abnormal returns. The expected returns will be determined using the market-adjusted model, which is also used by the majority of empirical studies reviewed by McCahery (2003). The market adjusted model estimates the expected returns as follows:

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

With $R_{i,t}$ representing the return on stock i in period t, $R_{m,t}$ presents the market return of market m in period t. The intercept is represented by $\hat{\alpha}_i$ and $\hat{\beta}_i$ represents the slope. $\varepsilon_{i,t}$ represents the error-term. To estimate equation 1, the stock data is used from 252 trading days, ending 6 days before the announcement. 252 days is chosen since it is equal to the number of trading days in a year[8]. When equation 1 is estimated, the expected returns are calculated for the 11-, 5- and 3-day event window. These windows start respectively 5, 2 and 1 day before the announcement date and end 5, 2 and 1 day after the announcement date. Taking the difference between these expected or normal returns and the actual returns, the abnormal returns (AR) are acquired:

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} \quad (2)$$

The output from DataStream contains the abnormal returns for each day within the event window. Since in this study the announcement effect will be calculated and this announcement effect contains several days with several ARs, the cumulative abnormal returns (CAR) are calculated, as is common practice in event studies. The CAR is calculated as follows (Kothari & Warner, 2006):

[8] https://www.nyse.com/markets/hours-calendars

$$CAR_i(t_1,t_2) = \sum_{t-t_1}^{t_2} AR_t \quad (3)$$

Where $CAR_i(t_1,t_2)$ represents the cumulative abnormal return for security i between date t_1 and date t_2. The right-hand side represents the sum of the abnormal returns between t_1 and t_2. When the CARs for every announcement and event window are calculated, the cumulative average abnormal return (CAAR) is calculated for each subsample as well (Miroslav, 2017):

$$CAAR_j(t_1,t_2) = \frac{1}{N}\sum_{i=1}^{N} CAR_{i,j}(t_1,t_2) \quad (4)$$

Where $CAAR_j(t_1,t_2)$ represents the CAAR for sample j between t_1 and t_2. The right-hand side represents the sum of all CARs from sample j divided by the number N (the sample size of sample j.

After having calculated all CARs and CAARs, I will first perform the generalized sign test and the one sample t-test to find if the found CAARs differ significantly from zero ($H_0: CAAR = 0$). The generalized sign test examines whether the fraction of positive cumulative abnormal returns is in line with the fraction of positive abnormal returns in the estimation window. The generalized sign test differs from the regular sign test in the way that the regular sign test assumes the distribution of positive and negative datapoints to be symmetrical where the generalized sign test first calculates the expected ratio of positive points. This causes the generalized sign test to be more robust against this possible unequal distribution in the abnormal returns during the estimation window. Moreover, Cowan (1992) find that, when comparing the generalized sign test to rank tests on event studies, that the generalized sign test is a better option for longer event windows. On top of that, Cowan, Nayar, and Singh (1990) as well as Sanger and Peterson (1990) have previously used the generalized sign test to test for significance in abnormal returns in their respective studies. To calculate the fraction of positive abnormal returns in the estimation window ($\hat{\rho}$), formula 5 is employed.

$$\hat{\rho} = \frac{1}{n}\sum_{j=1}^{n}\frac{1}{L}\sum_{t=E_1}^{E_L} S_{jt} \quad (5)$$

Where n represents the number of securities in the subsample, L represents the number of days in the estimation period (252 in this case) and S_{jt} takes on 1 when the abnormal return is positive and 0 if negative. The expected abnormal returns are calculated using the market-adjusted model and the estimation period is the same period used to compute the abnormal returns in the event horizon. The generalized sign test-statistic is

$$z_{gsign} = \frac{(w - n\hat{p})}{\sqrt{n\hat{p}(1-\hat{p})}} \quad (6)$$

Where w represents the number of stocks with positive $CAR_i(t_1,t_2)$ during the event period. The test-statistic is compared with the critical z-values presented in Appendix B.

A weakness of the generalized sign test is that it only considers signs but not the magnitude of the abnormal returns. I will therefore also employ a parametric test: the one sample t-test. Since all subsamples have sample-size greater than 30, it can be assumed that they all are normally distributed according to the Central Limit Theorem and therefore the one sample t-test can be conducted with these samples (Moore et al., 1996). First, one must calculate the sample mean, which is equal to the cumulative average abnormal return (formula 4). Second, the standard deviation for each subsample (S_{CAAR}) is calculated as presented in formula 7:

$$S_{CAAR} = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(CAR_i - CAAR)^2} \quad (7)$$

Finally, the one sample t-statistic (t_{one}) can be calculated as shown in formula 8:

$$t_{one} = \frac{CAAR - H_0}{S_{CAAR}/\sqrt{n}} \quad (8)$$

The H_0 depicts the value against which the sample's mean is tested. In this case, when checking whether the cumulative average abnormal returns differ significantly from zero, zero is the value against which the sample's mean is tested. When the t-statistic is calculated, it can be compared to the critical values, using $n-1$ degrees of freedom for each subsample. The proper critical values per subsample can be found in Appendix C.

If for the generalized sign test and the one sample t-test the null hypothesis, $H_0: CAAR = 0$, is rejected, it can be said that the cumulative average abnormal return for the subsample differs significantly from zero. In other words, the announcement has generated a stock-price reaction which deviates significantly from the expected 'normal' stock price behaviour. The acquirer's shareholders thus react significantly to the announcement of a takeover.

After the generalized sign test and the one sample t-test, I will employ Welch's t-test to find if there is any significant difference between the CAARs of the subsamples of every development measure. As mentioned before, all the pairs of subsamples differ substantially in size. The problem that arises when comparing two samples with different sizes is, according to Zimmerman (2004), that the assumption of equal variance of the Student's t-test might not hold. This can increase the change of a Type 1 Error, which means a true null-hypothesis is wrongfully rejected (Moore et al., 1996). This means that when the Student's t-test is used, the null-hypothesis, which assumes that the CAARs are not significantly different, might be wrongfully rejected and I might wrongfully conclude that the CAARs are in fact significantly different. One way to deal with this possibility of unequal variances is the use of the Welch's t-test, also called the t-test for unequal variances, as constructed by B.L. Welch (1938). I will use STATA to compare the variances of each subsample. Important to note is that Zimmerman (2004) argues that the Welch's t-test is the best test available when comparing samples of unequal size, even if no preliminary test is done. Nevertheless, I will compare the variances using an

F-test in STATA for the sake of completeness. Since the Student's t-test is more commonly known and Welch's t-test is derived from it, I will also state calculations for the t-statistic and the degrees of freedom of the Student's t-test so that the difference between the two tests can be seen easily. All formulas considering both tests are derived from the paper by Moser and Stevens (1992) on the Student's t-test and Welch's t-test.

The following variables are used when calculating the t-statistic for both tests: μ_1 and μ_2 represent the means of sample 1 and 2, s_1 and s_2 represent the variances of the two samples and n_1 and n_2 represent the sample sizes. The Student's t-statistic is calculated using with the following formula:

$$t = \frac{\mu_1 - \mu_2}{s_p^2 \sqrt{(\frac{1}{n_1} + \frac{1}{n_2})}} \quad (9)$$

Where s_p represents the pooled variance of both samples, which is calculated using formula 10:

$$s_p^2 \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \quad (10)$$

For Welch's t-test no pooled variance is used, which makes it better suited for comparing means with unequal variances. Welch's t-statistic (t_w) is calculated as follows:

$$t_w = \frac{\mu_1 - \mu_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad (11)$$

Next to the t-statistic, the number of degrees of freedom is also needed to perform a t-test. The calculation of the degrees of freedom for Welch's t-test (f_w) and the formula for the degrees of freedom for the Student's t-test (f) also differs. The formulas for f and f_w are as stated below:

$$f = n_1 + n_2 - 2 \quad (12)$$

$$f_w = \frac{(\frac{1}{n_1} + \frac{u}{n_2})^2}{\frac{1}{n_1^2(n_1 - 1)} + \frac{u^2}{n_2^2(n_2 - 1)}} \quad (13)$$

The u in formula 13 depicts the variance ratios of the two samples and is calculated using the following formula:

$$u = \frac{s_2^2}{s_1^2} \quad (14)$$

After completing these calculations, one can perform the Welch's t-test to find if there is any significant difference between two subsamples of different size. I will use STATA to perform these calculations. Next to the two-tailed test ($H_0: Highest = Lowest$), there will follow the one-tailed

tests ($H_0: Highest > Lowest$ and $H_0: Highest < Lowest$), to see if and which subsample yields larger CARs on average. If, for example, the CAAR of higher developed target countries is found to be significantly larger than the CAAR of lower developed target countries, one can conclude that a higher level of development for target countries can lead to a more favourable announcement effect for the US acquirer in this sample. Moreover, the tiers used for the methods of measurement which generate significant differences between its two subsamples can be considered of influence on the announcement effect and are factors future research should investigate.

5 Results

Table 5 reports the cumulative average abnormal returns for each of the measures of developments' subsamples over 3 different event windows. All subsamples generated small positive announcement-effects for all tested event windows. The results show that bidders with targets from the most developed countries experience small positive announcement effects ranging from 0,06% in the Gross National Income per capita subsample (Panel C) to 0,90% in the Human Development Index subsample (Panel A). Nevertheless, none of these CAARs seem to be significantly different from zero. It can thus be said that based on the measures of development examined in this paper, deals involving targets from higher-developed countries do not generate significant cumulative abnormal returns on average in my sample. For the deals with lower-developed target countries, the cumulative average abnormal returns vary from 0,34% in the GNI per capita subsample (Panel C) to 1,07% in the ICRG subsample (Panel D). As for significance, it is important to notice that I used two different statistical tests to make sure my results were robust against different ways of testing. Some of the CAARs in the lower-developed subsamples are only significant to some level for either the generalized sign test or the one-sample t-test. These CAARs are thus not treated as completely significant. Moreover, some of the CAARs do not yield significant results for either of the two tests. The CAARs which tested significant for both tests are the CAAR of 0,63% from the HCI-subsample with a 5-day event window (Panel B) and the CAARs of 1,07% and 0,83% from the ICRG-subsample with a respectively 5- and 3-day event window (Panel D). Out of the eight subsamples with higher- and lower-developed target countries, only the deals in these three subsamples based on the Human Capital Index and the International Country Risk Guide have generated significant cumulative average abnormal returns for the respective US acquirer around the announcement date.

Table 5
Cumulative average abnormal returns per measure of development

Panel A: Human Development Index

Subsample	Observations	Event window	CAAR	Generalized Sign Test	One sample t-test	% of positive
		(-5, +5)	0,14%	1,30	0,86	51,06%
Highest	1367	(-2, +2)	0,90%	1,24	0,77	50,99%
		(-1, +1)	0,14%	1,02	1,34	50,69%
		(-5, +5)	0,49%	0,79	0,99	53,21%
Lowest	109	(-2, +2)	0,57%	2,13**	1,62	59,63%
		(-1, +1)	0,48%	0,98	1.69*	54, 13%

Panel B: Human Capital Index

Subsample	Observations	Event window	CAAR	Generalized Sign Test	One sample t-test	% of positive
		(-5, +5)	0,06%	1,51	0,39	51,11%
Highest	1308	(-2, +2)	0,07%	1,49	0,57	51,03%
		(-1, +1)	0,11%	1,15	1,10	50,57%
		(-5, +5)	0,68%	1,12	1,50	54,33%
Lowest	127	(-2, +2)	0,63%	2,00**	1,95*	58,27%
		(-1, +1)	0,52%	1,47	1,96*	55,91%

Panel C: Gross National Income per capita

Subsample	Observations	Event window	CAAR	Generalized Sign Test	One sample t-test	% of positive
		(-5, +5)	0,16%	1,61	0,82	51,59%
Highest	942	(-2, +2)	0,19%	1,59	1,26	51,70%
		(-1, +1)	0,20%	0,80	1,63	50,42%
		(-5, +5)	0,35%	0,77	0,76	53,04%
Lowest	115	(-2, +2)	0,43%	1,89*	1,20	58,26%
		(-1, +1)	0,34%	0,95	1,10	53,91%

Panel D: International Country Risk Guide

Subsample	Observations	Event window	CAAR	Generalized Sign Test	One sample t-test	% of positive
		(-5, +5)	0,12%	1,48	0,71	51,04%
Highest	1342	(-2, +2)	0,09%	1,48	0,76	51,04%
		(-1, +1)	0,14%	1,37	1,32	50,89%
		(-5, +5)	0,92%	3,58***	1,60	64,49%
Lowest	138	(-2, +2)	1,07%	3,24***	2,60**	62,59%
		(-1, +1)	0,83%	2,90***	2,37**	61,15%

This table presents the results of the two subsamples based on the measures of development over an 11-, 5- and 3-day event horizon, depicted by respectively (-5, +5), (-2, +2) and (-1, +1). It presents the found cumulative average abnormal return rounded to 2 decimals. Furthermore, the generalized sign test statistic and the one sample t-statistic for every event horizon is presented. *, **, *** refers to the 10%, 5% and 1% significance levels. The proportion of positive cumulative abnormal returns is also given.

Table 6 reports the results of Welch's t-test for the comparison of cumulative average abnormal returns of the subsamples based per measure of development and event window. Before conducting Welch's t-test on every pair of subsamples, I conducted an F-test using STATA to test for the inequality of variances, as can be seen in Appendix D. The results depicted that all samples, except the lower-scoring sample based on the ICRG in the 5- and 3-day event horizon, have significantly different variances. Zimmerman (2004) argued that this does not necessarily mean that Welch's t-test is a worse alternative for the two pairs of ICRG subsamples who do not have significantly different variances. I therefore have conducted both Welch's t-test and the Student's t-test on these subsamples. In panel D, the values between brackets for the degrees of freedom, t-statistics and hypotheses' p-values present the values from the Student's t-test. Using either Welch's t-test or the Student's t-test does not change the conclusions considerably.

For every pair of subsamples, the CAARs found in a 11-, 5- and 3-days event window are compared and shown in table 6. Both the pairs of subsamples based on the Human Development Index (Panel A) and Gross National Income per capita (Panel C) do not have significantly different cumulative average abnormal returns for any of the tested event windows. This indicates that, based on HDI or GNI per capita, deals in my sample with a higher-developed target country do not generate, on average, a significantly greater or smaller announcement effect for the US bidding firm than deals with a lower-developed target country. For the subsamples based on the Human Capital Index (Panel B), the deals with lower-developing target countries have significantly higher CAARs than the deals with higher-developed target countries at a 10% significance level for all tested event windows. The subsamples based on the International Country Risk Guide (Panel D) also generate significantly different announcement effects. For all the tested event windows, the deals with targets from lower-scoring countries generate significantly greater announcement effects than the deals with higher-scoring target countries. These results are significant at a 10% level for the 11-day event window, 5% (1% with the Student's t-test) for the 5-day event window and 5% (with both tests) for the 3-day event window. It can be concluded that the Human Capital Index and the International Country Risk Guide are the only development measures in this paper which have a significant influence on the announcement effects generated on the bidder's side.

Table 6
Welch's t-test for differences between the means of two unequally sized samples

Panel A: Human Development Index

Event window	Degrees of freedom	Welch's t-statistic	H_a: Highest ≠ Lowest	H_a:Highest>Lowest	H_a:Highest<Lowest
(-5, +5)	132,81	0,67	0,502	0,749	0,251
(-2, +2)	136,07	1,27	0,205	0,899	0,103
(-1, +1)	138,73	1,11	0,270	0,865	0,135

Panel B: Human Capital Index

Event window	Degrees of freedom	Welch's t-statistic	H_a: Highest ≠ Lowest	H_a:Highest>Lowest	H_a:Highest<Lowest
(-5, +5)	160,11	1,29	0,200	0,900	0,100*
(-2, +2)	166,17	1,63	0,105	0,947	0,053*
(-1, +1)	166,56	1,42	0,158	0,921	0,079*

Panel C: Gross National Income per capita

Event window	Degrees of freedom	Welch's t-statistic	H_a: Highest ≠ Lowest	H_a:Highest>Lowest	H_a:Highest<Lowest
(-5, +5)	156,70	0,39	0,698	0,651	0,349
(-2, +2)	157,57	0,62	0,536	0,732	0,268
(-1, +1)	154,64	0,41	0,684	0,656	0,342

Panel D: International Country Risk Guide

Event window	Degrees of freedom	Welch's t-statistic	H_a: Highest ≠ Lowest	H_a:Highest>Lowest	H_a:Highest<Lowest
(-5, +5)	159,86	1,35	0,180	0,910	0,090*
(-2, +2)	163,12 (1478)	2,27 (2,40)	0,024** (0,017**)	0,988 (0,992)	0,012** (0,008***)
(-1, +1)	162,00 (1478)	1,89 (2,02)	0,061* (0,043**)	0,970 (0,978)	0,030** (0,022**)

This table presents the results of Welch's t-test per measure of development over an 11-, 5- and 3-day event horizon, depicted by respectively (-5, +5), (-2, +2) and (-1, +1). The resulting degrees of freedom, Welch's t-statistics (both rounded to two decimals) and the p-values (rounded to three decimals) for each hypothesis is given. *, ** and *** refer to the 10%, 5% and 1% significance levels if the null hypothesis is rejected. For the ICRG sample with 5- and 3-days event horizon, the results for the Student's t-test are given between brackets.

6 Discussion

The fact that none of the found CAARs, significant or not, are negative is essential to notice. Many studies such as the papers by Kaplan and Weisbach (1992) and Moeller et al. (2004) found negative rather than positive cumulative average abnormal returns for bidder firms around the announcement date. The non-negativity of the CAARs found in this paper might be contributed to the occurrence of high merger activity (also called a 'merger wave') during the timespan from which the sample was selected (2013 until 2018). Ching (2019) stated that the last merger wave started in 2009 and has not ended yet. Furthermore, Jovanovic and Rousseau (2001) argue that announcement effects are higher

during merger waves due to overoptimism by investors. Next to that, the significant CAARs found in the subsamples are quite small compared to the findings of the empirical papers on announcement effects for bidder firms reviewed earlier. The extensive review by McCahery (2003) of empirical papers on the announcement effect shows significant CAARs between 1% and 4% for US acquirers, compared to 0,63% to 1,07% in this paper. Bradley and Sundaram (2004) find significant positive CAARs for bidders of 1,45% and Kohers and Kohers (2000) find CAARs in a range from 1,09% to 1,45%, both larger announcement effects than the results found in this paper.

For all the subsamples with higher-developed countries and the HDI- and GNI per capita-subsamples with lower-developed countries, no significant CAARs were found. As previous research suggests, abnormal returns around the announcement date can be both positive and negative (Martynova & Renneboog, 2008). If the selection criteria, a measure of development in this case, does not result in a sample of takeover-announcements with primarily positive or negative announcement effects, the positive and negative effects might even out, and the cumulative average abnormal return does not generate a significant positive or negative announcement effect. This is also shown by the results from Welch's t-test (table 6). Both pairs of subsamples based on the Human Development Index and Gross National Income per capita do not seem to have significantly different CAARs according to Welch's t-test. This indicates that the acquirer's shareholders do not perceive deals with target's from more developed countries as more or less favourable than if the deal's target was from a lesser developed country. Their trading behaviour depicts that they are quite indifferent about the level of development based on the Human Development Index and Gross National Income per capita. For the pairs of subsamples based on the International Country Risk Guide and the Human Capital Index however, significant differences are found. These results show that deals with lower-scoring target countries generate significantly higher cumulative average abnormal returns than deals with targets from higher-developed countries, based on the HCI and ICRG.

In this paper, I tested if development in general has an influence on the announcement effect experienced by US bidders. I used multiple measures to make sure my results were robust against different ways of measuring development. Reviewing the results clearly shows that development in general does not have a significant effect on the announcement effect of the acquiring company. Not all samples based on the development measures show a significant difference between deals with higher- or lower-developed target countries. Moreover, the measures of development that did show significant differences between deals with lower- and higher-developed target countries indicated that deals with lower-developed target countries generated higher announcement effects for US bidders than deal announcements with higher-developed target countries. These conclusions result in the rejection of the hypothesis "*Acquisition announcements involving targets from lower-developed countries result in lower announcement effects for US bidders than announcements involving targets from higher-developed countries."*

7 Alternative explanations

The hypothesis was rejected as the different measures of development did not generate undivided results that a higher level of development of a target country leads to higher announcement effects for US bidders. First of all, the results are divided. For some pairs of subsamples differences were found and for other measures of development no significant difference in CAARs were found. Moreover, the differences which were found to be significant pointed out that higher level of development of the target's country resulted in significantly lower announcement effects for US bidders. These results show that different measures of development cannot be used as substitutes when it comes to their influence on the announcement effect for the acquiring firm.

Different measures of development use different pillars to examine the level of development of a country. These different pillars measure different aspects of a society, such as social or economic factors. Some aspects might be of importance to foreign acquirers and some aspects might not. In this paper I used four development measures which all focussed on different parts of development. The Human Development Index measures partly social and partly economic levels of development, the Human Capital Index focusses fully on the social aspects, Gross National Income per capita measures only economic aspects and the International Country Risk Guide focusses fully on risk faced by foreign investors. The explanation for the obtained results might lie in the focus of the respective measure of development and the relevance of these pillars to foreign acquiring companies.

Both the Human Development Index and Gross National Income per capita consider GNI per capita as a pillar for economic development. The results for the HDI and GNI per capita show that investors seem to be indifferent about the target country's score in those two measures. This also depicts that the level of economic development of a target, at least purely based on GNI per capita, does not affect the bidder's short-term wealth effect significantly. Gross National Income measures the country's production at a certain given time, but the announcement effect is mostly determined by the underlying long-term expectations of shareholders for the acquiring firm. GNI per capita might not be the best indicator for the expected economic development of a country. As a snapshot of a country's production it might indicate how wealthy a country is at a certain point in time, but it does not acknowledge the growth or stagnation present in economic development. The level of economic growth might be a better indicator for future economic development and thus future wealth of a country. Buckley and Ghauri (2002) already pointed out that acquirers are more often from slow-growing economies and targets are more often from fast-growing economies. Acquiring a company from faster growing economies can create opportunities in the future and therefore create more wealth. So, in conclusion, the current level of wealth of a target country might not be of significant influence on the bidder's announcement effect because it only provides a snapshot of economic development. Economic growth, however, can indicate future economic development of a target

country and gives prospect of future opportunities or obstacles faced by foreign investors. A recommendation for future research might be to define economic growth for target countries and to test its influence on the acquirer's announcement effect.

Both the subsamples based on the Human Capital Index and the International Country Risk Guide showed a result opposite of what I had hypothesized. They both indicated higher announcement effects for acquirers when taking over a lower-developed target. The Human Capital Index is mostly based on social factors. Thus, these results depict that shareholders from a US firm perceive the announcement of a takeover with a target country which is scoring lower on these social factors as significantly more positive news than if the target is from a country which scores higher on the social factors indexed by the Human Capital Index. The Human Capital Index's result might stem from the unexploited opportunities of companies from countries where social development is rather low. Firms from these countries might not be able to reach their full potential due to the lack of human capital present in their respective country. Being taken over by a firm from a more socially developed country can open up opportunities for the target and this can also be favourable for the acquirer. La Porta et al. (2000), for example, stated that it is favourable for a firm to be taken over by a firm with better corporate governance because it can benefit from the higher development of its acquirer. This can in turn be favourable for the acquirer in the long run (Moeller & Schlingemann, 2005). The acquirer's shareholders might foresee this and hence react positively on the announcement of a takeover of a firm from a country which lacks human capital. This generates a higher announcement effect then when the US acquirer would have taken over a target with access to human capital levels similar to the United States and thus fewer not-exploited opportunities.

The same logic counts for the sample based on the International Country Risk Guide, which measures risks faced by foreign investors; if these risks are higher in a target's country according to the ICRG (lower score means higher risk), the announcement is perceived as more favourable news for the acquirer then if it would announce a takeover with a target associated with a higher ICRG-score and thus lower risk. These findings are the contrary of what previous research suggests. The ICRG uses 'corruption', 'law and order' and 'bureaucracy quality' as pillars. These pillars are quite closely related to the quality of institutions in a country. Aybar and Ficici (2009) and Brouthers (2002) argued that corrupt, inefficient and restrictive institutions as well as shortcoming on ownership protection in a target country can cause higher risk due to more information asymmetry and agency costs. When one assumes that investors are not necessarily risk-seeking, one might expect deal announcements with targets from risky countries to generate lower announcement effects for the acquirer. Rossi and Volpin (2004) already proved this for the target's announcement effect. It might be, in my sample, that the acquirer's shareholders are less risk-averse than assumed. It might be that the shareholders associate the higher risk with higher returns. French et al. (1987) and Campbell and Hentschel (1992) were one of the first ones to find such a positive relation between risk and stock returns (Nyberg,

2012). This so-called risk return trade-off might not be completely rational. Higher risk can obviously also cause higher losses instead of higher profits. In my sample however, the expectations of greater wealth coming from greater risk seems to have the upper hand over the possibility of higher losses. In conclusion, it seems that the shareholders of US bidder firms are less risk averse than I expected when constructing my hypothesis. Furthermore, taking over targets from lower-developed countries creates opportunities and obstacles for the bidder. Irrational or not, the results for the HCI and ICRG indicate that the acquirer's shareholders expect greater opportunities than obstacles.

8 Conclusion

This paper investigates the potential effect of the level of development of a target's country on the announcement effect experienced by US-based acquiring companies. It investigates mergers and acquisitions between the 1st of January 2013 and 31st of December 2018 with a US acquirer and a non-US target. The Human Development Index, Human Capital Index, Gross National Income per capita and the International Country Risk Guide were used as measures of development to assess if deals with lower-developed target countries generated significantly different announcement effects for US bidders than deals with higher-developed target countries. According to the Human Development Index and Gross National Income per capita, development of the target firm's country does not affect the announcement effect for the acquirer. This might be because GNI per capita (also used in the HDI) provides a snapshot of wealth rather than a prospect for the future. Next to that, the Human Capital Index and the International Country Risk Guide showed that for social development and risk faced by foreign investors higher development means lower announcement effects. These finding contradict the reasoning of Aybar and Ficici (2009) and Brouthers (2002) that higher institutional risk is primarily disadvantageous for the acquiring firm. However, it affirms the study by Moeller and Schlingemann (2005) who argued in favour of taking over targets from lower-developed countries. It seems that for the HCI and the ICRG, the shareholders of the acquiring company expect more opportunities than obstacles for the bidding firm when they take over firms from lesser-developed countries. As it was hypothesized that lower-developed targets generated lower announcement effects for bidders than higher-developed targets, the results cause this hypothesis to be rejected. The results show no unified effect among the four measures of development; hence it can be concluded that development in general has no undivided effect on the acquirer's announcement effect.

My research can be improved in a couple of ways. First, future research should examine the effect of economic development on the announcement effect using other measures than GNI per capita as this only provides a snapshot of economic wealth rather than a prospect for the future. Economic growth could be a more appropriate measure as it shows a trend which might be a good prospect for future economic wealth. Second, controlling for deal-specific characteristics such as method of payment or industry can make the findings more robust. Finally, more specific development-related country-

specific characteristics should be reviewed. This paper gives a general view on development, while focussing on the pillars of the ICRG and HCI might reveal which characteristics are essentially responsible for the found effect.

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Appendix A: Countries initial sample with comments

All countries from the initial sample and the comments per measure of development

Country	HDI	HCI	GNI per Capita	Rank ICRG
Barbados	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Belarus		Eliminated (ND)		
Bermuda	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Bolivia		Eliminated (ND)		
Bosnia				Eliminated (ND)
Cayman Islands	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Equator Guinea		Eliminated (ND)		Eliminated (ND)
Gibraltar	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Grenadines		Eliminated (ND)		Eliminated (ND)
Guernsey	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Hong Kong				Eliminated (ND)
Isle of Man	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Jersey	Assigned to UK	Assigned to UK	Assigned to UK	Assigned to UK
Kazakhstan				Eliminated (ND)
Maldives		Eliminated (ND)		Eliminated (ND)
Mauritius				Eliminated (ND)
Monaco	Eliminated (ND)	Eliminated (ND)		Eliminated (ND)
Puerto Rico	Eliminated (ND)	Eliminated (ND)	Eliminated (ND)	Eliminated (ND)
Rwanda				Eliminated (ND)
St Lucia		Eliminated (ND)		Eliminated (ND)
Taiwan	Assigned to China	Assigned to China	Assigned to China	Assigned to China
US Virgin Is	Eliminated (US)	Eliminated (US)	Eliminated (US)	Eliminated (US)

All countries represented in the initial sample from Thomson One which have comments related to modifications made because of the unavailability of index-scores per index. There are some countries which are Chinese, British or US territory. I have considered the British and Chinese territories to be part of the United Kingdom and China. These modifications are described under comments as 'Assigned to UK' and 'Assigned to China'. Countries considered US territories are left out of the sample, as depicted by the comment 'Eliminated (US)' in the table below. As some countries do not have a score for some of the measurements, I have left them out as well. The comment 'Eliminated (ND)' refers to the elimination of these countries out of the sample because there was no data (ND) available.

Appendix B: Critical z-values

Critical z-values per significance level

Level of significance	Critical value
10%	1,645
5%	1,960
1%	2,576

This table represents the critical values for Z, as retrieved from Moore et al. (1996).

Appendix C: Critical t-values

Critical values t-distribution per subsample for the one sample t-test

Subsample	Degrees of freedom	10%	5%	1%
highest HDI-scores	1366	1,645	1,960	2,576
lowest HDI-scores	108	1,660	1,984	2,626
highest HCI-scores	1307	1,645	1,960	2,576
lowest HCI-scores	127	1,658	1,980	2,617
highest GNI per capita	941	1,645	1,960	2,576
lowest GNI per capita	115	1,658	1,980	2,617
highest ICRG-score	1342	1,645	1,960	2,576
lowest ICRG-score	138	1,655	1,976	2,609

This table presents the results the critical values per subsample, given the degrees of freedom n-1. These critical values are retrieved from Moore et al. (1996).

Appendix D: Test for the equality of variances

F-test for the equality of variances per subsample

Sample	Event window	F-statistic
HDI	(-5, +5)	1,35**
	(-2, +2)	1,52***
	(-1, +1)	1,65***
HCI	(-5, +5)	1,23*
	(-2, +2)	1,52***
	(-1, +1)	1,53***
GNI per capita	(-5, +5)	1,41**
	(-2, +2)	1,43**
	(-1, +1)	1,34**
ICRG	(-5, +5)	0,77**
	(-2, +2)	0,88
	(-1, +1)	0,84

This table presents the results of F-test for the equality of variances. The resulting F-statistic is given (rounded to two decimals) for every measure of development and event window. *, ** and *** refer to the 10%, 5% and 1% significance levels.