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# Deal or No Deal – How Overvaluation and Governance Problems Drive Stock-Financed Acquisitions

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# Abstract:

Theory suggests that overvalued firms can create value for their shareholders by exploiting their overvaluation to purchase less overvalued firms through stock-financed acquisitions. Recent evidence from the US indicates that these companies often fail to do so by significantly overpaying for their targets and destroying shareholder value in the long run. By adopting a similar study design to a European setting, we show that the same outcomes are attained for European overvalued stock acquirers. In a crosscountry setting, we find that the most value-destroying acquisitions are concentrated in countries with low levels of shareholder protection. Governance problems and principal-agent conflicts, not shareholder value creation, appear to be the main motive behind stock acquisitions by overvalued acquirers in these countries.

**Keywords:** Mergers and Acquisitions, Method of Payment, Stock Overvaluation, Corporate Governance, Shareholder Protection

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# 1 Introduction

In 2000, AOL acquired Time Warner in the deal often described as "the worst merger of all time".<sup>1</sup> AOL paid with shares whose value decreased by nearly 90% in the subsequent two years, raising the suspicion that AOL's managers conducted the deal precisely because they knew they could use their overvalued stock as currency and thus pay a discount price. This transaction not only transferred value from Time Warner to AOL shareholders but also eroded the overall value of the company, thereby destroying shareholder value in total (Di Li et al, 2018).

This phenomenon can be largely explained by existing theory and studies: A company that believes its shares are temporarily overvalued has a strong incentive to exploit this overvaluation by opportunistically acquiring other firms at a discount using its shares as currency (Shleifer and Vishny, 2003). Indeed, a highly positive correlation between stock market valuation and acquisition activity has been reported. However, theory and empirics diverge on the question of whether such stock-swap acquisitions motivated by overvaluation actually create shareholder value. While theory suggests a shift in value from the target to the acquirer shareholders and the acquisition thus serves the long-term interest of the acquirer shareholders (Shleifer and Vishny, 2003), empirical studies covering the UK and the US provide mixed results regarding the stock price performance of acquiring companies (Akbulut, 2013).

In this paper, we will address the question of how the above-mentioned circumstances manifest themselves in the Euro area , i.e., to what extent acquisitions are motivated by overvaluations and whether they are profitable for the shareholders of the acquiring company in the long-run. Our study sample consists of acquisitions conducted in the 19 countries that are part of the Euro monetary union between 1988 and 2017, pooling a total of 932 transactions. While estimating overvaluation using market and book value-based Fama-MacBeth regression models, we show that

<sup>&</sup>lt;sup>1</sup> In 2010, Gerald Levin, the former Time Warner chief who helped orchestrate the merger with AOL, said he had "presided over the worst deal of the century". Also, economically highly respected, and widely read business magazines describe the "AOL-Time Warner merger of 2000 [as] the most famous example of a dysfunctional deal" (e.g., Mergers and acquisitions often disappoint. (2017, October 7). *The Economist*, Oct 7th 2017 edition).

European stock-swap acquirers are significantly more overvalued compared to their targets, which is consistent with evidence from the Anglo-Saxon area (Fu et al, 2013). We conclude that these acquirers are motivated by their own overvaluation as well as their overvaluation relative to the target.

Although the idea of using overvalued stocks as currency to exploit mispricing is hypothetically attractive, it is questionable whether this concept also works in practice. Following the approach of Fu et al (2013), we hypothesize that the observed relative overvaluation is diminished or possibly even inverted by elevated prices or premia paid for target firms. We show that overvalued acquirers are often unable to conclude favorable exchange ratios and significantly overpay for their targets.

These results raise doubts that acquisitions motivated by overvaluation actually create shareholder value and thus imply different conclusions than a study by Savor and Lu (2009). The authors find that the returns of companies that announced but withdrew an acquisition are significantly lower than those of successful acquirers. Therefore, they conclude that there is value in the success of an equity acquisition and argue that this supports the hypothesis that firms may opportunistically exploit their overvaluation to acquire targets at a discount. To account for this, we adopt the approach suggested by Daniel et al (2001) as we examine how the long-run returns of acquirers in our dataset compare to a control group of non-merging firms in the same industries and in the corresponding year. We further examine the long-run effect of these transactions on acquirer shareholder wealth and find that overvalued stock acquirers seem to generate significantly negative abnormal returns compared to their control groups. Our results thus challenge the idea that acquisitions driven by overvaluation create value for the shareholders of the acquiring company and rather indicate that these shareholders would have been better off if the transaction had not been pursued.

Our results further pose the question of why stock-swap transactions by overvalued acquirers continue to happen, even though empirical evidence points to negative abnormal returns. In the second part of our thesis, we will therefore focus on the motivation of acquisitions beyond overvaluation and the creation of shareholder value. Prior research suggests that corporate governance problems and principal-agency conflicts may be a driver of those deals (Fu et al, 2013). Our geographical setup with transactions from 19 independent countries that vary with regard to corporate governance regulations allows us to conduct a cross-country study examining the relationship between corporate governance problems, measured by shareholder protection indices, and overvalued stock transactions. We find that the most shareholder value-destroying transactions by overvalued stock acquirers seem to be concentrated in countries with the lowest level of shareholder protection.

Overall, our results suggest that using temporarily overvalued stock as currency in transactions to generate shareholder value does not work. Rather than being driven by the generation of shareholder value, these deals seem to be driven by managerial motives. This manifests itself in the presence of principal-agent problems. High governance and shareholder protection standards, however, can help mitigate this problem and the risk of being exposed to such a value-destroying deal.

With these results, our study contributes to several existing discussions in the M&A literature that examine the relationship between acquirer overvaluation, payment methods, and long-term effects on shareholder wealth (Eckbo et al, 2018). A main contribution of our study is to extend the research question to a new geography by analyzing transactions in the Euro area rather than in the US or the UK, where most of the M&A literature originates. To our knowledge, no previous studies of overvaluation-driven stock purchases have been conducted in Europe. We show that the same patterns observed in the US appear to hold in a European setting. Moreover, we derive new hypotheses in order to conduct a cross-country study regarding the influence of governance and shareholder protection policies on the motivation and performance of mergers and acquisitions. Our study thus also contributes to the existing literature on corporate governance issues and principal-agent conflicts and their implications for corporate decision making (Djankov et al, 2008b).

We first outline existing theories as well as studies and derive hypotheses for our theoretical framework. This is then followed by a description of our methodology and the discussion of results before concluding with the cross-country study. Finally, we draw a conclusion from the results described.

#### 2 Literature Review and Hypotheses Development

### 2.1 Acquisitions Motivated by Overvaluation

The idea that market misvaluation can be a key driver of the takeover market is not new and was already discussed in the 1960s. Nevertheless, the concept has traditionally had a low profile compared to efficient market concepts. Neoclassical theory views mergers as an efficiency-enhancing response to various industry shocks, such as deregulation or antitrust policy (Dong et al, 2006). Rhodes-Kropf and Viswanathan (2004) show that market valuations have significant effects on merger activity and furthermore influence the method of payment. During periods of high valuations, takeover activity is higher and stock-financed mergers are more likely to occur. Shleifer and Vishny (2003) present a theoretical model of how the shareholders of overvalued acquirers may potentially benefit from stock-financed acquisitions. They assume inefficient capital markets and differences in managers' time-horizons as the main drivers of stock-financed acquisitions. According to their theoretical model, managers of target firms might occasionally accept stock-deals, even though the purchase price paid by the acquirer undercuts the long-run fundamental value of the target. The paper provides a framework for many subsequent studies in the field of M&A transactions and is widely referred to as the "misvaluation hypothesis". Based on the misvaluation hypothesis, Dong et al (2006) find that acquirer valuations are, on average, higher than those of their targets and that the resulting relative overvaluation of acquirers compared to targets is higher for stock-deals than for cash-deals. The authors further suggest that a higher valuation of target and, in particular, bidder firm correlates with a higher use of equity to finance the deal.

The underlying assumption of these papers is that market mispricing exists. According to the literature, there are various ways to identify and derive potential over or undervaluation. The most widespread proxies for misvaluation among investors are industry-adjusted multiple ratios. Multiples describe the difference between a firm's individual performance measure and the respective industry median, with a high difference indicating a potential over or undervaluation (Dong et al, 2006). RhodesKropf and Viswanathan (2004) introduce a multiple-based measure of misvaluation which has extensively been used since Hertzel and Li (2010). The authors decompose the firm's market-to-book ratio into two components: The market to true-value-ratio is described by (M/V), where M is the market value of a firm's equity and V is its intrinsic value; And the true-value to book value ratio (V/B), where, again, V is the intrinsic value of a firm's equity and B is its book value.

$$ln\left(\frac{M}{B}\right) = ln\left(\frac{M}{V}\right) + ln\left(\frac{V}{B}\right) \tag{2}$$

Thus, to infer mispricing by the market, one has to look at the first component, that is, the discrepancy between the market and intrinsic value of the firm. The second component captures the true-value to book and therefore measures growth opportunities undistorted by potential misvaluation. Naturally, in a perfectly efficient market, stock over- or undervaluation cannot be detected by publicly available information. However, as mentioned at the outset, Shleifer and Vishny (2003) assume a market that is not perfectly efficient and therefore presume the existence of mispricing. Not only Fu et al (2013) but also more recent studies follow these assumptions (Eckbo et al, 2018)<sup>2</sup>.

While both market and book values are widely publicly available, the intrinsic value of equity cannot be observed and must therefore be approximated. Rhodes-Kropf and Viswanathan (2004) employ sector-level, cross-sectional regressions of firm-level market equities on firm fundamentals to derive a series of such measures and thereby computing a value for V. Their variables are able to explain the within-industry cross-

<sup>&</sup>lt;sup>2</sup>There is extensive empirical evidence of misevaluation, much of which is based on studies with large samples whose results are often controversial because of methodological problems (see, for example, Fama, 1998; Loughran and Ritter, 2000; and Mitchell and Stafford, 2000). Single-case studies have, however, provided evidence of mispricing that is less controversial (e.g., Lamont and Thaler, 2003). A complete review of market efficiency or inefficiency is not our goal here. Some review articles on overvaluation or market efficiency, such as Fama (1998) and Shiller (2003), further provide evidence suggesting that in general, Wall Street professionals believe market mispricing exists.

sectional variations of market of equity well, with adjusted regression  $\mathbb{R}^2$  values over 80% for almost all industries (Fu et al, 2013).

Other studies (Dong et al, 2006; Lee et al, 1999) also use the market-to-book decomposition but follow the residual income model to compute V. The residual income value V includes the book value of equity as well as an adjustment to the value of the firm's forecasted excess income, which is measured using analysts' forecasts of future earnings prospects. The residual income model has been criticized for a number of fairly restrictive assumptions and more importantly, the use of analysts' forecasts, which would bias the tests towards larger M&A transactions (Fu et al, 2013).

In addition to the approaches presented for assessing mispricing, there is a variety of other methods. Some of these rely on very particular factors like abnormally high insider sales, earnings manipulation through accruals or negative post-formation returns (Jenter, 2005; Gu and Lev, 2011). Based on the data available to us as well as the frequency of applications of the different methods in prior literature, we follow the approach of Fu et al, 2013 to compute the intrinsic value of equity. In doing so, we expect the stock acquirers in our dataset to be overvalued in relation to their targets prior to the acquisition. We believe this is a necessary condition for an acquisition to be motivated by overvaluation and has been consistently observed in previous studies (Eckbo et al, 2018).

# 2.2 Acquisition Premia

Empirical studies extensively document the strong positive correlation between stock market valuation and acquisition activity. Yet, existing research provides mixed results on the question of whether overvaluation-driven stock acquisitions serve the long-term interest of the acquirer's shareholders (Akbulut, 2013). The relative overvaluation of the acquirer compared to the target is a necessary condition for an acquisition to be motivated by overvaluation. Whether an acquirer is able to turn the relative preannouncement overvaluation into actual gains after the merger, however, depends on the premium paid to the target and the potential synergies resulting from the deal. The acquisition premium can be computed in different ways. Schwert (1996) introduces a measure of acquisition premium based on the target's stock returns during the period from merger announcement to deal completion. Thus, in an efficient market, the measure would be equal to the increase in the market value of the target minus the correction for mispricing of the acquirer's stock. Fu et al (2013), on the other hand, modify this approach by calculating the acquisition premium as the cumulative abnormal returns of the target from 42 days before the announcement to the day of deal completion. Another measure of the acquisition premium that only works for stock-financed acquisitions is based on the exchange ratio. Fu et al (2013) define the measure as the quotient of the exchange ratio and the relative price of the target and acquirer stock before announcement.

Regardless of the measure used, empirical studies show that acquirers often pay significant premia to convince target shareholders to conduct a deal (Harford et al, 2012; Eckbo et al, 2018). In stock-financed deals, the acquirer further faces the risk of price movements: After announcing an acquisition, fluctuations in both target and acquirer stock prices could reduce or even eliminate the relative overvaluation that initially motivated the equity transaction. However, if the exchange ratio is fixed, the acquirer is protected from potential price movements and can also profit from the relative overvaluation in the event of a decrease in its own share price.

Fu et al (2013) suggest that equity-bidding companies are generally willing to pay a higher premium to lock the exchange ratio and thus not be exposed to the risk of price fluctuations and certainly benefit from the relative overvaluation. They further find that overvalued acquirers engaging in stock transactions significantly overpay for their targets and that agreed deal terms cannot explain the significantly higher premia paid. We therefore expect the premia paid by overvalued stock acquirers in our dataset to be higher compared to those paid by stock acquirers that are not overvalued or more overvalued than their targets.

# 2.3 Acquisition Synergies

Besides stock-transactions, seasoned equity offerings (SEOs) could be an alternative strategy for overvalued companies to take advantage of its temporary overvaluation (Loughran and Ritter, 1995). Shleifer and Vishny (2003) argue that high synergies from mergers may be the reason why companies prefer to exploit their overvaluation via stock acquisition rather than via SEO. Furthermore, significant enough synergies could justify the high premia paid to targets. Therefore, Fu et al (2013) examine generated synergies by analyzing the operating performance (measured by ROA and asset turnover) of the overvalued acquirers in the years surrounding the merger. Their point estimate suggests a significant deterioration in the operating performance of overvalued bidders, while this cannot be demonstrated for non-overvalued bidders and bidders that are less overvalued than their targets, nor for similarly overvalued industry peers that did not participate in an acquisition. They conclude that synergies from stock deals executed by overvalued acquirers are largely negative or at best lower than those from equity-financed deals of non-overvalued firms. Therefore, they argue that synergies cannot justify the high premia paid.

# 2.4 Long-Term Performance of Acquiring Firms

Evidence from Fu et al (2013) challenges the assumption that acquisitions by overvalued acquirers generate value for the shareholders of the acquiring company. Nevertheless, it can be argued that if such overvalued bidders had not pursued those acquisitions, their shareholders could have suffered even greater losses (Savor and Lu, 2009). To account for this, Fu et al (2013) compare the long-run abnormal returns of overvalued acquirers with those of control firms that did not pursue an acquisition. The control firms resemble the acquirers under consideration in terms of industry, overvaluation at the time of the deal, company size, and Tobin's q. Fu et al (2013) find that overvalued acquirers consistently and significantly perform worse than their overvalued non-acquiring peers in the two to five years following the acquisition and conclude that shareholder value for the acquiring firm's shareholders is destroyed through these acquisitions. Their evidence supports the findings regarding premia paid and synergies and thereby address a missing piece of the value creation puzzle.

There are various ways to calculate long-run abnormal returns. The most common approach is to calculate buy-and-hold abnormal returns (Daniel et al, 2001). Buy-and-hold is an investment strategy in which an investor buys stocks and holds them for a long period of time. The buy-and-hold abnormal return is based on this principle and calculates the abnormal returns by subtracting the market-generated buyand-hold return from the realized buy-and-hold return:

$$BHR_{i}[0,T] = \left(\prod_{t=0}^{T} (1+r_{i,t}) - 1\right) - \left(\prod_{t=0}^{T} (1+r_{m,t}) - 1\right)$$
(3)

Another method for calculating long-term abnormal returns, mainly used in event studies, is the calendar time portfolio approach by Mitchell and Stafford (2000). This involves forming a portfolio in each calendar month consisting of firms that had an acquisition within 36 months prior to the focal calendar month. Then, the null hypothesis that the intercept in the regression of monthly portfolio returns against the factors in an asset pricing model is zero is tested. Thus, the intercept corresponds to the abnormal return against the asset pricing model, and if the null hypothesis must be rejected, a positive or negative abnormal return can be concluded. The advantage of the calendar time portfolio approach is the inclusion of the cross-correlation effect, which describes the fact that the returns of acquiring firms are not independent of each other.

As the buy-and-hold approach is the most popular method for calculating returns, we also decided to apply it in this context of this paper. In doing so, we expect similar results applied to our dataset as in the Anglo-Saxon area, i.e. abnormal longterm return of the overvalued acquirers to be significantly negative (Fu et al, 2013) compared to their non-merging peers.

# 2.5 Acquisition Drivers Beyond Overvaluation

Although existing literature varies regarding whether overvalued acquirers can generate long-term value for their shareholder through stock acquisitions, more recent studies tend to deny that this strategy works. Fu et al (2013) therefore address the question of why these transactions still occur. They follow the argumentation of Jensen (2005) that overvaluation inherently implies that overvalued firms are unable to achieve the operating performance implied by their pre-acquisition stock price. To meet the expectations of the capital markets, managers of overvalued firms may be more willing to undertake risky actions like a stock-swap. Whether they are able to do so depends heavily on the prevailing corporate governance system which is highly dependent on the applicable shareholder protection regulations in a country. The geographical focus of this paper on the 19 countries belonging to the Euro area, which are, however, independent and autonomous from each other, allows us to conduct a cross-country study and test whether the stock-swap acquisitions motivated by overvaluation are more likely to occur in countries with poor shareholder protection.

Harford and Li (2007) offer another explanation on why stock-swap acquisitions of overvalued acquirers happen despite the negative historical abnormal returns. They suggest that those acquisitions might be driven by managerial motives rather than the generation of shareholder value. They further find evidence that shows that CEOs' payment structures are often-times designed in a way that incentivizes them to undertake large stock transactions. In the process of this, compensation is usually not linked to the firm's performance after the business combination, but rather the completion of a merger. Harford and Li (2007) argue that CEOs are hence more interested in completing the acquisition than in long-term shareholder benefits (Grinstein and Hribar, 2004). This hypothesis presents a classical principal-agent problem where the agent (in our case, the CEOs and the entire board of the acquiring firm, respectively) is motivated to act in their own interest, which, however, contradicts that of their principal (in our case, the shareholders of the acquiring firm).

An important factor to assess the potential risk of agency problems occurring within an economy is the level of shareholder protection created by the legal environment. The importance of shareholder protection has been emphasized in various cross-country studies. Rossi and Volpin (2004) show that in countries with higher accounting standards and better shareholder protection the probability of an all-cash bid decreases. At the same time, the level of M&A activity increases significantly in countries with higher shareholder protection. In their cross-country study, Bris and Cabolis (2008) try to assess whether a change in corporate governance systems has an influence on the corporate valuation. They find that the better the shareholder protection in the acquiror's country, the higher the merger premium in cross-border mergers relative to matching domestic acquisitions. Pinkowitz et al (2006) examine whether the contribution of corporate cash holdings and dividends to firm value depends on governance. Agency theory predicts that the value of corporate cash holdings is less in countries with poor shareholder protection because of the greater ability of controlling shareholders to extract private benefits from cash holdings in such countries. Pinkowitz et al (2006) find support for this hypothesis and furthermore show that a similar influence of the corporate governance system exists for the relation between dividends and firm value.

Following the line of reasoning of the literature laid out above, stricter governance rules and greater shareholder protection could help mitigate the risk of acquisitions motivated by morally hazardous reasons. We therefore expect countries with inferior governance and shareholder protection rules to have a higher proportion of acquisitions that are not motivated solely by increasing shareholder value than others. We assume that transactions carried out for managerially motives perform worse on average than those carried out primarily to increase shareholder value although we are well aware that individual mergers carried out in the interests of shareholders can also generate a negative return. Accordingly, the higher expected proportion of managerially motivated acquisitions in countries with inferior shareholder protection should be reflected in the average return to shareholders. In an extension of our cross-country study, we will therefore also test the hypothesis that returns for overvaluation-motivated acquirers are generally lower in countries with weaker shareholder protection regulation.

To test the two hypotheses laid out above, we will need to capture governance and shareholder protection regulation which is usually measured by shareholder protection indices (Djankov et al, 2008b). Those indices measure or rank regulations on corporate governance and legislation protecting minority shareholders differ among countries. We will use two of the shareholder indices most commonly used in the finance literature: the "anti-director index" developed by La Porta et al (1998) and the "antiself-dealing index" introduced by Djankov et al (2008b).

# 2.6 Summary

Based on the literature presented above and the derivation of our theoretical framework, in this thesis we will, on the one hand, take a holistic European perspective in the analysis of merger activities and, on the other hand, delineate the countries of the Euro area in a cross-country study with regard to national governance regulations. Specifically, we will test the following hypotheses regarding merger motivation and performance in the first part of the thesis.

**Hypothesis 1** Stock acquirers in our sample are, on average, more overvalued than their targets.

**Hypothesis 2** The premia paid by acquirers driven by overvaluation, i.e. bidders that are not only overvalued in absolute terms but also more overvalued than their targets, are higher than the premia paid by those stock acquirers that are not overvalued or not more overvalued than their respective targets.

**Hypothesis 3** Overvalued stock acquirers perform worse than their non-merging industry peers in the long run after the acquisition.

Our cross-country study is particularly concerned with the explanation and motivation behind historically on average poorly performing stock deals. We believe this is due to market expectations and managerial motives, both of which can be mitigated by good governance and shareholder protection, according to our theory. Therefore, in the second part of this paper, we address hypotheses about how this is reflected in merger activity and performance.

**Hypothesis 4** In countries with lower shareholder protection standards, acquisitions motivated by overvaluation occur more often than in countries with higher shareholder protection standards.

**Hypothesis 5** In countries with lower shareholder protection standards, shareholder value-destroying stock acquisitions occur more often and therefore, the post-merger returns are lower compared to countries with higher shareholder protection standards.

# **3** Methodology and Discussion of Results

The following chapter will cover not only the methodology of this paper, but also the corresponding results as well as the discussion of them. We have chosen this structure because of the extensive theoretical framework and the complex, sequential hypothesis structure. We believe that this will give the reader a better understanding of the overall construct without being thematically repetitive.

Thus, this chapter will first discuss the composition of our deal data set and then the estimation of overvaluation using three different models, as well as their results. Based on these results, we will examine the extent to which stock-financed acquisitions are driven by overvaluations. To get a better overview of whether these acquisitions motivated by overvaluation generate value for the acquirer's shareholders, we will then compare the acquisition premia of overvaluation-driven deals with those of non-overvalued acquisitions. In our final step, using the same classification of overvalued and non-overvalued deals, we will compare the long-term returns and abnormal returns of acquirers in order to draw conclusions about the profitability of stock acquisitions motivated by overvaluation.

# 3.1 Transaction Data

Our data on mergers and acquisitions are drawn from the Securities Data Company (SDC) merger and acquisition database. The data was then matched with the announcement-dated accounting data from Thomson Reuters Datastream and stock price data from the Centre for Research in Securities Prices (CRSP). To obtain the final sample, we used the following seven criteria.

- 1. The transaction is announced and completed between 1980 and 2017.
- 2. Both acquirer and target firm are publicly listed, therefore the sample excludes transactions such as leveraged buyouts (LBOs) or management buyouts (MBOs).
- 3. The headquarters of the acquiring companies are located in one of the 19 member states of the European Union (EU) that have adopted the Euro (EUR) as their primary currency and sole legal tender (Euro area). The Euro area consists of

Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

- 4. The acquirer controls at least 50% of the target's shares after the transaction (2,726 transactions directly drawn from the SDC database. The following criteria were implemented using R).
- 5. To compare how using stock as a currency might motivate overvalued firms to acquire targets and to further ensure an accurate delimitation of payment methods, the method of payment is either 100% cash or 100% stock (1,404 transactions).
- 6. For both acquirer and target, accounting data is available in Thomson Reuters Datastream as well as stock prices in either Thomson Reuters Datastream or CRSP (972 transactions).
- 7. To allow to take logarithmic values, both the acquirer and target have a positive book value of equity according to the data in Thomson Reuters Datastream at the announcement date (932 transactions).

The final sample used for the regression models contains 932 acquisitions of which 287 are stock-financed and 645 are cash-financed. Thus, our sample size is relatively small compared to similar studies in the US region. , for example, have a sample size of 2,760 for a period from 1977 to 2000, but include all US deals, regardless of the deal value or shares purchased, and even include withdrawn deals. Fu et al (2013), on the other hand, report 1,319 deals for a study period from 1985 to 2006, although their filter criteria are similar, and in some places even more narrowly defined than ours. We thus see the reason for our relatively rather small sample partly in relatively strict filters needed to allow our theoretical framework. However, the comparison with Fu et al (2013) also shows that fewer M&A transactions have taken place in the pan-European region than in the US. Another factor in this context relates to the availability of data. The European countries may also be inferior to the Anglo-Saxon countries in terms of the quality of the data. This is because the latter have stricter disclosure and reporting obligations compared with the countries in the Euro area and have been collecting their data digitally for some time.

| <b>Labre 1.</b> The sample of mergers and acquisitions from 10000 to <b>101</b> . |
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|---|

The sample consists of 287 stock-financed and 645 cash-financed mergers and acquisitions that are announced and completed between 1988 and 2017. The headquarters of the acquiring companies are in one of the 19 Euro area countries. The table presents the sample distribution by the calendar year of the merger announcement.

| Year | Cash deals | Stock deals | Average deal value<br>(in million USD) | Sum of deal value<br>(in million USD) |
|------|------------|-------------|--|---------------------------------------|
| 1988 | 1          | 0           | 161.29                                 | 161.29                                |
| 1989 | 3          | 0           | 761.26                                 | 2,283.79                              |
| 1990 | 2          | 2           | 1,858.49                               | 7,433.94                              |
| 1991 | 4          | 2           | 1,214.88                               | 7,289.3                               |
| 1992 | 2          | 5           | 282.71                                 | $1,\!978.97$                          |
| 1993 | 3          | 2           | 356.92                                 | 1784.59                               |
| 1994 | 2          | 1           | 918.40                                 | 2,755.21                              |
| 1995 | 14         | 2           | $1,\!159.93$                           | $18,\!558.86$                         |
| 1996 | 12         | 4           | 546.17                                 | 8,738.71                              |
| 1997 | 18         | 6           | 1,308.28                               | $31,\!398.73$                         |
| 1998 | 26         | 15          | 1,472.50                               | $60,\!372.61$                         |
| 1999 | 59         | 31          | 2,280.09                               | $205,\!208.23$                        |
| 2000 | 85         | 45          | $1,\!109.25$                           | $144,\!202.55$                        |
| 2001 | 35         | 19          | 509.46                                 | 27,511.06                             |
| 2002 | 43         | 12          | 309.09                                 | 17,000.09                             |
| 2003 | 18         | 11          | 545.12                                 | $15,\!808.58$                         |
| 2004 | 21         | 8           | 4,632.71                               | 134,348.46                            |
| 2005 | 30         | 11          | 2,609.98                               | $107,\!009.22$                        |
| 2006 | 41         | 19          | 3,869.45                               | 232,167.14                            |
| 2007 | 53         | 14          | 2,405.43                               | $161,\!164.02$                        |
| 2008 | 28         | 14          | 2,584.85                               | $108,\!563.79$                        |
| 2009 | 15         | 7           | 389.46                                 | 8,568.13                              |
| 2010 | 21         | 5           | 642.56                                 | 16,706.61                             |
| 2011 | 16         | 6           | 1098.04                                | $24,\!156.97$                         |
| 2012 | 15         | 10          | 363.50                                 | 9,087.52                              |
| 2013 | 13         | 8           | 533.05                                 | 11,194.03                             |
| 2014 | 23         | 10          | $2,\!170.06$                           | 71,612.08                             |
| 2015 | 7          | 8           | 4,525.29                               | 67,879.33                             |
| 2016 | 18         | 4           | 4,279.69                               | 94,153.23                             |
| 2017 | 17         | 6           | 2,197.59                               | $50,\!544.58$                         |

With regard to the structure of the data, consistent with existing studies, Table 1 shows increased merger activity in our dataset in the late 1990s and in the mid-2000s before the financial crisis. Similarly, we can see that the number of mergers and acquisitions generally increased over the observation period from 1980 to 2017. However, as can further be seen from Table 1, we cannot infer a merger wave in the late 1980s from our dataset, although existing studies from the US and UK have reported evidence of this phenomenon. While our period of investigation, and hence our search for data, was set out to begin as early as 1980, our final sample does not include deals up to and including 1987 and even in the late 1980s, when there was a sharp increase in acquisition activity in Anglo-Saxon countries, the number of deals in our dataset is rather low. This may be because US financial markets, as well as those of the UK, are more mature and thus precede the European ones in many trends. However, this does not necessarily indicate that there was no M&A bull market wave in the Euro area countries in the 1980s but may also have other reasons. For example, the general level of acquisition activity in the US and the UK is higher than in the pan-European countries. This may be particularly noticeable in the availability of data.

# 3.2 Estimating Overvaluation

#### 3.2.1 Derivation to the Model for Estimating Overvaluation

Both the model of Shleifer and Vishny (2003) as well as the theory of Rhodes-Kropf et al (2005) suggest that a merger is more likely if the market value (M) of the acquirer is greater than its true value (V). Fu et al (2013) further argue that a stock-swap acquisition is motivated by overvaluation when the acquirer's stock is not only overvalued itself, but also more overvalued than the target's stock. To assess whether valuation might motivate acquirers in our dataset we thus follow Rhodes-Kropf's et al (2005) approach to decompose their market-to-book ratio (M/B) into two components: market value-to-true value (M/V) and true value-to-book (V/B):

$$\frac{M}{B} = \frac{M}{V} \times \frac{V}{B} \tag{4}$$

where M is the market value of equity, B is the book value of equity, and V is the fundamental or true value of equity. Equation (4) expressed in logarithms gives us:

$$m-b = (m-v) + (v-b)$$

(5)

where lowercase letters indicate the respective values of uppercase variables denoted in logs. Rhodes-Kropf and Viswanathan (2004) argue that if there existed a perfect measure of v and markets perfectly anticipated future growth opportunities, discount rates, and cash flows, there would be no room for pricing errors to taint market-tobook ratios and the term m - v would always be zero. Therefore term v - b would trivially always be equal to m - b, v would be equal to m and readily observable.

Following this line of reasoning, we will assume that markets potentially make mistakes in estimating discounted future cash flows or, as suggested by Rhodes-Kropf and Viswanathan (2004) markets do not have all the information known to managers, resulting in the price-to-truth value, m - v, to capture the component of m - bassociated with the mispricing. Accordingly, m - v is positive if the market overvalues an asset and negative if a company outperforms the market's expectation. v is hence not observable and needs to be estimated.

# 3.2.1.1 Model 1: Market Value and Book Value

The simplest model to estimate v suggested by Rhodes-Kropf and Viswanathan (2004) relies on the market and book values of equity alone. To relate the market values to book values of equity, two identifying conditions are sufficient. Supported by price premia, potential competitive entries as well as technological changes that require expectations of future profitability to be linearly dependent on discount rates, we first assume the expected future return on equity to be a constant multiple of expected future discount rates. Second, we assume a constant rate of growth in the book value of equity. To express these restrictions analytically, we write:

$$M_t = \alpha_{0t} + \alpha_{1t} B_t \tag{6}$$

where  $\alpha_{0t}$  and  $\alpha_{1t}$  represent discount rates (costs of capital) and growth rates of book equity that vary over time t, respectively. To allow for the possibility that discount rates and growth rates vary over time as well as to account for the potential skewness in market and book data, equation (6) can be rewritten in logarithmic terms:

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + \varepsilon_{it} \tag{7}$$

To deploy equation (7), we aggregate all firms i by the 12 Fama-French industries (for assignment of index j to industry classifications, see appendix A) and run annual, cross-sectional Fama-MacBeth regressions for each industry j concerned. We chose this approach, since it provides point estimates for each year, which is then weighted and valued equally regardless of the number of observations per year to obtain an industry average. Thus, we obtain a point estimate  $\hat{\alpha}_{kjt}$ , k = 0, 1 for each industry *j* every year *t*. Approaching the estimation of separate equations for each industry year eliminates the need for the growth rates or discount rates associated with our multipliers to be constant over time. As such, this addresses the concerns raised by Ang and Liu (2001) and Lyle et al (2013) about expected growth opportunities and time-varying risk premia. Thus, the constant  $\alpha_{0jt}$  represents the average market value assigned to a firm with book equity of USD 1 million in industry i in a given year t. The term is thus independent of the book value of a firm relative to peers in its industry and can be interpreted as the value of intangibles priced into the average firm in an industry in a given year, since these cannot be represented by a multiple of book value:  $\hat{\alpha}_{0jt} = \overline{m}_{jt} - \hat{\alpha}_{1jt} \overline{b}_{it}.$ 

The coefficient on the book value of equity,  $\alpha_{1jt}$ , measures the multiplier associated with the difference between the book value of the firm under consideration and its respective industry-year average. Lastly, to estimate v, we average each set of parameters  $\{\alpha\}$  over time to obtain  $\bar{\alpha}_j = \frac{1}{T} \sum \hat{\alpha}_{jt}$  then derive:

$$v_{it} = \bar{\alpha}_{0j} + \bar{\alpha}_{1j} b_{it}. \tag{8}$$

# Table 2: Conditional multiple regressions table.

Fama-French 12 industry classifications are reported across the top. Output from valuation regressions are reported in each row. Each model is estimated cross-sectionally at the industry-year level. The subscripts j and t denote industry and year, respectively. The respective industry names can be found in Appendix A. The variable  $E_t[\hat{a}_{0j}]$  denotes the time-series average of the constant term for each regression.  $E_t[\hat{a}_{kj}]$  denotes the time-series average multiple from the regression associated with the kth accounting variable. Fama-MacBeth standard errors are printed below average point estimates. Finally, the timeseries average adjusted  $\mathbb{R}^2$  is reported for each industry. Regressions are run annually for each industry from 1980 to 2017. Significance is conducted using t-tests: \*, \*\* or \*\*\* indicates that the estimate is significantly different from zero at the 10%, 5%, or 1% level, respectively.

| Fama-French Industry Classification |                                 |                                  |                            |                           |                                |                                |          |            |          |         |          |         |
|-------------------------------------|---------------------------------|----------------------------------|----------------------------|---------------------------|--------------------------------|--------------------------------|----------|------------|----------|---------|----------|---------|
| Parameter                           | 1                               | 2                                | 3                          | 4                         | 5                              | 6                              | 7        | 8          | 9        | 10      | 11       | 12      |
| Model 1: $m_{it}$                   | $= \alpha_{0jt} + \alpha_{1j}$  | $_{jt}b_{it} + \varepsilon_{it}$ |                            |                           |                                |                                |          |            |          |         |          |         |
| $E_t[\bar{\alpha}_{0j}]$            | -0.88                           | 0.30***                          | 0.75***                    | 1.04***                   | 0.43***                        | 2.38***                        | 1.13***  | 0.11       | 0.50***  | 2.50*** | 0.44**   | 0.73**  |
|                                     | (0.18)                          | (0.08)                           | (0.08)                     | (0.11)                    | (0.10)                         | (0.11)                         | (0.10)   | (0.10)     | (0.09)   | (0.15)  | (0.21)   | (0.33)  |
| $E_t[\bar{\alpha}_{1j}]$            | 1.14***                         | 1.07***                          | 0.93***                    | 0.96***                   | 0.94***                        | 0.79***                        | 0.90***  | 1.06***    | 1.03***  | 0.79*** | 1.01***  | 1.07*** |
|                                     | (0.13)                          | (0.03)                           | (0.04)                     | (0.04)                    | (0.03)                         | (0.22)                         | (0.03)   | (0.09)     | (0.04)   | (0.13)  | (0.01)   | (0.07)  |
| $\mathbb{R}^2$                      | 0.7738                          | 0.8577                           | 0.8767                     | 0.8840                    | 0.7470                         | 0.7720                         | 0.8674   | 0.8490     | 0.8758   | 0.6905  | 0.9883   | 0.9236  |
| Model 2 $m_{it}$ =                  | $= \alpha_{0jt} + \alpha_{1jt}$ | $b_{it} + I_{(>0)}a$             | $t_{2jt} \ln NI_{it} +$    | $I_{(<0)}\alpha_{3jt}\ln$ | $ NI_{it}  + \varepsilon_{it}$ |                                |          |            |          |         |          |         |
| $E_t[\bar{\alpha}_{0j}]$            | -1.22                           | 1.18***                          | 1.38***                    | 1.64***                   | 1.20***                        | 2.29***                        | 1.48***  | 1.35***    | 0.94***  | 3.87*** | 1.41***  | 1.07*** |
|                                     | (0.19)                          | (0.07)                           | (0.06)                     | (0.10)                    | (0.10)                         | (0.11)                         | (0.09)   | (0.11)     | (0.08)   | (0.12)  | (0.17)   | (0.29)  |
| $E_t[\bar{\alpha}_{1j}]$            | 1.18***                         | 0.57***                          | 0.61***                    | 0.66***                   | 0.66***                        | 0.81***                        | 0.74***  | 0.54***    | 0.84***  | -0.01   | 0.68***  | 0.91*** |
|                                     | (0.41)                          | (0.09)                           | (0.06)                     | (0.06)                    | (0.11)                         | (0.20)                         | (0.06)   | (0.17)     | (0.15)   | (0.17)  | (0.05)   | (0.17)  |
| $E_t[\bar{\alpha}_{2j}]$            | -0.00                           | 0.54***                          | 0.35***                    | 0.32***                   | 0.28**                         | -0.02                          | 0.16***  | 0.52***    | 0.20     | 0.86*** | 0.31***  | 0.13    |
|                                     | (0.26)                          | (0.09)                           | (0.08)                     | (0.05)                    | (0.11)                         | (0.16)                         | (0.04)   | (0.14)     | (0.14)   | (0.16)  | (0.04)   | (0.17)  |
| $E_t[\bar{\alpha}_{3j}]$            | 0.11                            | 0.48***                          | 0.26***                    | 0.29***                   | $0.17^{*}$                     |                                | 0.11**   | 0.14       | -0.01    | 0.44*** | 0.31***  | 0.26    |
|                                     | (0.21)                          | (0.12)                           | (0.07)                     | (0.07)                    | (0.09)                         |                                | (0.05)   | (0.39)     | (0.22)   | (0.12)  | (0.02)   | (0.18)  |
| $\mathbb{R}^2$                      | 0.7609                          | 0.8995                           | 0.9113                     | 0.9004                    | 0.7612                         | 0.7664                         | 0.8747   | 0.9081     | 0.8867   | 0.7891  | 0.9887   | 0.9247  |
| Model 3: $m_{it}$                   | $= \alpha_{0jt} + \alpha_1$     | $_{jt}b_{it} + I_{(>0)}$         | $\alpha_{2jt} \ln NI_{it}$ | $+ I_{(<0)} \alpha_{3jt}$ | $n NI_{it}  + \alpha_{d}$      | $_{ijt}LEV_{it} + \varepsilon$ | it       |            |          |         |          |         |
| $E_t[\bar{\alpha}_{0j}]$            | 0.31**                          | $1.53^{***}$                     | 1.53***                    | 1.75***                   | 1.33***                        | 2.33***                        | 1.47***  | 1.93***    | 1.22***  | 3.86*** | 1.64***  | 0.89*** |
|                                     | (0.13)                          | (0.05)                           | (0.05)                     | (0.08)                    | (0.08)                         | (0.10)                         | (0.08)   | (0.08)     | (0.06)   | (0.13)  | (0.32)   | (0.31)  |
| $E_t[\bar{\alpha}_{1j}]$            | 1.12***                         | 0.67***                          | 0.65***                    | 0.70***                   | 0.72***                        | 0.84***                        | 0.84***  | 0.79***    | 0.88***  | 0.20    | 0.97***  | 0.89*** |
|                                     | (0.31)                          | (0.07)                           | (0.05)                     | (0.05)                    | (0.11)                         | (0.22)                         | (0.06)   | (0.10)     | (0.11)   | (0.22)  | (0.05)   | (0.09)  |
| $E_t[\bar{\alpha}_{2j}]$            | -0.03                           | 0.47***                          | 0.33***                    | 0.31***                   | 0.28**                         | -0.01                          | 0.11***  | $0.24^{*}$ | 0.17     | 0.70*** | -0.06    | 0.11    |
|                                     | (0.28)                          | (0.07)                           | (0.06)                     | (0.05)                    | (0.10)                         | (0.17)                         | (0.04)   | (0.13)     | (0.10)   | (0.17)  | (0.06)   | (0.11)  |
| $E_t[\bar{\alpha}_{3j}]$            | -0.00                           | 0.46***                          | 0.30***                    | 0.29***                   | $0.18^{*}$                     | -                              | 0.12**   | 0.25       | 0.11     | 0.40*** | -0.06    | 0.21**  |
|                                     | (0.29)                          | (0.04)                           | (0.06)                     | (0.06)                    | (0.09)                         | -                              | (0.04)   | (0.21)     | (0.17)   | (0.10)  | (0.07)   | (0.09)  |
| $E_t\left[\bar{\alpha}_{4j}\right]$ | -4.37                           | -2.07***                         | -1.19***                   | -1.73**                   | -0.99***                       | -0.90                          | -1.31*** | -3.63***   | -1.75*** | -3.84** | -3.89*** | 2.06*** |
|                                     | (2.59)                          | (0.52)                           | (0.37)                     | (0.63)                    | (0.22)                         | (0.67)                         | (0.30)   | (0.52)     | (0.39)   | (1.66)  | (0.08)   | (0.56)  |
| $\mathbb{R}^2$                      | 0.845                           | 0.9239                           | 0.9243                     | 0.91                      | 0.7773                         | 0.7657                         | 0.8938   | 0.9617     | 0.9138   | 0.8593  | 0.9988   | 0.9371  |

The top panel of Table 2 shows the time-series averages from model 1. The variable  $\bar{\alpha}_{0j}$  is captured as  $E_t[\bar{\alpha}_{0j}]$  and is significant for all industries but Energy in our

sample. Further, it varies substantially across industries. This is, however, consonant, at least in part, with the aforementioned interpretation of the variable to capture value of capitalized intangibles for the average firm in an industry. For example, Shops and Chemicals show among the lowest values of  $E_t[\bar{\alpha}_{0j}]$ , while Health shows one of the highest values for intangibles according to our estimation scheme. Furthermore,  $E_t[\bar{\alpha}_{1j}]$  seems to be highest in those industries that have the lowest values for the constant, suggesting that tangible book values are more highly correlated with intrinsic value in these industries. Finally, the average  $\mathbb{R}^2$  values for model 1 varies between 0.69 and 0.99 for all industries implying a high informative value as well as a good fit of model 1 in general.

# 3.2.1.2 Model 2: Market Value, Book Value and Net Income

As recent accounting studies (e.g. Akbulut, 2013) have emphasized the importance of net income for explaining cross-sectional variation in market values, we have, in accordance with Rhodes-Kropf and Viswanathan (2004) incorporated net income in our model 2. To develop a valuation model that includes net income as well as book value, we can impose less restrictive assumptions on equation (6) by assuming, for example, that both book value and net income grow at constant rates:

$$M_t = \alpha_{0t} + \alpha_{1t}B_t + \alpha_{2t}NI_t \tag{9}$$

where *NI* represents net income. However, net income can also be negative. Since we regress with over log terms, negative net income must be included separately from positive net income:

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + I_{(>0)}\alpha_{2jt}\ln NI_{it} + I_{(<0)}\alpha_{3jt}\ln |NI_{it}| + \varepsilon_{it}$$
(10)

where  $I_{(>0)}$  is an indicator variable that is 1 if net income is positive and 0 if it is negative and  $I_{(<0)}$  is in turn an indicator that is 1 if net income is negative and 0 if it is positive. Again, by running separate regressions for the industries over time, obtain a point estimate  $\hat{\alpha}_{kjt}$ , k = 0, 1, ..., 3 for each industry *j* every year *t*. Since we estimate separate parameter sets  $\{\alpha_2\}$  and  $\{\alpha_3\}$  for positive and negative net incomes, observations of negative net incomes can be included in the estimation without contaminating the interpretation of the positive net income coefficient  $\alpha_2$ . Hence, if companies in a certain sector are suffering negative net incomes in a given year and thus experience a decrease in value, the parameter  $\alpha_{3jt}$  should, in theory, be negative. To obtain an equation analogue to equation (8) we again average each set of parameters  $\{\alpha\}$  over time to obtain  $\bar{\alpha}_j = \frac{1}{r} \sum \hat{\alpha}_{jt}$  and get:

$$v_{it} = \bar{\alpha}_{0j} + \bar{\alpha}_{1j} b_{it} + I_{(>0)} \bar{\alpha}_{2j} \ln N I_{it} + I_{(<0)} \bar{\alpha}_{3j} \ln |N I_{it}|$$
(11)

The time-series averages are displayed in the middle panel of Table 2. Again, all coefficients for book values,  $E_t[\bar{\alpha}_{1j}]$ , as well as the constants  $E_t[\bar{\alpha}_{0j}]$  for all industries except energy are highly significant. The coefficients for positive and negative net incomes  $E_t[\bar{\alpha}_{2j}]$  and  $E_t[\bar{\alpha}_{3j}]$  are also largely significant. Consistent with our expectations, the coefficients on net incomes are smaller in magnitude than those on book values. Further, comparing model 1 and model 2, we observe a reduction of the loading on book value in general, which is presumed to be arising from the time-series properties of net income (Rhodes-Kropf and Viswanathan, 2004). What is surprising, however, is that while negative net incomes have a smaller coefficient than positive net incomes, and thus a smaller impact on the value of a company, only in the consumer non-durables industry a negative coefficient is present. This would mean that even negative net incomes have a positive impact on the value of a company. We have two possible explanations for this. First, from our dataset, only 92 acquirers and 199 targets have negative net incomes. This represents only about 15.61% of our merging companies under consideration. This number is very small which might impede us from drawing conclusions about the complete sample. Second, we can imagine that our sample is subject to some sort of survivorship bias (Shleifer and Vishny, 2003). For example, since for acquirers we only include companies whose share prices are still retrievable 36 months after the acquisition, this excludes those that have been liquidated or sold themselves. In the case of targets, negative net income may be a reason to sell shares, which in turn is reflected in the share price. Finally, adding net income to the model uniformly increases the average  $\mathbb{R}^2$  values.

# 3.2.1.3 Model 3: Market Value, Book Value, Net Income and Leverage

In our final model, model 3, we revert to the approaches of Rhodes-Kropf and Viswanathan (2004), which were also applied by Fu et al (2013). In doing so, we relax the restriction implied by models 1 and 2 that firms are based solely on average multiples within an industry year. This is because by taking leverage into account, we now also account for the fact that differences in leverage within an industry could have an impact on these multiples. The rationale for this assumption is that a leverage that differs from the average leverage within the industry may be the reason for a company's higher or lower cost of capital, which in turn would lead to different coefficients in our regression equation. We therefore expand equation (10) to:

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + I_{(>0)}\alpha_{2jt}\ln NI_{it} + I_{(<0)}\alpha_{3jt}\ln|NI_{it}| + \alpha_{4jt}LEV_{it} + \varepsilon_{it}$$
(12)

where  $LEV_{it}$  is the leverage ratio. Methodologically, working with market values is appropriate in this context. However, as historical market values for debt are difficult to obtain, we have made the simplifying assumption that book values are a good approximation of these (Fu et al, 2013). For equity, the corresponding market values were used. As in the previous models 1 and 2, we again regress across all industries and years, so we obtain a point estimate  $\hat{\alpha}_{kjt}$ ,  $k = 0, 1, \ldots, 4$  for each industry *j* every year *t* and each set of parameters  $\{\alpha\}$  can vary across both industries and years. As with the other two models, to derive the estimated value of v, we once again average over the resulting parameter sets  $\{\alpha\}$  over time to obtain  $\bar{\alpha}_j = \frac{1}{r} \sum \hat{\alpha}_{jt}$  and obtain:

$$v_{it} = \bar{\alpha}_{0j} + \bar{\alpha}_{1j} b_{it} + I_{(>0)} \bar{\alpha}_{2j} \ln N I_{it} + I_{(<0)} \bar{\alpha}_{3j} \ln |N I_{it}| + \bar{\alpha}_{4j} LE V_{it}$$
(13)

The time-series averages of each parameter can be found in the bottom panel of Table 2. In line with our expectations, the coefficients on leverage are negative and highly significant across almost all industries. Moreover, the  $\mathbb{R}^2$  values vary between 0.77 and 1 for the individual industries, indicating a very good fit of the model and implying that accounting values and leverage together provide a very high explanatory power for market values across industries.

# 3.2.1.4 Model Discussion

We chose the Fama-MacBeth method for the regressions as the basis of our models, since here each year is weighted and valued equally regardless of the number of observations per year. We thus obtain coefficients that can be considered as averages over the period under consideration. As a result, over or undervaluation is shown in relation to these averages in each case. Therefore, periods in which the market overvalued stocks of certain industries, for example, can also be represented as such. Moreover, we benefit from considering observations as panel data in the Fama-MacBeth regression. This is because although multiple observations per year and industry are better here as well, a panel data regression also works with fewer data points. Hence, we benefit from this method since we only have a few data points for some industries and years.

We address concerns about endogenous effects that may positively or negatively affect our explanatory accounting variables in the form of omitted variables by using fixed effects regressions. For time in-variant variables, fixed effects models remove bias due to omitted variables by measuring changes within groups over time for the missing or unknown characteristics. Although it could be argued that fixed effects are too restrictive and omit variables that might have been of interest, the risk and impact of there being variables that affect both the accounting explanatory variables and the market value dependent variable but are not in the dataset appears to be greater. Therefore, in this case, the benefits of using fixed effects outweigh the undesirable results in our analyses.

The models seem to be a good fit to the data and have a high explanatory power. The adjusted  $\mathbb{R}^2$  values for model 1, for example, show that 69% to 99% of the variance, depending on the industry, can be represented, and explained by the regression model. They further continue to increase with each additional variable introduced. However, the smaller number of observations could be the explanation for the rather higher standard errors compared to other studies like Fu et al (2013) or Rhodes-Kropf and Viswanathan (2004). All three models imply similar inter coefficient proportions, yet model 3 has the lowest standard errors with the highest significance and  $\mathbb{R}^2$  values. Hence, we have decided to rely on the values resulting from Model 3 for the intrinsic firm values and thus over- or undervaluation in the remainder of this paper.

# 3.2.2 Identifying Acquisitions Motivated by Overvaluation

Employing the intrinsic enterprise values from model 3, we have compiled various measures of valuation at different points in time in Table 3. In logs, the market-to-book ratio (m - b), the true value-to-book value ratio (v - b), and the measure of overvaluation, the market to true-value-ratio (m - v), can be found 42 days before the announcement date. The market to true-value-ratio is also given for the day before the merger announcement as well as the completion day. Measures for 42 days before announcement are included in line with Fu et al (2013), as it can be assumed that stock prices of merging firms may partially reflect the value implications of the merger already two months before the announcement due to information leakage and market anticipation (Schwert, 1996). The companies are grouped based on target or acquirer, and the deals are categorized according to the type of payment, i.e. cash or stock. The last three columns of Table 3 show relative mispricing, which can be expressed in terms of the difference between overpricing or underpricing due to the logarithmic calculation of the values.

Two months before the merger announcement, acquiring firms seem to have a significantly higher market-to-book ratio than their targets (0.73 versus 0.58, respectively). However, the difference seems to be due to a relative overvaluation of the acquirers, as they show an average market-to-true value of 0.34, while their targets only have an average overvaluation of 0.06. It is further striking that the overvaluation is particularly high for acquirers in stock-financed transactions (0.40 versus 0.31 for cash acquirers). It should also be noted, however, that the overvaluation of stock targets is also higher than that of acquired companies in cash-financed deals (0.11 versus 0.04, respectively).

### Table 3: Overview of overvaluation measures of merging firms.

This table presents average stock overvaluation for bidders and target in the sample described in Table 1. The overvaluation measure is proposed by Rhodes-Kropf, Robinson, and Viswanathan (2005). Overvaluation is measured at three points in the life of each deal: 42 days before announcement (AD-42), one day before announcement (AD-1), and one day before deal completion (CD-1). For all three measures, the book value of equity was given by Thomson Reuter's Datastream on a per diem basis at announcement dates. The market-to-book equity ratio is decomposed into two components: misvaluation and long-run investment opportunities, (m - b) = (m - v) + (v - b). The lowercase letters indicate a logarithmic denotation. The last three rows of the table describe the measure of misvaluation (m - v). The last three columns report the relative misvaluation as the differences in valuation ratios. Statistical significance of relative misvaluations is examined with t-tests: \*, \*\* or \*\*\* indicates that the difference is significantly different from zero at the 10%, 5%, or 1% level, respectively.

|                            | Bidders | Targets | Stock<br>Bidders | Stock<br>Targets | Cash<br>Bidders | Cash<br>Targets | Stock bidders -<br>cash bidders | Stock bidders -<br>stock targets | Cash bidders -<br>cash targets |
|----------------------------|---------|---------|------------------|------------------|-----------------|-----------------|---------------------------------|----------------------------------|--------------------------------|
| $\overline{(m-b)}_{AD-42}$ | 0.729   | 0.589   | 0.819            | 0.543            | 0.690           | 0.609           | 0.129**                         | 0.276***                         | 0.082*                         |
| $\overline{(b-v)}_{AD-42}$ | -0.392  | -0.529  | -0.417           | -0.437           | -0.382          | -0.569          | -0.035                          | 0.02                             | 0.187***                       |
| $\overline{(m-v)}_{AD-42}$ | 0.337   | 0.060   | 0.402            | 0.106            | 0.309           | 0.040           | 0.093                           | 0.296***                         | 0.269***                       |
| $\overline{(m-v)}_{AD-1}$  | 0.349   | 0.130   | 0.409            | 0.153            | 0.323           | 0.121           | 0.085                           | 0.256***                         | 0.203***                       |
| $\overline{(m-v)}_{CD}$    | 0.361   | NA      | 0.436            | NA               | 0.329           | NA              | $0.107^{*}$                     | NA                               | NA                             |
| Sample size                | 932     | 932     | 287              | 287              | 645             | 645             |                                 |                                  |                                |

As a result, the relative overvaluation of acquirers versus targets, which can be expressed as the difference in the respective measure of overvaluation (m - v) of acquirer and target is similar for stock and cash deals 42 days before announcement, with a slightly higher relative overvaluation for stock-swap transactions (0.30 versus 0.27 for cash deals). Our results are thus consistent with empirical findings from US studies (Dong et al, 2006; Fu et al, 2013; Rhodes-Kropf et al, 2005) and, moreover, in line with the proposed theory by Rhodes-Kropf and Viswanathan (2004) suggesting stock-financed takeovers to be motivated by overvaluation.

Fu et al (2013) also successfully demonstrate that the relative overvaluation of acquirers to their targets gradually diminishes as the completion date approaches. In particular, for stock-financed mergers, they see a decline in the relative overvaluation of 80% in the period from 42 days before the announcement to completion date, providing evidence that acquirer stock prices generally fall during the bidding period while those of targets usually rise. However, we cannot clearly identify this trend from our figures. According to our data, the relative overvaluation decreases in the 42 days before the announcement for both stock- and cash-financed deals, but not to the extent

shown in the US studies. The average relative overvaluation of acquirers over their targets (ROV) on the day before announcement is 0.26 for stock deals and 0.20 for cash deals, which corresponds to a decline of 13.5% and 24.7% in the 42 days before announcement, respectively.

Since many targets in our dataset are no longer publicly listed at the completion date, we are unable to demonstrate the same ratios as Fu et al (2013) at the date the deals are completed. Apart from this, however, our results are consistent with those from the Anglo-Saxon area: Acquirers are more overvalued than their targets, with the difference in overvaluation, i.e. the relative overvaluation of acquirer to target, being even higher for stock-financed transactions than for fully cash-financed ones. Thus, we find support for our hypothesis 1: *Stock acquirers are, on average, more overvalued than their targets.* 

Shleifer and Vishny (2003) hypothesize that overvaluation is likely to motivate a firm to make an equity-financed acquisition, but Fu et al (2013) emphasize that not every equity-financed acquisition is motivated by the overvaluation of the acquirer relative to the target firm. They, in turn, suggest the importance of conditioning on relative overvaluation in testing their hypothesis and define an acquisition as being motivated by overvaluation if, first, the acquirer is overvalued and, second, the acquirer is more overvalued than its target, i.e., the relative overvaluation (ROV) is positive. Applying this definition to our dataset, we find that of the 266 stock-financed transactions, 138 cannot be motivated by overvaluation, since at least one of the previously mentioned criteria is not met here. We will therefore focus on the remaining 128 stock deals in the remainder of this paper. In the context of this thesis, we will also refer to these 128 stock acquisitions as "OV acquisitions" (i.e., acquisitions that are likely to be driven by stock overvaluation according to Rhodes-Kropf and Viswanathan (2004), while the remaining 138 stock acquisitions that do not appear to be driven by overvaluation (using the above criteria) will be denoted as "NOV acquisitions".

#### 3.3 Acquisition Premia

The acquiring shareholders can only benefit from a stock-swap if the acquirer's shares are more overvalued than the shares of the target company. In this regard, previous studies like Dong et al (2006), employing different measures of stock overvaluation have shown that on average stock acquirers are more overvalued than their targets (Fu et al, 2013). As argued in the last section and shown in Table 3, we find that also in our dataset, stock acquirers are relatively more overvalued than their targets. In doing so, we follow the approach of Rhodes-Kropf et al (2004) and use market prices 42 days before the merger announcement to account for possible rumors in the market that affect stock prices before the merger announcement.

However, this justification overlooks an important fact: acquirers often pay substantial premia to acquire their targets. Therefore, target share prices generally rise sharply after the announcement, while acquirer share prices tend to fall on average (Harford et al, 2012). In this way, the relative overvaluation between acquirer and target, which we argue motivated the merger in the first place, could be reduced or even disappear altogether. However, stock acquirers can realize the full benefits of their relative overvaluation prior to the announcement if they manage to fix the deal terms and, in particular, the exchange ratio, i.e. the rate at which the shares of the target company are exchanged for shares of the acquirer, prior to the merger announcement. If the bidding firm can do this, however, depends heavily on the negotiated acquisition premia and whether the stock acquirer overpays its target. Thereby, we calculate the relative acquisition premium with the following formula:

$$AP_{i} = \left(\frac{DV_{i}}{s_{i}} - M_{AD-42}^{tar}\right) / M_{AD-42}^{tar} , \qquad (14)$$

where  $M^{tar}$  is the market value of equity of the target 42 days before the merger announcement,  $DV_i$  is the deal value and  $s_i$  is the share acquired in transaction *i*. For stock-financed acquisitions, the deal value is the product of the realized exchange ratio and the number of shares acquired. To allow a better comparison of the premia paid, whether between stock-financed and cash-financed acquisitions or between acquisitions in which varying proportions of company shares were purchased, we define the acquisition premia in relative terms. According to our data, very unrealistic results are included in the calculation of these acquisition premia. The values range between -100% and 12,602,000%, with a mean of 158% and a median of 34%. We see the reason for this in the presence of incorrect or incomplete observations in our dataset. In the case of premia of -100%, for example, according to our dataset the deal value is 0, while in the case of extremely high premia the proportion of shares purchased and/or the market value of the target is diminishingly low. To account for these erroneous values and to remove outliers, we exclude the top and bottom 2.5% of observations based on the acquisition premia. As a result, we get acquisition premia ranging from -54% to 891%, with a mean of 61% and a median of 33%. We consider these trimmed values to be more realistic and will therefore continue the analysis with them. The following table presents the mean and median acquisition premia divided into OV, NOV and cash acquisitions.<sup>3</sup>

# Table 4: Acquisition premia.

This table presents descriptive statistics for acquisition premia paid by acquirers to targets. Acquisition premia are calculated as described in the formula above. Stock acquisitions are classified into OV and NOV groups. The last three columns report the differences in means and medians. Statistical significance is examined with t-tests for means and Wilcoxon–Mann–Whitney tests for medians: \*, \*\* or \*\*\* indicates that the values are significantly different from zero at the 10%, 5%, or 1% level, respectively. The values are shown in percent.

|             | OV    | NOV   | Cash  | OV-NOV       | OV-Cash | Cash-NOV      |
|-------------|-------|-------|-------|--------------|---------|---------------|
| Mean        | 67.97 | 49.82 | 62.58 | 18.15        | 5.39    | 12.77         |
| Median      | 34.61 | 20.34 | 37.24 | $14.27^{**}$ | -2.63   | $16.91^{***}$ |
| Sample Size | 128   | 138   | 615   |              |         |               |

Cash acquirers are known to offer significantly higher premia for their targets compared to stock acquirers (Jensen and Ruback, 1983). This is usually explained by the incidence of hostile acquisitions, which generally involve cash payments and higher premia, and the fact that in many countries, cash offers trigger an immediate tax liability for the target shareholders, leading to higher premia for their compensation. In our sample, the acquisition premia paid by OV stock acquirers are not significantly

 $<sup>^{3}</sup>$  As a robustness check, the following tests were also performed with a 95% winsorized data set. The results are consistent with the results from the trimmed data set and in some places even statistically more significant. The exact results are presented and described in Appendix B.

different from those paid by cash acquirers. However, they are significantly higher than those of NOV stock acquirers. The median relative acquisition premium paid by cash acquirers is nearly 17%, significantly higher than that paid by NOV stock acquirers. These results are also consistent with those of Fu et al (2013), and therefore the same pattern, which has been extensively researched in Anglo-Saxon countries, seems to be evident in Euro area countries as well.

Moreover, consistent with Fu et al (2013), we find that acquirers of OV shares pay a higher premium than acquirers of NOV shares. The median takeover premium of acquirers of OV shares exceeds that of acquirers of NOV shares by more than 14% at the 5% significance level.

#### Figure 1: Histogram of acquisition premia.

This figure presents the histogram of the relative distribution of acquisition premia: deal value divided by the percentage of outstanding shares acquired in the deal compared to the market value of the target 42 days before merger announcement. The top panel shows the OV acquirers, the middle panel shows the NOV acquirers and the bottom panel shows the cash acquirers. The dashed vertical line represents the median, the solid vertical line represents the mean.



Thus, we can reject null hypothesis of the premia of OV and NOV acquirers being the same, i.e. having a difference of zero, using medians rather than arithmetic

means. Using the means for our analysis instead, we again see that OV acquirers pay higher premia on average than their non-overvalued peers. However, it is not statistically significant at conventional levels.

Overall, these results thus seem to suggest that targets acquired by OV bidders anticipate the overvaluation of the acquirer and therefore demand a higher relative acquisition premium compared to NOV bidders. Conditional on the choice of method, we thus find support for our hypothesis 2: The premia paid by acquirers driven by overvaluation, i.e. bidders that are not only overvalued in absolute terms but also more overvalued than their targets, are higher than the premia paid by those stock acquirers that are not overvalued or not more overvalued than their respective targets

# **3.4 Acquisition Synergies**

Despite premia, the created synergies by a merger are an important factor in assessing the possible benefits for the shareholders of the acquiring companies. Higher synergies could also justify higher premia paid by overvalued acquirers. Prior studies have examined the operating performance of overvalued and non-overvalued stock bidders and cash bidders (Fu et al, 2013). There is no existing study that suggests that overvalued stock acquirers capture higher synergies than other type of bidders.

The topic of synergies goes behind the scope of this paper, but we believe it is reasonable to assume that overvalued stock acquirers do not create higher synergies than non-overvalued stock acquirers or cash acquirers, as the level of operational synergy creation is independent of the method of payment<sup>4</sup>. Therefore, higher synergies seem not to be the justification for the higher premia paid by overvalued stock acquirers compared to cash bidders.

<sup>&</sup>lt;sup>4</sup> Few studies address the relationship between payment method in M&A deals and post-merger operating performance, i.e. synergies (e.g. Bradley et al, 1998; Ghosh, 2001; Linn and Switzer, 2001). These studies have shown that cash-financed acquisitions achieve higher synergies than stock-financed acquisitions. To our knowledge, only the study by Fu et al (2013) goes beyond this analysis by further comparing transactions motivated by overvaluation with non-overvalued acquisitions among stock-financed deals. The authors find that overvalued acquirers have a worse operating performance. as only above-average operating performance, i.e. higher synergies, of OV acquirers would be relevant for our research, yet existing research gives no reason to assume so, we decided not to further analyze synergies in this paper.

# 3.5 Long-Run Performance of Acquiring Firms

The evidence obtained so far casts doubt on the idea of overvalued acquirers generating shareholder value through stock acquisitions. However, one can argue that overvalued acquirers might have been worse off by not conducting the transactions and their respective shareholders could have incurred even larger losses (Savor and Lu, 2009). To address this issue, we compare the long-term returns of our overvalued stock acquirers with non-acquiring companies from the same industry and similar market size. The analysis of the long-term returns is crucial to add a missing piece in the value creation puzzle of overvalued acquirers.

# **Table 5:** Acquirer cumulative returns.

This table presents acquirer long-term cumulative returns: stock price as of 42 days before the announcement of the acquisition to three years after the completion of the acquisition. Statistical significance of means is examined with t-tests and with Wilcox-Mann-tests for medians: \*, \*\* or \*\*\* indicates that the value is significantly different from zero at the 10%, 5%, or 1% level, respectively. The values are shown in percent.

|             | OV        | NOV      | Cash         |
|-------------|-----------|----------|--------------|
| Mean        | -20.94*** | -7.80*   | 8.15***      |
| Median      | -32.89*** | -12.77** | $2.90^{***}$ |
| Sample Size | 127       | 144      | 607          |

First, we look at the total cumulative acquirer return over a three-year period. As a starting point, we use the company's stock price 42 days before the announcement of the acquisition and compare it to the stock price three years after the completion of the acquisition. As can be seen from Table 5, the stock acquisitions in our transaction dataset significantly underperform the cash deals in the three years following the acquisition. The stock prices of cash acquirers slightly increase and generate median returns of 2.90% over the three-year period. In contrast, stock acquirers, both overvalued and non-overvalued, generate significant negative median returns. From Figure 2 we can see that only cash deals yield positive returns. As we have hypothesized, overvalued stock acquirers significantly generate the most negative returns. But this does not necessarily mean that stock acquisitions destroy value for the acquirer's shareholders. The decreasing stock price could also be the result of the market correcting the overvaluation. To evaluate the acquisition's effect on shareholder benefits we need to control the acquiring company's return to the return of its control group.

Figure 2: Histogram of acquirer cumulative returns.

This figure presents the histogram of the relative distribution of acquirer long-term cumulative returns: stock price as of 42 days before the announcement of the acquisition compared to three years after the completion of the acquisition. The top panel shows the OV acquirers, the middle panel shows the NOV acquirers and the bottom panel shows the cash acquirers. The dashed vertical line represents the median, the solid vertical line represents the mean.



In a next step, we seek to compute the long-term abnormal returns or acquirers. To do so, we use the WRDS Compustat Global Daily Stock Prices data. We search the entire database for stock data of listed companies since 1988 until 2017 in the 19 Euro area countries. Similar to our transaction dataset we experience the same problem that data availability and quality are better for the more recent years and worse for the 1980s. To obtain a dataset with comparable peer companies, we first exclude all companies that are also included in the transaction dataset from the whole market dataset. Second, as for the transaction dataset, we divide the control dataset into the twelve Fama-French industries as well as the years of the merger announcement. Within each industry-year we further divide the companies into quintiles based on their respective market capitalization for every year between 1980 and 2017. This method of creating characteristic-based benchmarks was introduced by Daniel et al (2004). The control firms are hence those companies that are assigned to the same market cap quintile of the respective acquirer within the same industry-year. In doing this, we are able to compare the long-term returns for each acquirer to that of its control group. However, as in the case of the acquisition premia, we observe implausible results in some cases. Since cumulative returns are by definition bounded below, in this case the outliers are only found in the highest long-term returns. To counteract this, we trim the data set by 5%, this time removing the observations with the highest cumulative acquirer returns in both transaction and control data set.

We then compute the long-run abnormal returns as buy-and-hold abnormal returns over three years.  $R_{CG,t}$  is subtracted from the acquiring company's return and measures the return of the control group consisting of the non-acquiring companies from the same industry and the same quintile of market capitalization.

$$BHR_i[0,T] = \left(\prod_{t=0}^T (1+r_{i,t}) - 1\right) - \left(\prod_{t=0}^T (1+r_{CG,t}) - 1\right)$$
(15)

#### Table 6: Acquirer abnormal returns.

This table presents acquirer long-term abnormal returns: stock price as of 42 days before the announcement of the acquisition to three years after the completion of the acquisition. Statistical significance of means is examined with t-tests and with Wilcoxon-Mann-tests for medians: \*, \*\* or \*\*\* indicates that the value is significantly different from zero at the 10%, 5%, or 1% level, respectively. The values are shown in percent.

|             | OV       | NOV      | Cash         |
|-------------|----------|----------|--------------|
| Mean        | -8.26*   | -7.74*   | 8.58***      |
| Median      | -11.09** | -11.16** | $3.01^{***}$ |
| Sample Size | 127      | 144      | 607          |

Consistent with the results of Fu et al (2013) regarding overvalued stock acquirers in the US, we find that European overvalued stock acquirers not only overpay for their targets but also significantly underperform their control group in the three years following the acquisition and thereby destroy shareholder value.

# Figure 3: Histogram of acquirer abnormal returns.

This figure presents the histogram of the relative distribution of acquirer long-term abnormal returns: stock price as of 42 days before the announcement of the acquisition compared to three years after the completion of the acquisition minus the equally computed three-year return for non-merging control firms within the same industry and year. The top panel shows the OV acquirers, the middle panel shows the NOV acquirers and the bottom panel shows the cash acquirers. The dashed vertical line represents the median, the solid vertical line represents the mean.



It is, however, notable that the cash bidders in our sample generate slightly positive, but significant, abnormal returns, whereas the median abnormal return of non-overvalued stock acquirers resembles the one of the overvalued stock acquirers and are significantly negative. This long-run stock price performance indicates that the shareholders of overvalued stock acquirers would be better off if the firms did not pursue the acquisitions. Further, as can be concluded from the comparison of Figure 2 and Figure 3, the distribution of returns is largely smoothed by the control returns, so that the histogram of abnormal returns more closely resembles a Gaussian curve than that of cumulative returns. This suggests that shocks or trends capture entire industries at certain time periods. Although the distribution has been smoothed by the introduction of control groups and the abnormal returns are less different between groups than the cumulative returns, they are also significantly higher for cash than for OV acquisitions. This thus supports hypothesis 3: Stock acquirers perform worse than their non-merging industry peers in the long run after the acquisition.

### 4. Cross-Country Analysis

Our results support prior literature suggesting that overvalued acquirers fail to generate shareholders benefits through stock-swap acquisitions. This raises the question of why these shareholder value-destroying acquisitions are still happening. Jensen (2005) argues that overvaluation implies that the firm is unable to deliver the operating performance priced into its stock price before the acquisition. To meet the expectations of the capital markets, managers of overvalued firms may be more willing to undertake risky actions like a stock-swap. If they are able to do so depends on the prevailing corporate governance system. The corporate governance system is always subject to the current regulation within a country and the applicable shareholder protection law. Therefore, in our first part of the cross-country analysis, we test whether stock-swap acquisitions motivated by overvaluation (OV acquisitions) occur more frequently in countries with inferior governance and shareholder protection policies.

Moreover, Harford and Li (2007) suggest that there are several major managerial motives to merge, that are of no benefit to the firm or its shareholders and are therefore of conflicting interests. For example, managers might prefer to run a larger company or "empire" to get more salary or prestige. They might also be overconfident in their own abilities to run a company. Finally, Harford and Li (2007) find empirical evidence that chief executive officers of acquiring firms, in particular, benefit monetarily and thus might be further motivated to enter into mergers that do not necessarily generate shareholder value. However, stricter governance rules and greater shareholder protection can help mitigate the risk of acquisitions for purely managerial reasons. Following this line of reasoning, we expect countries with weaker governance and shareholder protection rules to have a higher proportion of acquisitions that are not motivated solely by increasing shareholder value than others. Now, the motivation of mergers cannot be conclusively determined in retrospect. Yet, we assume that transactions carried out for managerially motivated reasons perform worse on average than those carried out primarily to increase shareholder value although we are well aware that individual mergers carried out in the interests of shareholders can also generate a negative return. We therefore expect returns for overvaluation-motivated

acquirers (OV acquirers) to be generally lower in countries with weaker shareholder protection laws. In this context, however, returns are only an approximation of merger motivation, which is the actual factor of interest to us.

To test the two hypotheses laid out above, we conduct a cross-country study on the relationship between nationally regulated governance and investor protection and overvalued stock takeovers. The 19 Euro area countries from which the acquirers in our dataset originate are assessed in terms of their national regulations on investor protection and governance within companies in so-called shareholder protection indices. Those indices measure or rank regulations on corporate governance and legislation protecting minority shareholders differ among countries. In the following cross-country analysis, we use two of the shareholder indices most commonly used in the finance literature: the "anti-director index" developed by La Porta et al (1998) and the "antiself-dealing index" introduced by Djankov et al (2008).

# 4.1 Anti-Director-Index

The anti-director-index (AD-index) by La Porta et al (1998) is the most widely used shareholder index in the literature and has been applied in over a hundred articles since its establishment (Spamann, 2010). It is based on a list of six legal fields of minority shareholder protection and the respective implementation in a certain country.

The first legal field describes the rules regarding voting per mail, which makes it easier for minority shareholders to participate in the corporate decision processes, because their physical presence at the shareholder meetings is not required. The second law expresses whether the shareholders need to deposit their shares with the company or a financial intermediary several days prior to a shareholder meeting. The third component describes the proportional representation of minority shareholders in the board of directors. The fourth law expresses whether it is possible for shareholders to challenge directors decision in court or the right to force the company to repurchase shares of the minority shareholders who are object to certain fundamental decisions of the management or of the assembly of shareholders, such as mergers or asset sales. The fifth law describes the preemptive right for shareholders to buy new issues of stock, protecting them from dilution. For each of these five anti-director rights measures, a country gets a score of 1 if it protects minority shareholders according to this measure and a score of 0 otherwise. Furthermore, each country gets a 1 if the percentage of share capital needed to call an extraordinary shareholder meeting is at or below the world median of 10%. Therefore, the possible values for the AD-index range from 0.00 (lowest possible shareholder protection) to 6.00 (highest possible shareholder protection).

As can be seen from Appendix C, the AD-index is not available for all 19 Euro area countries. The countries Cyprus, Estonia, Malta, Slovenia, and Slovakia were not assessed with regard to their governance regulation. However, these countries represent rather weaker financial markets within the EU and thus account for only a small fraction of our considered transactions (see Appendix C).

The index values of the other countries rank between 2.00 and 5.00. When dividing the Euro area countries into groups (high, medium, low) according to the AD index, we find that a uniformly large group size cannot be achieved in each case, as the values of many countries are the same especially at the crucial group thresholds. The group of countries with particularly high investor protection consists of Finland, France, Germany, Ireland, Latvia, Lithuania, and Spain. They each have AD index values between 3.50 and 5.00. By contrast, Austria, Greece, Italy, Luxembourg, the Netherlands, and Portugal perform particularly poorly with values between 2.00 and 2.50 according to the AD index and are thus in the "low" group. Only Belgium, with an AD index of 3.00, serves as a buffer between the high and low groups. Due to the coarse values of the index, a different allocation of groups is not possible. However, an analysis of the medium group seems very inconclusive, as the sample of OV acquirers located in Belgium amounts to just 7. For this reason, we have decided to neglect the medium group in the following analysis.

# 4.1.1 Market Expectations and External Pressure

The following table shows the different proportions of OV deals for each of the three groups of shareholder protection with the AD index. The differences between the groups are not significant and we do not find any evidence for our initial hypothesis that overvalued stock acquisitions tend to happen more frequently in the countries with the lowest shareholder protection. We do not find an existing connection between the frequency of overvalued stock transactions and the level of shareholder protection, since the values for all three groups do not notably differ.

 Table 7: Relative proportion of OV stock transactions

This table presents the relative proportion of stock transactions by OV acquirers to total transactions. The first three columns indicate the results for each of the three levels of shareholder protection according to the AD index. The next three columns indicate the difference between the three groups. Proportion values are given in percent.

|             | High  | Low   | Low-High |
|-------------|-------|-------|----------|
| Proportion  | 15.00 | 12.24 | -2.76    |
| Sample Size | 90    | 29    |          |

# 4.1.2 Managerial Motives for OV Acquisitions

To examine the extent to which managerial motives might have influenced the decision to merge, we decided, as described above, to analyze the returns on OV acquisitions broken down by the country groups used earlier. In Appendix C, the first three columns list the returns of the three groups with high, medium, and low AD index numbers and thus inferior governance and shareholder protection policies. The last three columns each represent the difference in returns between the groups.

Contrary to our expectations, the high group seems to perform worst, with negative differences between high and medium as well as between high and low. However, it should be said that none of the differences could convince in significance tests. Thus, none of the returns are statistically significant to conventional levels.

#### Table 8: Comparison of group returns.

This table presents the returns for the OV stock acquirer divided in three country groups formed based on their rank according to the AD-index and facilitates the comparison between them. The first three columns list the mean and median of the returns of OV stock acquirers divided into the three groups, the last three columns show the difference in the returns and thus the abnormal return of one group over another. Statistical significance is examined with t-tests for means and Wilcoxon–Mann–Whitney tests for medians: \*, \*\* or \*\*\* indicates that the differences are significantly different from zero at the 10%, 5%, or 1% level, respectively. The values are given in percent.

|             | High   | Low    | High- Low |
|-------------|--------|--------|-----------|
| Mean        | -21.41 | -19.50 | -1.91     |
| Median      | -35.82 | -34.04 | -1.78     |
| Sample Size | 90     | 29     |           |

# 4.2 Anti-Self-Dealing-Index

We do, however, believe that this result is at least in parts attributable to the fact that the AD index takes a rather superficial view of shareholder rights and governance, which is reflected in the fact that many countries are rated the same, although they certainly have different strengths and weaknesses. We thus include a second shareholder protection index, the Anti-Self-Dealing Index (ASD-Index). The ASD index offers a more detailed differentiation between countries, which allows us to form three equal groups (high, medium, low) in order to distinguish more clearly between high and low in particular.

The ASD-index has been developed by Djankov et al (2008a) as an extension of the previously introduced Anti-Director Index. Building on the same six criteria as the AD-index, it further incorporates the protection of minority shareholders against corporate insiders and majority shareholders based on the premises that majority shareholders or directors may harm minority shareholders through transactions with third parties. Thereby a wealth transfer from the minority shareholders to the majority shareholder or director can occur when the transaction is conducted on unreasonable terms. The graphic in Appendix E presents a typical example for a "self-dealing" transaction. The legal differences of dealing with these types of transactions between several countries are incorporated in the ASD-index. The index incorporates:

- 1. who approves the transaction;
- 2. what needs to be disclosed to the board of directors or supervisory board;
- 3. the duties of officers, directors, and controlling shareholders, the stock exchange and the regulators;
- 4. how the transaction's validity could be challenged;
- 5. what causes of legal action are available if Buyer suffers damages;
- 6. what needs to be proved under each cause of legal action;
- 7. who has standing to sue under each case of legal action;
- 8. the availability of direct and derivative suits;
- 9. access to information and discovery rights; and
- 10. fines and criminal sanctions (Djankov et al, 2008a).

The table in Appendix D presents the values for the ASD-index for our 19 countries in the Euro area. As for the AD-index before, no values are available for Cyprus, Estonia, Malta, Slovenia, and Slovakia. The ASD-index ranks countries from 0.00 (lowest shareholder protection) to 1.00 (highest shareholder protection). As we can obtain from the table, the values for the countries that the acquirers in our dataset origin from rank from 0.20 (Netherlands) to 0.79 (Ireland). The smaller subdivision again allows us to divide into three groups, but this time of equal size. The countries with the highest ASD-index are therefore Ireland, Belgium, Finland, Portugal, and Italy, while those with the lowest are Germany, Luxembourg, Greece, Austria, and the Netherlands. The buffer between the two groups is the medium group with France, Spain, Latvia, and Lithuania.

# 4.2.1 Market Expectations and External Pressure

Regarding the relative proportion of OV stock acquisitions compared to total transactions we also do not find any notably differences between the levels of shareholder protection according to the ASD index. These results resemble the ones of the AD index and we therefore need to reject our initial hypothesis that a low level of shareholder protection within a country leads to a higher proportion of stock transactions by overvalued acquirers compared to total transactions.

 Table 9: Relative proportion of OV stock transactions

This table presents the relative proportion of stock transactions by OV acquirers to total transactions. The first three columns indicate the results for each of the three levels of shareholder protection according to the ASD index. The next three columns indicate the difference between the three groups. Values are given in percent.

|             | High  | Medium | Low   | Medium-<br>High | Low-<br>Medium | Low-<br>High |
|-------------|-------|--------|-------|-----------------|----------------|--------------|
| Proportion  | 14.42 | 16.12  | 12.33 | 1.70            | -3.79          | -2.09        |
| Sample Size | 30    | 59     | 37    |                 |                |              |

As with the AD index, the results are not statistically significant for conventional levels, which is why we have to reject *hypothesis 4: In countries with lower shareholder* protection standards, acquisitions motivated by overvaluation occur more often than in countries with higher shareholder protection standards.

# 4.2.2 Managerial Motives for OV Acquisitions

Analogously to the procedure for the AD index, we also proceed to investigate the influence of management motives on the merger decision. We thus analyze the returns to OV takeovers broken down by the country groups classified by the ASD index. In Table 10, the first three columns report the returns of the three groups with high, medium, and low ASD index scores, and thus poorer governance and shareholder protection. The last three columns represent in each case the difference in returns between the groups (high - medium, medium - low and high - low).

While both the arithmetic mean and the median for the returns of the high ASD index group of countries are ambiguous regarding their sign (6.00% and -7.00%, respectively), those for the medium group are both negative (-18.97% and -38.75%, respectively) and those for the low group are even strongly negative (-45.47% and -64.64%, respectively). Thus, the excess returns of the countries rated better according to the ASD index over those rated worse, which are shown in the form of the difference between the mean and median returns, are also positive in all cases.

Furthermore, all differences are significant at least at the 5% significance level, the differences between the best rated group and the worst rated group (high - low) are even significant at the 1% level. Employing the ASD index, we can thus show that OV stock acquirers from countries with better shareholder protection and governance according to the ASD index outperform their peers from countries with worse shareholder protection and governance guidelines according to the ASD index and thus achieve significantly higher returns.

#### Table 10: Comparison of group returns.

This table presents the returns for the OV stock acquirer divided in three country groups formed based on their rank according to the ASD-index and facilitates the comparison between them. The first three columns list the mean and median of the returns of OV stock acquirers divided into the three groups, the last three columns show the difference in the returns and thus the abnormal return of one group over another. Statistical significance is examined with t-tests for means and Wilcoxon–Mann–Whitney tests for medians: \*, \*\* or \*\*\* indicates that the differences are significantly different from zero at the 10%, 5%, or 1% level, respectively. Values are given in percent.

|             | High  | Medium | Low    | High<br>- Medium | Medium<br>- Low | High<br>- Low |
|-------------|-------|--------|--------|------------------|-----------------|---------------|
| Mean        | 6.00  | -18.97 | -45.47 | 24.97**          | 26.50**         | 51.47***      |
| Median      | -7.00 | -38.75 | -64.64 | 31.75**          | 25.89***        | 57.64***      |
| Sample Size | 29    | 59     | 37     |                  |                 |               |

This supports our hypothesis that better governance can make extrinsically motivated mergers more difficult to execute. The shareholders in the countries with the weakest ASD score experience less protection from transactions motivated by something else than the creation of shareholder value. By significantly overpaying their targets, managers could destroy shareholder value of their firm in order to get a higher bonus or build an empire, for example. This hypothesis as well as our results are further backed by Harford and Li's (2007) study that shows that in the vast majority of acquiring firms' director compensation soars following acquisitions.

In summary, we consider these results as an indication that legal regulations protecting shareholders are an important determinant of the extent of stock transactions by overvalued acquirers that are extrinsically motivated, for example, by empire-building or bonuses of managers. In countries with the worst shareholder protection in the Euro area, we find significantly higher negative returns than in the countries with better shareholder protection, which makes us question the motive of creation of shareholder value.

# 4.3 Analysis Discussion

A general problem in conducting a period-based study using a point-in-time index is the question of the timeliness and dynamism of the index. In this paper, we consider the period between 1980 and 2017, a total of 37 years. Over such a long period, longestablished structures and even the legislature of a country can change. This means that the index value of a country and thus its ranking and grouping according to it can also change. This problem can hardly be mitigated within the scope of this paper, but it has prompted us to give secondary consideration to the aspect of topicality in the selection of the indices used, and instead to focus on the quality and dissemination of the indices.

One of the challenges in conducting a cross-country analysis of this kind is the choice of the independent variable, in our case an estimator of corporate governance quality. Corporate governance quality is not directly measurable, but there are various indices that can be used to capture it. We chose the Anti-Director (AD) and Anti-Self-Dealing (ASD) indices used in this study because the AD index is the most widely used in the existing literature. The ASD index, as its further development, is considered more detailed and up to date, which is why we decided to implement it in our study in addition to the AD index and as a robustness check. However, the results of the crosscountry study using the AD index do not correspond to those using the ASD index. This can be attributed to the different grouping of the countries according to their respective index scores. Usually, when working with indices, the temporal component is also a problem as indices and thus the rankings within them can change dynamically. Since both indices are from 2003, however, the difference in grouping stems from the different evaluation of the countries according to the indices. Yet, the grouping according to the AD index is to be viewed more critically, since here, due to the coarse steps of the index values, many Euro area countries were rated the same and thus made a division into three equally sized groups impossible. As a result, the number of observations, which is already low overall for OV acquisitions, is particularly low for the medium group according to the AD Index, for example, so that it is impossible to draw any meaningful conclusions about it. Methodologically, therefore, the approach of the cross-country study using the ASD index is preferable. Further, the ASD index incorporates all factors that determine the AD index and additionally includes legal rules protecting minority shareholders against "self-dealing" transactions by directors or majority shareholders. Therefore, we see the ASD results as more meaningful and informative and will refer to those in the following when speaking about our crosscountry-study results. Since we determine the results using the ASD index to be more meaningful, we find support for hypothesis 5: In countries with lower shareholder protection standards, shareholder value-destroying stock acquisitions occur more often and therefore, the post-merger returns are lower compared to countries with higher shareholder protection standards.

What is also considered in the choice of indices, but difficult to prevent in crosscountry studies, are endogeneity problems. The independent variable, i.e. the index, should be chosen in such a way that it alone determines the grouping of the countries. However, there may be other relationships between countries in a group that are unobserved by the study. Thus, while we find that the most value-destroying acquisitions appear to be concentrated in countries with the lowest levels of shareholder protection, we cannot definitively rule out the possibility that there is no other variable correlated with both corporate governance quality and abnormal returns that is not incorporated into our model. However, we believe that this paper is a good first step in exploring the determinants of abnormal returns from stock-financed acquisitions driven by overvaluation and can imagine that shareholder protection is indeed a key driver of them.

# **5** Conclusion

Recent evidence from the US has shown that acquisition-strategies like the one AOL had applied in the deal with Time Warner, namely using overvalued stock to create shareholder value by acquiring less overvalued targets, does not seem to work on average. Within this paper we adapted the research question to a European setting and aimed at shedding light on the motivation behind overvalued stock transactions in Europe. Our results show that stock acquirers are on average more overvalued than their targets as well as their cash-acquiring peers. In identifying those transactions that might thus be motivated by the overvaluation of acquirer stock we find, however, that those acquirers pay significantly higher premia than their non-overvalued peers. As hypothesized, we further find that these transactions underperform those of their peers in the long-run and thus destroy rather than generate value for their shareholders. These results are in line with the ones prior research has found in the US.

Our results cast considerable doubt on the effectiveness of acquirers' use of temporarily overvalued stock in stock-swap acquisitions. Substantial overpayments in terms of acquisition premia seem to negate most of the profits that would otherwise be available to the shareholders of an overvalued acquirer who acquires a less overvalued target firm. This results in negative abnormal returns for these acquirers, not only compared to non-overvalued bidders, but also compared to their non-merging peers. This suggests that companies whose stock-swap acquisitions are motivated by temporary overvaluation would be better off not doing the merger in the first place.

In the second part of this paper, we took a more intensive and differentiated look at the motivation behind stock-financed acquisitions of overvalued acquirers. If empirical evidence suggests that it is generally counterproductive to carry out such acquisitions in light of the return to the shareholders, there must be other motivators to them, because these acquisitions are still happening. In a cross-country study, we show that in countries with better governance and shareholder protection, such acquisitions in which shareholder value is destroyed occur less frequently. As a reason for this, we see agency problems that apply through other incentives for CEOs and management. For example, existing studies showed that CEOs are financially rewarded by completed acquisitions regardless of their success. We conclude that governance and shareholder protection have a significant mitigating effect against the risk of mergers and acquisitions incentivized by agency problems.

It should be noted, however, that the explanatory power of this paper is limited by several aspects in the transaction analysis as well as in the cross-country study. The main limitation is certainly the availability and quality of the data. It is reasonable to conclude that there were significantly more M&A transactions in the period under consideration than our sample reflects. While our models provide a very good fit to our data, we cannot definitively rule out the possibility that transactions excluded due to missing data would not have significantly changed the underlying models and thus also the results in our transaction analysis as well as the cross-country study. We encountered similar problems when creating the control groups. Nevertheless, we assume that the missing data is not systematic and that both our transaction data and our control data represent a good sample of the respective environments and are therefore representative.

Moreover, our models are limited by the variables we use and could be extended and improved beyond them. For example, it could be argued that beyond the accounting-based measures we focus on in this paper, characteristics such as company size in terms of total assets or volatility of sales and profits also have a significant impact on the valuation of a company. While our models approximate our sample data very closely, it may be of interest to conduct the same tests in future research, considering a broader range of risk factors proposed in the literature. Similarly, we believe that performing the same analysis while using different approaches to measures under consideration (e.g. use of the calendar time portfolio approach to compute abnormal returns) could further demonstrate the robustness of our models, if yielding consistent results.

With respect to the cross-country study, we see a main limitation in the measure of corporate governance regulations. The methodologies of shareholder protection and governance indices up to date neglect the enforcement of evaluated regulations.<sup>5</sup> Therefore, by design, we cannot capture differences in the enforcement of shareholder protection and governance regulations and essentially do not account for the fact that in some countries, the law on the books does not reflect the full legal environment. We therefore conceive that it might prove valuable in future research to further extend shareholder protection indices for the enforcement quality of regulations, e.g. through a survey approach. Certainly, this would prove difficult in a cross-country setting, especially since governance and shareholder protection regulations, as well as their enforcement, are sensitive issues and may moreover be strongly dependent on intranational perceptions.

Finally, there might be other drivers to OV acquisitions than governance problems. In consistence with other literature (e.g. Harford and Li, 2007; Jensen, 2005), we consider shareholder protection problems and resulting principal-agent problems as key drivers of OV acquisitions. However, there are studies suggesting that these deals are motivated by other factors, such as information asymmetries, and thus could be mitigated by increased disclosure requirements (Eckbo et al, 2018). We therefore believe that intensive research on how different country-specific characteristics, such as shareholder protection regulations and disclosure requirements, but also cultural components interact to influence acquisition activity, especially with respect to stock acquisitions motivated by overvaluations, which empirically have a strong negative impact on the performance of acquiring companies.

Despite the aforementioned limitations as well as opportunities for expansion and improvement for future research, our paper presents valuable findings on the relationship between overvaluation, corporate governance, and acquisition activity that may be of relevance to both management and the political sphere. Especially in the context of growing awareness for the protection of minority shareholders as well as

<sup>&</sup>lt;sup>5</sup> The AD Index has been revised and criticized with regard to various aspects, also with regard to the failure to account for the enforcement of evaluated shareholder protection regulations (Spamann, 2010). In the extension of the AD Index to the ASD Index, various points of criticism were eliminated, but it was acknowledged that the enforcement of regulations could not be fully assessed and taken into consideration (Djankov et al, 2008b).

increased interest in fair corporate governance, the findings as well as the resulting implications of this paper may be of interest to policymakers and firms alike.

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# Appendix A: Assignment of Index j to 12 Fama-French Industry Classifications.

This table shows which index j we have assigned to which Fama-French industry. This assignment is used several times throughout this paper in body text and tables.

| j  | Fama-French Industry Classification   |
|----|---|
| 1  | Energy<br>Oil, gas, and coal extraction products                              |
| 2  | Shops<br>Wholesale, retail, and some services (laundries, repair shops)       |
| 3  | Manufacturing<br>Machinery, rrucks, planes, office furniture, paper, printing |
| 4  | Business Equipment<br>Computers, software, and electronic equipment           |
| 5  | Money<br>Finance  |
| 6  | Utils<br>Utilities  |
| 7  | Other<br>E.g. mines, constructions, transportation, hotels, entertainment     |
| 8  | Chemicals<br>Chemicals and allied products                                    |
| 9  | Consumer Nondurables<br>Food, tobacco, textiles, apparel, leather, toys       |
| 10 | Health<br>Healthcare, medical equipment, and drugs                            |
| 11 | Consumer Durables<br>Cars, TVs, furniture, household appliances               |
| 12 | Telecommunication<br>Telephone and television transmission                    |

# Appendix B: Acquisition premia.

This table presents descriptive statistics for acquisition premia paid by acquirers to targets. Acquisition premia are calculated as described in chapter 3.3 based. The table summarizes summary statistics for acquisition premia based on a dataset that is winsorized at 95% Stock acquisitions are classified into OV and NOV groups. The last three columns report the differences in means and medians. Statistical significance is examined with t-tests for means and Wilcoxon–Mann–Whitney tests for medians: \*, \*\* or \*\*\* indicates that the values are significantly different from zero at the 10%, 5%, or 1% level, respectively. The values are shown in percent.

|             | OV    | NOV   | Cash  | OV-NOV        | OV-Cash | Cash-NOV      |
|-------------|-------|-------|-------|---------------|---------|---------------|
| Mean        | 88.61 | 61.21 | 81.24 | 17.40         | 7.37    | 20.03         |
| Median      | 34.61 | 19.26 | 37.71 | $15.35^{***}$ | -3.10   | $18.50^{***}$ |
| Sample Size | 136   | 149   | 642   |               |         |               |

The winsorization assigns the premium of the 97.5% percentile to all acquisition premia whose value is above the 97.5% percentile. All premia below the 2.5% percentile are assigned the value of the 2.5% percentile. Thus, compared to the trimmed data set, the sample is larger, the minimum and maximum are identical, and the mean is higher than that of the trimmed data set. The median of the entire data set, not split by OV, NOV, and cash, remains identical. Thus, the average premia split by OV, NOV, and cash are also above those found by applying the same methodology to the trimmed data set. The same patterns become apparent: OV and Cash acquirers seem to pay higher premia than NOV acquirers. This presumption is also supported, with respect to the median, by the Wilcoxon-Mann test, which confirms a significance level of less than 1% for both the difference of (OV - NOV) and (cash - NOV).

# Appendix C: Anti-Director Index for Euro area countries.

This table shows the values of the AD index for the countries belonging to the Euro area monetary union. The values are taken from the paper (Djankov et al, 2008a). The first column also shows the classification of countries into groups according to the AD index, which is used in the following cross-country analysis. The last column gives an overview of the number of total acquisitions per country.

| Group  | Country     | Andi-Director Index | Number of Transactions |
|--------|-------------|---------------------|------------------------|
|        | Ireland     | 5.00                | 30                     |
|        | Spain       | 5.00                | 73                     |
|        | Latvia      | 4.00                | 0                      |
| High   | Lithuania   | 4.00                | 0                      |
|        | Finland     | 3.50                | 41                     |
|        | France      | 3.50                | 283                    |
|        | Germany     | 3.50                | 155                    |
| Middle | Belgium     | 3.00                | 37                     |
|        | Austria     | 2.50                | 12                     |
|        | Netherlands | 2.50                | 87                     |
| Low    | Portugal    | 2.50                | 13                     |
| LOW    | Greece      | 2.00                | 25                     |
|        | Italy       | 2.00                | 85                     |
|        | Luxembourg  | 2.00                | 10                     |
|        | Cyprus      | -                   | 3                      |
|        | Estonia     | -                   | 0                      |
|        | Malta       | -                   | 1                      |
|        | Slovenia    | -                   | 0                      |
|        | Slovakia    | -                   | 0                      |

# Appendix D: Anti-Self-Dealing Index for Euro area countries

This table shows the values of the ASD index for the countries belonging to the Euro area monetary union. The values are taken from the paper (Djankov et al, 2008a). The first column also shows the classification of countries into groups according to the ASD index, which is used in the following crosscountry analysis. The last column gives an overview of the number of mergers and acquisitions per country.

| Group  | Country     | Anti-Self-Dealing Index | Number of Transactions |
|--------|-------------|-------------------------|------------------------|
|        | Ireland     | 0.79                    | 30                     |
| High   | Belgium     | 0.54                    | 37                     |
|        | Finland     | 0.46                    | 41                     |
|        | Portugal    | 0.44                    | 13                     |
|        | Italy       | 0.42                    | 85                     |
|        | France      | 0.38                    | 283                    |
| Modium | Spain       | 0.37                    | 73                     |
| Medium | Lithuania   | 0.36                    | 0                      |
|        | Latvia      | 0.32                    | 0                      |
|        | Germany     | 0.28                    | 155                    |
|        | Luxembourg  | 0.28                    | 10                     |
| Low    | Greece      | 0.22                    | 25                     |
|        | Austria     | 0.21                    | 12                     |
|        | Netherlands | 0.20                    | 87                     |
|        | Cyprus      | -                       | 3                      |
|        | Estonia     | -                       | 0                      |
|        | Malta       | -                       | 1                      |
|        | Slovenia    | -                       | 0                      |
|        | Slovakia    | -                       | 0                      |

# **Appendix E:** Anti-Self-Dealing Example from Djankov et al (2008a)

This graphic shows a typical example of a self-dealing transaction. In this case, Buyer Co. ("Buyer") is a food manufacturer. It is a publicly traded firm listed on the country's largest stock exchange. Buyer manufactures and distributes all of its products itself. Mr. James is Buyer's controlling shareholder and a member of Buyer's board of directors. He owns 60% of Buyer and elected two directors to Buyer's five-member board of directors (in addition to himself). Buyer's CEO is the son of Mr. James. Mr. James also owns 90% of Seller Co., which operates a chain of retail hardware stores. Seller recently shut down a large number of its stores. As a result, its fleet of trucks is not being utilized. Mr. James proposes that Buyer purchase Seller's unused trucks to expand Buyer's distribution of its food products. The final terms of the transaction require Buyer to pay to Seller in cash an amount equal to 10% of Buyer's assets in exchange for the trucks. The Buyer enters into the transaction. All required approvals are obtained, and all the required disclosures made. The transaction might be unfair to Buyer. Shareholders sue the interested parties and the approving body.

