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Offer premiums in mergers and acquisitions

In what way are offer premiums affected by the economic condition of the market and the financial condition of the firms involved?

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ABSTRACT

The aim of this thesis is to gain more knowledge about the way in which the offer premiums in mergers and acquisitions are affected by fluctuations in the economic condition of the market and the financial condition of the firms involved. A sample of 1889 mergers and acquisitions announced between 2000 and 2015 is analysed with the use of multivariate regressions. The results show significantly higher offer premiums for mergers and acquisitions announced in periods of financial crisis, for mergers and acquisitions announced in periods with relatively bad credit market conditions, and for mergers and acquisitions in which a distressed target is acquired by a healthy firm. Furthermore, the results show that acquirers tend to offer a price close to a recent peak in the stock price of the target firm. This appears to cause the higher offer premiums for distressed targets and for acquisitions during financial crises, as the differential with the recent peak price is greater in these cases. When a distressed target is acquired by a distressed firm instead of a healthy firm, the offer premium is found to be significantly lower instead of higher.

Keywords:
Mergers and acquisitions, offer premium, financial distress, financial crisis, 52-week high

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CHAPTER 1 Introduction

Global financial crises are a continuously recurring phenomenon. Two major global crises have already occurred in the 21st century alone, while this century is just seventeen years old now. The first of these was the crisis that followed the burst of the Dot-com bubble in March 2000 (LPL Financial, 2015). According to the National Bureau of Economic Research (NBER), the recession started in March 2001 and ended in November 2001. The economy was already in decline before March 2001, but this decline was too mild to be qualified as a recession. The Nasdaq Composite index for example declined from 5048 in March 2000 to 1705 in November 2001, which illustrates the severity of the crisis (Sweet & Rothwell, 2015). The other financial crisis started a couple of years later, at the end of 2007. According to the NBER, this crisis started in December 2007 and continued up to and including June 2009 (National Bureau of Economic Research, 2017). After June 2009, the business cycle shifted onto an upward trajectory and the market thus started to recover (DeLong, 2014).

Despite the global economy being in a crisis from time to time, a lot of mergers and acquisitions take place every year. In 2008 for example, in the middle of the financial crisis, the number of merger and acquisition announcements in the United States that eventually led to takeovers amounts to 282[1]. The acquirers in acquisitions typically pay substantial premiums over the market value of the target firms. Takeovers can be executed for different reasons, especially during a financial crisis. After all, a lot of companies will face distress during a crisis. This could force some of them to sell their company. Ang and Mauck (2011) find empirical evidence for higher premiums paid in such takeovers, while fire sale theories predict lower premiums for these distressed targets. Moreover, the acquiring firm in the takeover could be distressed as well. By one distressed firm acquiring another firm that experiences financial distress to some extend, both firms may be able to improve their creditworthiness (Parnes, 2009). However, the creditworthiness of the acquiring firm should be sufficient to not endanger its own survival with the acquisition. Furthermore, if the acquirer's creditworthiness allows for it, it could also be the case that a distressed acquirer takes over a healthy firm, as acquisitions can give a distressed acquirer some diversification benefits. For example, diversifying acquisitions stabilize the cash flows of the acquirer, which lowers the bankruptcy risk (Zhang, 2016). Moreover, acquisitions that increase the corporate focus of the acquiring firm could be beneficial for distressed acquirers as well, as Ferris, Sen, Lim and Yeo (2002) have shown that these acquisitions create shareholder value for acquirers. Increasing the corporate focus could make the acquirer able to utilize economies of scale, which could substantially lower their costs.

Investigating whether the premiums paid in mergers and acquisitions that occurred during a financial crisis substantially deviate from the premiums paid in mergers and acquisitions that occurred in other periods can provide some valuable insights. After all, economic circumstances can have a

[1] This number is retrieved from the Securities Data Company's Mergers and Acquisitions database.

large impact on the number of takeovers and the height of the offered prices. For example, when the interest rates on the companies' loans are low, companies can lend money from creditors with more ease, which makes it easier to finance acquisitions or other investments. The height of these interest rates and other market conditions may lead to an identifiable trend in the offer premiums over the years. Alexandridis, Mavrovitis and Travlos (2012) already found higher overall premiums for the period 2000-2002, during which the burst of the dotcom bubble took place, than periods around these years, but they looked only at periods of multiple years. To identify a trend, this study will investigate the premiums per year. Knowing whether such a trend exists can help companies in timing a takeover attempt or in identifying the right moment to sell the company. Besides identifying a possible trend in premiums, this study also contributes to the existing literature by including the ownership characteristics of the target and the financial condition of the firms participating in mergers and acquisitions. This provides additional insights on the effects of ownership concentration and financial distress in takeovers. Including both variables in combination with the economic condition of the market is one of the main contributions of this study to the existing literature. The research question of this study is as follows:

"*To what extent are offer premiums influenced by the different economic and financial conditions during and around years of financial crises?"*

For this study, data is used of the mergers and acquisitions that have been announced and completed in the United States between the start of 2000 and the end of 2015. Two global financial crises took place in this period. Two methods are used to identify the start and the end of these crises. Firstly, the NBER is followed, which defines a recession as a significant decline in economic activity that is spread across the entire economy and endures for more than a couple of months. This decline is usually visible in real GDP, unemployment, and real income, among other things (National Bureau of Economic Research, 2017). According to the NBER, the two crisis periods in our sample are from March 2001 to November 2001 and from December 2007 to June 2009. The second method of crisis identification is using the highest and lowest values of the S&P 500 index. This method serves mainly as a robustness test in this study and leads to a financial crisis from September 2000 to September 2001 and a crisis from December 2007 to March 2009.

The data is mainly analysed in this study by multivariate regression analysis with the offer premium as the dependent variable. The offer premium is defined in this study as the percentage difference between the offer price and the target's stock price thirty calendar days prior to the announcement. Several independent variables are added each time to find the relation between these variables and the offer premium. The most important of these are the target's highest stock price of the last 52 weeks, the ownership concentration of the target firm, a dummy variable for the presence of a financial crisis at the time of the announcement and dummy variables regarding the financial condition

of the target and the acquirer. To determine whether the target and the acquirer experience financial distress, a proxy is used that is often used in existing literature as well. Distressed firms are defined in this study as firms experiencing negative net income in the year before the announcement of the acquisition (Ang & Mauck, 2011). Moreover, a number of control variables are added to the regressions as well. Some of these variables are related to the specific deal, others to the firms involved. The deal-specific control variables involve firstly the form of payment used in the takeover and the offer type. The two main types of offers in the United States are mergers and tender offers (Offenberg & Pirinsky, 2015). In mergers, the acquiring firm negotiates with the target's board of directors and they ultimately come to an agreed offer price. The target's shareholders subsequently vote on this price to either approve or disapprove the deal. In tender offers, the acquiring firm proposes a price per share to the target's shareholders, who can decide to sell their shares at that price or to keep them (Offenberg & Pirinsky, 2015). Furthermore, the deal attitude, meaning whether the deal is friendly or hostile, and dummy variables for the presence of multiple bidders and for the takeover being a Leveraged Buyout (LBO) are included. An LBO is an acquisition and delisting of a company or a department of a company, financed for a large part with debt (Eckbo & Thorburn, 2008). The firm-specific variables used are the size of the firms, the price-earnings ratio, the market-to-book ratio, the return on assets (ROA) and the target's stock price volatility, among other things.

The final regressions made are related to the objective of finding a trend in offer premiums over the years. Multiple regressions are performed with dummy variables included for different time periods. This enabled us to display the movement of offer premiums over the years. Moreover, to take the credit market conditions into account as well, the high-yield spread is also included in these regressions. The high-yield spread is the difference between the yields of less than investment-grade corporate bonds, also known as junk bonds, and government bonds and is often used in existing literature as a proxy for the credit market conditions (Mody & Taylor, 2003).

The main findings of the regression analyses include firstly a significant positive non-linear relation between the 52-week high premium and the offer premium. Larger 52-week high premiums thus lead to larger offer premiums. The marginal effects of the 52-week high premiums are found to be greatest for the smallest 52-week high premiums. Furthermore, the ownership structure of the target firm is not found to have a significant influence on the offer premium. The empirical results indicate no significant relation after controlling for the relative size of the firms. The financial condition of the target and the acquirer on the other hand does have a significant influence on the offer premium according to the empirical results. Distressed targets get significantly higher offer premiums when the acquirer is a healthy firm and significantly lower offer premiums when the acquirer is a distressed firm as well. The economic condition of the market shows the same relation with the offer premium as the financial condition of the target. Offer premiums are significantly higher when the merger or acquisition is announced during a financial crisis and when the merger or acquisition is announced in a period with a relatively bad condition of the credit market. The significant relations of the offer

premiums with the financial condition of the target and with the presence of a financial crisis are found to disappear when the 52-week high premiums are included in the regressions as well. This indicates that higher 52-week high premiums for distressed targets and during periods of financial crisis are the cause of the higher offer premiums in these situations. Finally, no evidence is found that indicates the existence of a trend in offer premiums.

This thesis is structured in the following order. In the next section, the relevant literature, the empirical evidence provided by this literature, and the theories related to the research topic are discussed. In the third section, the hypotheses are developed, together with the methodologies used to test these hypotheses. Section four describes how the dataset is established and provides the definitions and proxies used for the main variables of the study. In section five, the empirical results are analysed and several robustness tests are performed on these results. In the sixth and final section, the conclusion is drawn up and the limitations of this study are discussed, together with a few recommendations for future research.

CHAPTER 2 Literature Review

Empirical findings of existing literature related to mergers and acquisitions and economic circumstances are discussed in this chapter. In this way, the current knowledge about mergers and acquisitions and the effects of different economic and financial conditions on the offer premiums becomes clear.

2.1 Motives for mergers and acquisitions

Firstly, we focus on the reasons for firms to take part in mergers and acquisitions. The main idea behind conducting a merger or an acquisition is enhancing shareholder value (Sudarsanam & Sorwar, 2010). However, mergers and acquisitions can be executed based on many different motives. The most important of these are expected synergies, the agency motive, managerial hubris and financial distress (Berkovitch & Narayanan, 1993).

Synergies are defined here as the economic gains that result from the two firms becoming one after the merger or acquisition. The total value of the new combined company will be higher than the total value that emerges when the values of the two separate firms are added up. This definition is very broad and can be split up into three categories, consisting of operational synergies, financial synergies and collusive synergies (Chatterjee, 1986). The operational synergies are related to production and administrative efficiencies that lower the cost of production of the company. These synergies can be obtained for example by utilizing economies of scale or scope in the production or distribution process. By surveying CFOs, Mukherjee, Kiymaz and Baker (2004) find that these operational synergies are the most important motive for CFOs to do a merger or acquisition. Financial synergies involve value creation that is obtained because of reduced costs of capital for the firm. This makes it easier for the firms to raise capital and to utilize investment opportunities. Lastly, collusive synergies are related to the ability to raise the price of the products after the merger or acquisition. This is only possible when the two firms are operating in the same industry. After all, collusion among participants in the same industry leads to more market power, but collusion among firms in different industries does not (Chatterjee, 1986).

The agency motive relates to the agency problems between managers and shareholders. It implies that the mergers and acquisitions are initiated to maximize the welfare of the managers, while at the same time hurting the shareholders of the acquiring firm. This means that the managers choose the target firms that are most favorable for their own utility. When the target shareholders know this, they can use their bargaining power to obtain value as well, as the managers really want to complete these acquisitions. There are several reasons for managers to pursue such acquisitions. For example, they may do it to acquire assets that increase the firm's dependence on its management (Shleifer & Vishny, 1989). Other examples are to diversify their own, i.e. the manager's, portfolio and to increase

the size of the firm (Berkovitch & Narayanan, 1993). All of these examples can increase the welfare of the managers.

The managerial hubris motive means that acquisitions that do not provide synergies are executed because managers made the wrong estimations (Berkovitch & Narayanan, 1993). Before deciding whether or not to execute a takeover, managers make estimations of the value of the target firm and the synergy gains that will arise from the takeover. To find the synergy gains, the managers have to predict the future cash flows after the takeover and the risks involved in executing the takeover. They execute the merger or acquisition only when they estimate that it leads to sufficient synergy gains. However, as managers are only human, they may overestimate the future cash flows or they may underestimate the risks involved. It is thus possible that managers estimate sufficient synergy gains and execute the takeover, while there are actually no gains or too little gains to cover the risks. These takeovers lead to losses for the acquirers. This is the case for the mergers and acquisitions in which managerial hubris is the motive (Berkovitch & Narayanan, 1993).

The motive that is especially important during periods of financial crises is financial distress. The presence of financial distress at a firm raises the need to improve the creditworthiness of the firm, which could be the case for both the acquiring firm and the acquired firm (Parnes, 2009). When firms experience financial distress, a certain point could be reached at which they have to find a way to improve their financial condition. A bankruptcy may follow otherwise, which is usually less beneficial for the shareholders than a merger or an acquisition. After all, shareholders often receive nothing with a bankruptcy, while they keep holding some stock when the firm is acquired or when they have merged (Haw, Pastena, & Lilien, 1987). An acquisition can thus be used as a bankruptcy alternative. However, such acquisitions are only possible when three credit conditions are met. Firstly, while the target firm searches for an acquiring firm, it cannot waste resources that are essential to survive. Moreover, the acquiring firm must have sufficient creditworthiness for the acquisition to not endanger its own survival. Finally, the target firm must receive substantial creditworthiness benefits from the acquisition (Parnes, 2009). The acquisition will not be a success when one or more of these conditions are not met, and is thus not likely to occur in that case. Besides searching for a financially healthy firm that is willing to merge or willing to acquire the firm, financially distressed firms could also search among other distressed firms for one that is interested in merging together. After all, financial distress tends to be present at the same time for multiple firms within the same industry (Lang & Stulz, 1992). Firms can achieve operational synergies when they merge with a firm from the same industry, even though both are in financial distress, as they can combine their operational activities. In this way, two distressed firms could strengthen their position and thus prevent bankruptcy by merging together. Another alternative for distressed firms is to acquire a healthy firm, as acquisitions can give a distressed acquirer several diversification benefits (Zhang, 2016). Diversifying acquisitions for example stabilize the cash flows of the acquirer, which lowers the bankruptcy risk. Furthermore, diversifying acquisitions can increase the optimal leverage ratio, which allows the acquirer to raise the

amount of leverage and finance positive-NPV projects that they were unable to finance without the acquisition. Diversifying acquisitions can thus lead to financial synergies for distressed acquirers (Zhang, 2016).

Mukherjee et al. (2004) add some different motives to the list. These motives are diversification, management incentives, tax considerations and cheap asset purchasing. Diversification, which was already mentioned in the previous subsection about financial distress, means that firms acquire target firms that are operating in another industry or country to be able to reduce their risks. This enables them to limit their losses, especially during financial crises. The survey of CFOs by Mukherjee et al. (2004) that was mentioned earlier shows that diversification is the second most important motive for CFOs to do a merger or acquisition. However, diversification does not always result in value creation, as Ferris et al. (2002) show. Diversification namely decreases the corporate focus, as the firm has to manage a greater number of different operations. Ferris et al. (2002) find that mergers and acquisitions that increase the corporate focus lead to value creation for the shareholders of the firms. This value creation is possible for example by achieving economies of scale. Moreover, Ferris et al. (2002) find that diversifying mergers and acquisitions, which thus decrease the corporate focus, have a negative effect on the shareholder value when there are little growth opportunities for the acquiring firm and when this firm has relatively small cash flows. When this is not the case, these diversifying mergers and acquisitions often create shareholder value as well. Diversification and increasing corporate focus can thus both be motives to perform a merger or acquisition, but it depends on the situation whether it would create value for the acquirer.

2.2 Determinants of offer premiums

In mergers and acquisitions, the acquirer typically offers a price that exceeds the current market value of the target firm (Sudarsanam & Sorwar, 2010). This additional amount is known as the offer premium. Existing literature regarding takeovers show varying offer premiums over time as well as between individual takeovers. This can be explained by the fact that multiple factors are found to influence the premiums offered. These factors consist of deal-specific characteristics, firm-specific characteristics and factors that relate to differences between industries and over time. A lot of research has been done regarding these determinants of offer premiums. The most important findings will now be discussed.

2.2.1 Deal-specific characteristics

The first deal-specific characteristic that could influence the height of the offer premium is the form of payment that is used in the takeover. There are many types of payment possible, but the most important two are payment in cash and payment in stocks. The existing literature shows some contradicting empirical results regarding the effect of the form of payment on the offer premiums. On one side are for example the studies of Eckbo (2009) and Franks, Harris and Mayer (1988). A large

part of the study of Franks et al. (1988) consists of an analysis of the effects of the different forms of payment on the offer premiums. They found that the premiums were much larger when the offer consisted of cash only compared to when the offer consisted of stocks instead of cash. The results of Eckbo (2009) correspond to this observation. This relation holds for both mergers and tender offers, even after controlling for the number of bidders. Moreover, the acquirers suffer abnormal losses when the offer consists of equity only (Franks et al., 1988). These results indicate that the form of payment used in a takeover is an important determinant of the height of the offer premium. Madura, Ngo and Viale (2012) also find the form of payment to be an important factor, as their findings based on the entire sample all hold for their sample with only the stock-financed mergers, but not all hold when the sample consists of only the cash-financed mergers. Suk and Sung (1997) on the other hand find no significant difference in offer premiums between cash offers and equity offers. This means that according to their study, the form of payment does not significantly influence the height of the offer premium. These studies thus find contradicting results regarding the effect of the form of payment.

Another important deal-specific characteristic is the offer type that is used, in particular whether it involves a tender offer or not. Baker, Pan and Wurgler (2012) show that offer premiums are significantly higher when it involves a tender offer, as they find large increases in offer price when a tender offer is used. Jensen and Ruback (1983) found significantly higher offer premiums for tender offers compared to mergers, which by definition do not involve tender offers. The offer premiums were found to be 30 percent for tender offers, while the offer premiums for mergers were only 20 percent. Both Franks et al. (1988) and Suk and Sung (1997) also analyzed whether a difference in premiums exists between mergers and tender offers. Franks et al. (1988) initially find a significant difference in offer premiums between mergers and tender offers, but this disappears after controlling for the form of payment. Suk and Sung (1997) find no significant difference in premiums.

The deal attitude is another deal characteristic that influences the offer premiums. The deal can be friendly or hostile, where hostile takeover bids are found to lead to significantly higher offer premiums (Alexandridis, Fuller, Terhaar, & Travlos, 2013; Baker et al., 2012). This finding corresponds to the expected influence, as hostile bids are unwanted by the target's management. The target's management may seek to find a friendlier competing firm that is willing to acquire them after they got a hostile bid (Schwert, 2000). This means that hostile bids almost have to contain high offer premiums, as it gives them a better chance of acceptance of the offer by the target's management.

Furthermore, the presence of multiple bidders in the takeover process is found to have a significant effect on the offer premiums as well (Gondhalekar, Sant, & Ferris, 2004). Gondhalekar et al. (2004) have studied possible determinants of premiums only for takeovers with cash as method of payment. Their results indicate that the presence of multiple bidders leads to higher premiums, which can be explained by the competition necessitating the firms to offer higher prices.

Finally, it is important whether the deal is a leveraged buyout (LBO) or not. An LBO can be defined as the acquisition and delisting of a company or a department of the company, financed for a

large part with debt (Eckbo & Thorburn, 2008). The acquiring firm in an LBO transaction is usually a private equity fund. Baker et al. (2012) show that LBOs are associated with significantly lower offer premiums compared to non-LBO takeovers. These lower offer premiums for LBOs can be explained by the fact that acquirers in LBOs are usually private firms. After all, private firms are found to generally offer lower premiums than public firms (Bargeron, Schlingemann, Stulz and Zutter, 2008).

2.2.2 Firm-specific characteristics

A lot of firm-specific characteristics are found to influence the offer premiums in existing literature. The two characteristics that are most important for our study are the target's 52-week high and the ownership characteristics of the target firm. The other firm-specific characteristics that are found to possibly affect the offer premiums will only be used as control variables in this study.

2.2.2.1 Target firm's 52-week high

The target's 52-week high is the highest stock price of the target firm of the last 52-weeks. This 52-week high is often used in a merger or acquisition as a reference point in the determination of the offer price by the bidder and in the reception of the offer price by the target (Baker et al., 2012). Generally, the offer price is the outcome of a negotiation between the bidder and the target. In theory, the appropriate price for a target firm is determined based on the value of the synergies, the value of the combination of the two firms under the new corporate structure, and a projection of expected future cash flows, among other things. The gain in value following the combination of the two firms is divided between the target's shareholders and the acquirer's shareholders according to their relative bargaining power. However, in practice, the determination of the offer price is subjective. A large number of assumptions need to be made in order to justify a particular offer price. Moreover, boards can bluff in a negotiation process, other bidders might arise and relative bargaining power is often not fully established. Consequently, the target price can only be set within a wide range. In particular, this range is affected by psychological reference points or anchors (Baker et al., 2012).

Baker et al. (2012) provide empirical evidence that shows a significant positive relation between the target's 52-week high and the offer premium when using a simple linear regression. For a one percent increase in offer price, the target's 52-week high has to rise with ten percent according to this regression. However, they also performed piecewise linear regressions, in which the target's 52-week high is split up into three specifications. The first specification involves all observations where the target's 52-week high price is between 0 and 25 percent higher than their stock price thirty days before the offer announcement[2]. The marginal effect of the 52-week high on the offer price is highest for this specification, with a ten percent increase in 52-week high leading to a 3.3 percent increase in offer price. The other specifications involve all 52-week high premiums between 25 and 75 percent and all 52-week high premiums above 75 percent respectively. These specifications are also found to

[2] Baker et al. (2012) used thirty days before announcement instead of the announcement date to reduce heteroskedasticity.

have a significant marginal effect on the offer price, but these effects are much lower than the marginal effect of the first group. For these specifications, a ten percent increase in 52-week high leads to a 1 percent and a 0.7 percent increase in offer price respectively (Baker et al., 2012).

2.2.2.2 Ownership characteristics

The ownership structure of the target firm can have a substantial impact on the height of the premium offered. Regarding this ownership structure, the studies of Bena and Li (2013), Claessens, Djankov and Lang (2000), Faccio and Lang (2002) and La Porta, Lopez-de-Silanez and Schleifer (1997) provide a solid methodology. According to their methods, the ownership structure of the target firms can be divided into concentrated and dispersed structures. A concentrated ownership structure is defined as a structure with a controlling shareholder, who is also known as the ultimate owner. A controlling shareholder is a shareholder that owns at least 20.00 percent of the cash flow rights of the target firm. The ownership structure is dispersed if there is no controlling shareholder. According to their methodology, four different investor types exist. The controlling shareholder can thus be one of these four types, which include individuals, corporations, financial institutions, and government. Moreover, they make a distinction between domestic and foreign ultimate owners, as they can be located in the same or in another country. All in all, the important ownership characteristics are concentrated or dispersed ownership, the amount of ownership of the different investor types and the origin of the ultimate owner.

The target's ownership structure influences the offer price and the offer premium through the incentives and the power of the shareholders. When ownership is dispersed, shareholders have little incentive to actively participate in the decision-making process of the firm, as all shareholders only get a small portion of the benefits (Leech & Leahy, 1991). Concentrated ownership on the other hand gives the large shareholders, and especially the controlling shareholder, a lot of incentives to participate, since the decisions of the firm can largely influence their profit. They get a large share of the benefits, so they want to actively participate to maximize their profit. Moreover, the large shareholders that are present with concentrated ownership have more power to influence the managers (Thomsen & Pedersen, 2000). This power enables them to put pressure on the managers to not accept offers unless the shareholders' profit is high enough. The acquirer may be forced to offer a higher price and thus a higher premium in order for the offer to be accepted. Otherwise, the shareholders may oppose the deal.

Haw et al. (1987) provide evidence regarding the effect of concentrated ownership at the target firm on the offer premium, as they show a positive correlation between ownership concentration at the target firm and the Cumulative Abnormal Returns (CAR) over the period from 60 weeks before till 3 weeks after the announcement of the takeover. This correlation is not significant when looking just at the periods -40 to -11 weeks, -30 to -11 weeks and -6 to +1 week. Bargeron et al. (2008) and Stulz, Walkling and Song (1990) show evidence supporting the positive correlation found by Haw et

al. (1987), as higher target managerial and institutional ownership are associated with higher premiums for acquisitions by public companies according to their research. Concentrated ownership at the target firm thus goes together with higher offer premiums compared to dispersed ownership.

2.2.2.3 Firm-specific control variables

The first firm-specific variable that is found to have a significant effect on the magnitude of the offer premiums is the target's market-to-book ratio (Li, 2013). A negative relation is found between the offer premium and the market-to-book ratio. This implies that the premiums will be higher in those periods when the market experiences difficulties, like a financial crisis, as the market values of almost all firms will be lower in these periods. The fundamental book value of firms doesn't change when the market collapses, only their market value declines. The book values of the target firms will thus not decrease with the same proportion, which leads to lower market-to-book values. The negative relation between offer premium and market-to-book ratio found in this study thus indirectly implies that offer premiums will be higher for takeovers occurring during a financial crisis than for takeovers that take place with better economic circumstances.

Gondhalekar et al. (2004) have also found some firm-specific characteristics with a significant effect on the offer premiums in their study. They included only takeovers with cash as form of payment and found significant effects for the leverage ratio of the acquirer and the relative Earnings Per Share (EPS) growth. Lower acquirer leverage ratios are found to go together with higher offer premiums. A higher EPS growth of the target relative to the acquirer's growth is accompanied by higher premiums as well.

The relative size of the target compared to the acquirer is a characteristic that could substantially influence the offer premiums as well. Existing literature is quite univocal about the effects of this characteristic, as Alexandridis, Petmezas and Travlos (2010), Gondhalekar et al. (2004) and Robinson and Shane (1990) all found a significant negative relation between the relative size of the target compared to the acquirer and the premiums offered. This means that relatively smaller targets get higher offer premiums.

The Return on Assets (ROA) of both the target and the acquirer can also influence the height of the offer premiums, as the ROA gives an indication about the profitability of the firm. Existing literature provide mixed evidence regarding the effect of the ROA on the offer premium. Palia (1993) and Jackson and Gart (1999) among others find a positive relation between the target's ROA and the premiums offered in bank mergers and acquisitions. However, Frieder and Petty (1991) and Baker et al. (2012) do not find a significant relation between these variables.

The final important firm-specific characteristic is the target's stock price volatility. This volatility reflects the company risk and is usually implemented by calculating the average daily standard deviation of the target's stock one year prior to the announcement (Chang & Galvez, 2014). Existing literature is not univocal regarding the relation between the target's volatility and the offer

premium. Baker et al. (2012) find a significant positive relation, with higher volatility of the stock price leading to higher offer premiums. Chang and Galvez (2014) on the other hand provide evidence for a significant negative relation. An explanation they provide is that higher risk could lead to less interested bidders, which in turn reduces the premium offered.

2.2.3 Factors related to differences between industries and over time

Several studies, like Madura et al. (2012) and Alexandridis et al (2012), provide evidence for the presence of large differences in offer premiums over time and across industries. Madura et al. (2012) conducted a study to find the determinants that are able to explain these differences. The factors that are found to have a significant positive relation with the height of the offer premiums per industry are the magnitude of growth in the industry, the level of concentration within the industry and the amount of research and development within the industry. The research and development factor is used as a proxy for the expected growth in the industry. Industry premiums are also found to be higher when the dispersion of performance among the firms is lower and when the GDP growth of the industry is more volatile (Madura et al., 2012).

2.3 Financial distress

Firms entering financial distress can be due to economic distress, which refers to a decline in the industry operating income, or poor management (Wruck, 1990). Both causes are important, but more firms enter financial distress as a result of poor management rather than economic distress (Whitaker, 1999). Firms are seen as being in financial distress when their cash flow over a whole year is lower than their current cash obligations (Wruck, 1990). According to Wruck (1990), being unable to meet the current cash obligations means that the firm is insolvent on a flow basis. This flow-based insolvency provides the creditors power, as the firm is not able to meet all the conditions of the contract. Bankruptcy on the other hand involves stock-based insolvency (Moeller & Carapeto, 2012). Wruck (1990) defines stock-based insolvency as having a present value of the cash flows of the firm that is lower than the total obligations. This means that the firm has a negative economic net worth. This negative economic net worth is different than the accounting perception of negative net worth, which occurs when the total assets are lower than the total liabilities. For example, if a healthy firm has just completed a leveraged recapitalization, in which equity is typically sold with the use of a lot of additional debt, their accounting net worth could be negative. However, the firm would not necessarily have any problems meeting their debt obligations, which is the case for stock-based insolvency (Wruck, 1990).

Andrade and Kaplan (1998) performed a study on the costs of financial distress for the firms. For this study, they used a sample of firms that have completed Highly Levered Transactions (HLTs), but became financially distressed afterwards. HLTs are for example MBOs, LBOs or recapitalizations performed with the use of a lot of leverage. When taking the whole period from before the transaction

to after the distress is resolved into account, the effect of financial distress on the value of the firm is found to be a small increase. The gains from the transactions are thus higher than the costs of financial distress. However, when the firms would not have been in financial distress, the transactions would have led to significantly positive returns. Regarding the costs of financial distress, Andrade and Kaplan (1998) find estimates between ten and twenty percent of firm value. These costs of financial distress decrease with the total capital value of the firms, which implies that the costs of distress are mostly fixed costs. These findings indicate that it would in general be more profitable to acquire firms that do not experience financial distress, as the costs of financial distress are substantial.

Distressed and bankrupt targets and acquirers were involved in a lot of takeovers over the years. Three combinations of takeovers are possible where at least one of the firms involved is in distress. Firstly, a healthy firm could acquire or merge with a distressed target, which is most common. In this case, the healthy acquirer could save the distressed target from bankruptcy. Moreover, two distressed firms could merge together or one of the two could acquire the other. Together, they can achieve operational synergies for example and improve their creditworthiness (Parnes, 2009). Finally, a distressed firm could acquire a healthy firm or merge with it. The distressed acquirer could achieve diversification benefits, as they could stabilize their cash flows, which reduces the bankruptcy risk, and they could increase their optimal leverage ratio, which makes them able to take on more debt and do more profitable investments (Zhang, 2016).

Carapeto, Moeller and Faelten (2009) found that the target firm was bankrupt or in distress in almost 25% of all deals between 1984 and 2008. It must be noted however that bankrupt targets were only involved in 2% of these deals. Another interesting finding regarding firms in financial distress is that the acquirer and target are more often operating within the same industry when the acquisition involves one or more distressed companies compared to acquisitions involving only healthy firms. Furthermore, acquisitions that are conducted as a bankruptcy alternative are completed faster, on average, than other acquisitions. This is especially the case when the acquisition takes place during an economic crisis (Carapeto et al., 2009).

2.3.1 Offer premiums for distressed targets

Existing literature provides some empirical evidence about the magnitude of offer premiums related to acquisitions involving distressed companies. Unfortunately, there is little to no literature available regarding the offer premiums when the acquirer is in distress. When the target is in distress on the other hand, many studies have been conducted to investigate whether or not a fire sale discount exists. A fire sale discount means that firms that experience severe financial distress may be forced to sell their assets at a deep discount, that is for a price that is lower than the fundamental value (Ang & Mauck, 2011). Eckbo (2009) for example studied the presence of these discounts in bankruptcy auctions, but he only finds evidence for fire sale discounts when the components of the company are sold one by one. No evidence is found for discounts when the firm is sold as a whole; independent of

the industry the buyer operates in. Ang and Mauck (2011) also studied the existence of fire sale discounts. Their empirical evidence indicates that no fire sale discount exists when the most recent stock price is used as the real value of the assets. However, when using the highest stock price of the target of the last 52 weeks as the real value instead of the most recent stock price, distressed targets do get lower premiums than healthy targets. Ang and Mauck (2011) therefore claim that the acquirers may feel that they get a discount if they use this 52-week high price as a reference point, while they do not get a discount in reality. Moreover, their study provides evidence for the opposite of a fire sale discount, as the premiums are actually higher when the target firm is in distress. In normal, i.e. non-crisis, periods, the average premium paid for a distressed target is approximately 12% higher than the average premium for a healthy target. In crisis periods, this difference is 34%. This means that firms pay higher premiums for target firms that are in distress, irrespective of the market conditions. However, these market conditions do affect the height of the premiums. Distressed targets get approximately 30% higher premiums in periods of financial crisis than in non-crisis periods. Healthy targets get around 8% higher premiums in periods of financial crisis (Ang & Mauck, 2011).

Ang and Mauck (2011) give two possible explanations for the higher premiums for targets in distress and/or during a crisis. Firstly, the acquirers may assign a higher fundamental value to the targets than the value according to the market at that moment, which means that the acquirers feel the targets are undervalued by the market. By offering a premium on the market value, the market value gets closer to the fundamental value again. Secondly, the acquirers actually use the target's 52-week high as a reference point and therefore feel that they get a discount. Using the 52-week high leads to higher premiums for targets in distress and/or during a crisis, as the difference between the current stock price and the highest stock price is much larger in these cases.

2.3.2 Abnormal returns in distressed acquisitions

Ang and Mauck (2011) have also studied the announcement returns for distressed and healthy firms in normal periods and in crisis periods. Significantly positive abnormal returns are found for the target firms on the days around the announcement, irrespective of the period and the financial condition of the target. However, the abnormal returns are higher for distressed targets compared to healthy targets and the returns are higher when the takeover is announced in periods of crisis compared to normal periods. The study of Johnson et al. (1991) provides supporting evidence, as positive abnormal announcement returns are shown for distressed target firms.

Regarding the acquirers of distressed targets, Johnson et al. (1991) find positive abnormal announcement returns in tender offers and negative abnormal announcement returns in mergers. The acquirers' returns in the study of Ang and Mauck (2011) are significantly negative, irrespective of the financial condition of the target. These returns are slightly more negative for the acquirers of distressed targets than for the acquirers of healthy targets and the returns are less substantial than the target's returns. For example, the mean abnormal returns from the day before to the day after the

announcement are found to be 18.33% for distressed targets in normal periods, where these returns are found to be -1.06% for the acquirers in these takeovers. All in all, the study of Ang and Mauck (2011) indicates that the market views the acquisition of distressed firms as more value creating for the target firms and slightly more value destroying for the acquirers than the acquisition of healthy firms.

In contrast to Ang and Mauck (2011), Carapeto et al. (2009) find different abnormal announcement returns for the acquirers of distressed or bankrupt targets than for the acquirers of healthy targets. Acquirers of distressed or bankrupt targets are found to earn positive abnormal returns on the days around the announcement, whereas no such abnormal returns are found for the acquirers of healthy targets. This indicates that the market generally views acquisitions of distressed targets as more value creating for the acquirers, which is in contrast to the findings of Ang and Mauck (2011).

The long-term performance of the acquirers of healthy targets is better than the performance of the acquirers of distressed targets, who seem to struggle to create value in the long run. Nevertheless, evidence is found for the presence of synergies, as the performance of the combined firm is found to be better than the combined performance of the two firms from before the acquisition (Ang & Mauck, 2011).

Regarding the abnormal returns in acquisitions for distressed acquirers compared to non-distressed acquirers, Lin and Piesse (2003) find that the CAR prior to announcement is more than three times smaller for distressed acquirers than for non-distressed acquirers. When using an event window from -44 days to -1 day prior to announcement, the stock price increases around two percent when a distressed acquirer acquires a healthy firm, whereas the stock price increases around eight percent when a healthy acquirer acquires a healthy firm. When using a smaller event window, the stock price of a distressed acquirer even decreases prior to announcement, while the stock price of a healthy acquirer still increases. The study of Lin and Piesse (2003) thus finds that the market reacts worse to acquisitions of distressed acquirers than acquisitions of healthy acquirers. A distressed firm can profit from acquisitions by being able to reduce the risk of bankruptcy, but their profit will be limited due to the reaction of the market.

2.4 Offer premiums around financial crises

Offer premiums are found to fluctuate substantially over the years. For example, the average premiums are found to be higher in crisis periods compared to periods without a crisis for both distressed and healthy targets (Ang & Mauck, 2011). This implies that the overall level of premiums will be at a higher level in periods of financial crisis than in other periods. This can be explained by the M&A activity in general being procyclical, whereas the M&A activity involving distressed firms are found to be countercyclical (Moeller & Carapeto, 2012). This means that less mergers and acquisitions take place during a financial crisis, but more takeovers that involve distressed firms. Distressed acquisitions thus take a much larger share of the total number of takeovers during a crisis. This finding, combined with the finding that premiums are higher when the target firms are in

financial distress, indicates a possible trend in the offer premiums over the years. The offer premiums may be increasing as the financial crisis continues, as more and more firms experience financial difficulties and the firms' troubles increase. The increasing troubles force more firms to sell, which causes the number of distressed acquisitions to be a greater share of the total number of acquisitions. Carapeto et al. (2009) indeed find an increasing number of acquisitions of distressed and bankrupt companies following major crises, confirming the idea of countercyclical distressed M&A activity. Moreover, acquisitions of distressed and bankrupt companies are found to be higher than average for a period of three to four years, even if the market has already started its recovery. As shown by Ang and Mauck (2011), the premiums are highest when the target firm is in distress and when the economy is in a crisis. This would lead to increasing premiums during financial crises until a significant portion of the market has recovered and the financial difficulties have decreased.

The study of Alexandridis et al. (2012) also provided empirical findings that show higher offer premiums in periods of financial crisis. Their study contains an investigation of the changes of mergers and acquisitions over time, which led to the empirical finding of substantially lower offer premiums during merger waves compared to other years. Furthermore, the premiums related to the takeovers in the years 2000-2002, the years in which the Internet bubble burst took place that led to a global crisis during most of 2001, were higher than the premiums of the takeovers in other years (Alexandridis et al., 2012). These results support the idea that a trend in offer premiums exists around the years of global financial crises. However, it is not possible to identify a clear trend from their study, as the comparison of the offer premiums in the study was only done for periods of multiple years.

Furthermore, some indirect evidence can be found that supports the theory that offer premiums are higher during years of financial crisis. Baker et al. (2012) namely show that offering a price that is close to a recent peak in the stock prices, like the 52-week high price that was discussed earlier, increases the probability of deal success. Because of this, many acquirers use this 52-week high price as a reference level and offer a price close to this reference level. This implies that the offer premiums will be higher in the years where the market performs worst, so when a financial crisis is most severe. After all, the difference between the 52-week high price and the current price of the target tends to be the greatest in these years. The premiums would then decrease when the market starts to recover, as the stock prices will get closer to their 52-week high. This could lead to an identifiable trend in the offer premiums over the years.

Finally, a trend in offer premiums could arise from the different conditions of the credit market over the years. The credit market is where firms get debt or other forms of credit from creditors. This credit can be easy to obtain when the credit market conditions are good, but it can be very difficult during bad times. During the financial crisis of 2007-2009 for example, the credit market collapsed, which made getting more credit to finance acquisitions or other investments nearly impossible and very expensive (Cui, 2009). When firms are unable to get more debt to finance

mergers and acquisitions or when getting more debt is very expensive due to high interest rates, they have to use more equity if they want to do a merger or acquisition. Whether firms have to use equity to finance a takeover or whether they can cheaply raise more debt could lead to very different offer premiums. Firms are more tempted to offer high premiums when they are able to use cheap debt for this instead of paying equity to give a high premium. In this way, the different conditions of the credit market over time could lead to a trend in offer premiums. In existing literature, the high-yield spread between the yields of less than investment-grade bonds, also known as junk bonds, and government bonds is often used as a measure for the credit market conditions (Gertler & Lown, 1999; Mody & Taylor, 2003). Gertler and Lown (1999) find that the high-yield spread has sufficient explanatory power to predict economic activity and explain business cycles. Because of this, the high-yield spread is found to be a good proxy for the credit market conditions and may thus explain differences in premiums over time.

2.5 Conclusion

Several motives exist that can be the reason for a firm to take part in a merger or acquisition. An important motive in times of financial crisis is the wish to improve the creditworthiness of the firm to increase the chance of survival. Firms that experience financial distress when conducting the merger or acquisition are the main users of this motive. Acquisitions involving such distressed firms are found to go together with higher premiums paid by the acquirer, in contrast to the theory of fire sale discounts. The 52-week high price of the target firm is often used in mergers and acquisitions as a reference point in the determination of the offer price by the bidder. This can explain the higher premiums being paid for distressed targets, as distressed firms' current market price is further away from their 52-week high price than the current price of healthy firms. The offer premiums are influenced by a lot of factors and are found to fluctuate substantially over the years and between industries. Ownership characteristics for example can have a large impact, with concentrated ownership at the target firm leading to higher premiums. Another example is that the premiums are found to be higher in crisis periods compared to periods in which the market circumstances were relatively good. Moreover, the current literature also provides some evidence that indicates the existence of a trend in the offer premiums over the years. This evidence includes higher premiums in mergers and acquisitions involving distressed firms, procyclical M&A activity and countercyclical distressed M&A activity. Combining these three findings gives a trend with rising premiums when market conditions severely decrease and falling premiums when the market is recovering. Furthermore, a trend in premiums could also be present due to different credit market conditions over time.

Chapter 3 Hypotheses and Methodology

To be able to formulate an answer to the research question about the influences of economic circumstances on the offer premiums, a number of hypotheses are formed. These hypotheses are based on the theories and evidence from the existing literature described in the previous chapter. This chapter provides a description and an explanation of the hypotheses used in this study. The methodology that is used to test the hypotheses is covered as well.

3.1 52-week high premium

Baker et al. (2012) argue that acquirers and targets often use the target's highest stock price of the last 52 weeks as a reference point in the determination and the reception of the offer price. Consequently, a lot of acquirers offer a price close to this 52-week high price. This means that a higher 52-week high leads to a higher offer price. Furthermore, it also means that a greater difference between the current stock price and the 52-week high price, known as the 52-week high premium, leads to a higher offer premium. Baker et al. (2012) provide evidence for this, as they find a significant non-linear relation between the offer premium and the 52-week high premium. If this is the case, economic circumstances that influence the stock price of the target firm can have a substantial impact on the offer price and the offer premium in the merger or acquisition. The first hypothesis is therefore as follows:

Hypothesis 1: There is a positive relation between the offer premium and the target's 52-week high premium.

This hypothesis is tested using multiple regression analyses. The dependent variable in these regressions is the offer premium; the explanatory variable is the 52-week high premium. The calculations of these variables are shown in formulas (1) and (2):

(1) $OfferPremium_{it} = (OfferPriceSDC_i - StockPriceCRSP_{i,t-30}) / StockPriceCRSP_{i,t-30},$

(2) $52WeekHigh_{i,t-30} = (max\ (StockPriceCRSP_{i,t-365}:StockPriceCRSP_{i,t-30}) - StockPriceCRSP_{i,t-30})/ StockPriceCRSP_{i,t-30}.$

Here, OfferPremium is the offer premium. OfferPriceSDC is the offer price per share that is noted for the takeover in the SDC Mergers and Acquisitions database. StockPriceCRSP is the stock price of the target firm as noted in the Center for Research in Security Prices (CRSP) database. The offer premium is thus defined as the percentage difference between the offer price from SDC and the CRSP stock price 30 calendar days prior to the announcement. The reason to leave the last 30 calendar days prior to the announcement out of account is to reduce the chance that any rumours about a possible takeover influence the offer premium, which could happen when information becomes public and causes the

target's stock price to rise in the month leading up to the announcement. Moreover, excluding the last 30 calendar days before the announcement could reduce the heteroskedasticity in the regressions (Baker et al., 2012). 52WeekHigh is the 52-week high premium, calculated as the percentage difference between the highest stock price of the target firm over 335 calendar days prior to the announcement of the takeover and the stock price 30 calendar days prior to the announcement. $StockPriceCRSP_{i,t-365}$ and $StockPriceCRSP_{i,t-30}$ reflect the start and the end of this 335 day period, which starts 365 days and ends 30 days before the announcement.

The two main regressions used to test the hypothesis are regressions (3) and (4):

(3) $OfferPremium_{it} = \beta_0 + \beta_1\ 52WeekHigh_{i,t-30} + e_{it}$,

(4) $OfferPremium_{it} = \beta_0 + \beta_1\ min(52WeekHigh_{i,\ t-30},\ 0.25) + \beta_2\ max(0,\ min(52WeekHigh_{i,t-30}-0.25,\ 0.50)) + \beta_3\ max(52WeekHigh_{i,t-30}-0.75,\ 0) + e_{it}$,

where OfferPremium and 52WeekHigh show the offer premium and the 52-week high premium, of which the definitions are described in the previous paragraph. Regression (3) tests whether a significant linear relation exists between the offer premium and the 52-week high premium. Following the methodology of Baker et al. (2012), the 52-week high premium variable is split up in three different variables in regression (4) to test if a non-linear relation indeed shows more significant results than the linear relation tested in regression (3), as Baker et al. (2012) have found in their study. Regression (4) shows the three different variables, where the first one reflects the marginal effects of the 52-week high premiums below 25%. This variable gives all 52-week high premiums below 25% their own value, which is somewhere between 0 and 0.25. All 52-week high premiums above 25% get the value 0.25. By doing this, the marginal effects of all 52-week high premiums above 25% will not be covered by β_1, causing β_1 to only show the marginal effects of the premiums below 25%. The second variable shows the marginal effects of 52-week high premiums between 25% and 75% and works the same way. This variable gives all 52-week high premiums below 25% the value 0, all 52-week high premiums between 25% and 75% their own value minus 0.25, and all premiums above 75% the value 0.50. This variable now only includes the marginal effects of 52-week high premiums between 25% and 75%. The last variable reflects the marginal effects of the 52-week high premiums above 75%. This variable gives the 52-week high premiums below 75% the value 0 and all 52-week high premiums above 75% their own value minus 0.75, which means that the variable only shows the marginal effects of the 52-week high premiums above 75%.

The hypothesis is mainly tested by executing regressions (3) and (4) with only the variables shown in these regressions. After these two regressions, several multivariate regressions are executed as well in which a number of control variables are added to the best regression of regressions (3) and

(4) each time. Adding other variables that could influence the premiums as well enables us to test the robustness of the relation found.

3.2 Ownership structure of the target

The ownership structure of the target firm can significantly influence the premiums offered in mergers and acquisitions, as shown by Haw et al. (1987) for example. Concentrated ownership, which is the case when a shareholder owns at least 20.00 percent of the cash flow rights of the target firm, is found to lead to higher offer premiums compared to dispersed ownership. Different types of concentrated ownership exist, which may vary in their influence on the offer premiums. Higher institutional ownership for example is found to go together with higher offer premiums (Stulz et al., 1990). This leads to the following hypothesis:

Hypothesis 2: The ownership structure of the target firm influences the offer premium.

This hypothesis is mainly tested with the use of regressions (5) and (6):

(5) $OfferPremium_{it} = \beta_0 + \beta_1\, min(52WeekHigh_{i,\,t-30},\, 0.25) + \beta_2\, max(0,\, min(52WeekHigh_{i,t-30}-0.25,\, 0.50)) + \beta_3\, max(52WeekHigh_{i,t-30}-0.75,\, 0) + \beta_4\, Concentrated_{it} + e_{it},$

(6) $OfferPremium_{it} = \beta_0 + \beta_1\, min(52WeekHigh_{i,\,t-30},\, 0.25) + \beta_2\, max(0,\, min(52WeekHigh_{i,t-30}-0.25,\, 0.50)) + \beta_3\, max(52WeekHigh_{i,t-30}-0.75,\, 0) + \beta_4\, Corporation_{it} + \beta_5\, Individual_{it} + \beta_6\, Institution_{it} + \beta_7\, Foreign_{it} + e_{it},$

where OfferPremium is the offer premium, defined as the percentage difference between the offer price from SDC and the CRSP stock price 30 calendar days prior to the announcement. 52WeekHigh is the 52-week high premium, calculated as the percentage difference between the highest stock price of the target firm over 335 calendar days prior to the announcement of the takeover and the stock price 30 calendar days prior to the announcement. This 52-week high premium is again split up into three different variables, as this non-linear relation is expected to provide more significant results. The calculation of the offer premium and the 52-week high premium is shown in formulas (1) and (2). Concentrated is a dummy variable that takes the value one if the target firm has concentrated ownership. Corporation, Individual and Institution are dummy variables equal to one if the ownership of that specific type of shareholder at the target firm is high enough to be the controlling shareholder, which is the case when that type of shareholder owns at least 20.00 percent of the cash flow rights. Foreign is a dummy variable equal to one if the controlling shareholder is located outside the United States. When the ownership at the target firm is dispersed, all dummy variables are equal to zero.

The hypothesis is again tested with multiple regression analysis. Firstly, regressions (5) and (6) are executed with only the variables shown in these regressions. After that, a number of

regressions are executed in which several control variables are added to regressions (5) and (6) each time. Moreover, as a robustness check, the same regressions are done another time, but now with ownership variables that display the degree of ownership concentration. All dummy variables are replaced in these regressions with variables that show the total ownership of all shareholders with at least five percent ownership of the target firm. So, the variables for the different types of shareholders now show the total ownership per investor type. For example, the variable corporation now shows the total ownership percentage of all corporations that own at least five percent of the shares of the target firm.

3.3 Financial distress

The focus now turns to the financial condition of the firms involved. The theory of fire sale discounts predicts lower premiums when the target is in severe financial distress. However, many studies find little to no evidence to support this theory. The studies from Ang and Mauck (2011) and Carapeto et al. (2009) also provide substantial evidence regarding the premiums in takeovers including financially distressed targets. Both studies find the opposite of what you would expect with the fire sale discount theory, namely significantly larger premiums when the target firms are in distress than when the acquisition involves a healthy target. Unfortunately, little evidence is found regarding the premiums when a distressed firm acquires a healthy target. However, we expect the premiums offered by distressed acquirers to be higher than those offered by healthy acquirers, as they need the acquisition to lower their bankruptcy risk. The need for an acquisition is lower for healthy acquirers, so they are less likely to offer high premiums. On top of that, the target's management is likely to accept the offer only when the compensation is high enough, as they are taking a risk when they sell the company to a distressed firm. The third hypothesis is therefore as follows:

Hypothesis 3: Financially distressed targets get higher offer premiums than healthy targets and financially distressed acquirers offer higher premiums than healthy acquirers.

Again, the hypothesis is tested using multiple regression analysis. The main regression used here is regression (7):

(7) $$OfferPremium_{it} = \beta_0 + \beta_1\, min(52WeekHigh_{i,\,t-30},\, 0.25) + \beta_2\, max(0,\, min(52WeekHigh_{i,t-30}-0.25,\, 0.50)) + \beta_3\, max(52WeekHigh_{i,t-30}-0.75,\, 0) + \beta_4\, DistressedTarget_{it} + \beta_5\, DistressedAcquirer_{it} + \beta_6\, DistressedTarget_{it} * DistressedAcquirer_{it} + e_{it},$$

where OfferPremium is the offer premium, defined as the percentage difference between the offer price from SDC and the CRSP stock price 30 calendar days prior to the announcement. 52WeekHigh is the 52-week high premium, calculated as the percentage difference between the highest stock price

of the target firm over 335 calendar days before the announcement of the takeover and the stock price 30 calendar days prior to the announcement. This 52-week high premium is again split up into multiple variables to reflect a non-linear relation with the offer premium. The calculation of these variables is shown in formulas (1) and (2). DistressedTarget is a dummy variable that takes the value one if the target firm is in financial distress when the takeover is announced. Here, firms are in financial distress when they have a negative net income in the last twelve months before the announcement of the takeover (Ang & Mauck, 2011). Similarly, DistressedAcquirer is a dummy variable equal to one if the acquirer is in distress. DistressedTarget * DistressedAcquirer is an interaction term that takes the value one when both the target and the acquirer are in distress. By adding this variable, each of the three possible situations regarding the financial condition of the firms involved in the takeover is included in the regression.

The hypothesis is tested by firstly executing regression (7) without the 52-week high premium variables. After this, the regression is executed as it is shown above. Subsequently, several regressions are done in which a number of control variables are added to regression (7) each time. These results will then be analysed.

3.4 Periods of financial crisis

General market conditions are also important economic circumstances that can affect the height of the offer premiums. When the global economy experiences a financial crisis, the market reacts differently to news compared to periods during which the global economy was not in a crisis, as a lot of firms experience financial difficulties. Significantly higher offer premiums are found for mergers and acquisitions that are announced during such financial crises, irrespective of the financial condition of the target firm (Ang & Mauck, 2011). Moreover, according to the study of Alexandridis et al. (2012), the overall level of offer premiums is higher in the period from 2000 to 2002 compared to the years around. Since there was a financial crisis during a large part of this period, the following hypothesis is formed:

Hypothesis 4: The offer premiums of acquisitions announced during a financial crisis exceed the premiums of acquisitions announced in periods without a crisis.

This hypothesis is tested by adding two crisis variables to regression (7). The regression used is (8):

(8) $$OfferPremium_{it} = \beta_0 + \beta_1\, min(52WeekHigh_{i,\,t-30},\, 0.25) + \beta_2\, max(0,\, min(52WeekHigh_{i,t-30}-0.25,\, 0.50)) + \beta_3\, max(52WeekHigh_{i,t-30}-0.75,\, 0) + \beta_2\, DistressedTarget_{it} + \beta_3\, DistressedAcquirer_{it} + \beta_4\, DistressedTarget_{it} * DistressedAcquirer_{it} + \beta_5\, Crisis2001_i + \beta_6\, Crisis2007\text{-}2009_i + e_{it},$$

where OfferPremium is the offer premium, defined as the percentage difference between the offer price from SDC and the CRSP stock price 30 calendar days prior to the announcement. 52WeekHigh

is the 52-week high premium, calculated as the percentage difference between the highest stock price of the target firm over 335 calendar days before the announcement of the takeover and the stock price 30 calendar days prior to the announcement. This 52-week high premium is again split up into multiple variables to reflect a non-linear relation with the offer premium. The calculation of these variables is shown in formulas (1) and (2). DistressedTarget and DistressedAcquirer are dummy variables that are equal to one when the target and the acquirer are in distress respectively. DistressedTarget * DistressedAcquirer indicates if both the target and the acquirer are in distress. Crisis2001 and Crisis2007-2009 are dummy variables that take the value one if the announcement of the merger or acquisition takes place within the crisis periods defined by the NBER. These periods are March 2001 to November 2001 and December 2007 to June 2009.

Similarly to the previous hypothesis, this hypothesis is tested initially by executing regression (8) without the 52-week high premium variables and without the distress variables. Subsequently, the distress variables will be added to the regression, followed by the 52-week high premium variables. After this, several regressions are done in which a number of control variables are added to the regressions each time. As a robustness test, another regression is executed as well in which the crisis periods are used that are determined with the use of the highest and lowest values of the S&P 500 instead of the NBER.

3.5 Trend in offer premiums

Besides showing higher offer premiums in periods of financial crisis, existing literature also provides indirect evidence supporting the theory of the existence of a trend in offer premiums over the years. For example, M&A activity in general is found to be procyclical, whereas M&A activity involving distressed firms is found to be countercyclical (Moeller & Carapeto, 2012). Combining this with the higher premiums for distressed targets and takeovers during financial crises indicates that the premiums are rising as the economic situation worsens. Furthermore, as we show with the first hypothesis, many firms offer a price close to the highest stock price of the last 52 weeks. This leads to higher premiums when the market is going down for a longer period, as the difference with the highest price will be higher in these cases (Baker et al., 2012). Premiums would decrease when the market recovers. Finally, a trend in offer premiums could arise from the different credit market conditions over the years. Whether firms can easily use cheap debt to finance acquisitions or whether they have to use expensive debt or equity could have a major impact on the premiums offered. The fifth and final hypothesis is therefore as follows:

Hypothesis 5: Offer premiums follow a clear pattern over the years in relation to the economic condition of the market.

This hypothesis is tested with regression (9) and formula (10):

(9) $OfferPremium_{it} = \beta_0 + \beta_1\ min(52WeekHigh_{i,\ t-30},\ 0.25) + \beta_2\ max(0,\ min(52WeekHigh_{i,t-30}-0.25,\ 0.50)) + \beta_3\ max(52WeekHigh_{i,t-30}-0.75,\ 0) + \beta_4\ HYSpread_t + \beta_5\ Year2001_i + \beta_6\ Year2002_i + \beta_7\ Year2003_i + \beta_8\ Year2004_i + \beta_9\ Year2005_i + \beta_{10}\ Year2006_i + \beta_{11}\ Year2007_i + \beta_{12}\ Year2008_i + \beta_{13}\ Year2009_i + \beta_{14}\ Year2010_i + \beta_{15}\ Year2011_i + \beta_{16}\ Year2012_i + \beta_{17}\ Year2013_i + \beta_{18}\ Year2014_i + \beta_{19}\ Year2015_i + e_{it},$

(10) $HYSpread_t = MoodyBBB_t - MoodyAAA_t,$

where OfferPremium is the offer premium, defined as the percentage difference between the offer price from SDC and the CRSP stock price 30 calendar days prior to the announcement. 52WeekHigh is the 52-week high premium, calculated as the percentage difference between the highest stock price of the target firm over 335 calendar days before the announcement of the takeover and the stock price 30 calendar days prior to the announcement. This 52-week high premium is again split up into multiple variables to reflect a non-linear relation with the offer premium. The calculation of these variables is shown in formulas (1) and (2). HYSpread is the high-yield spread at the time of the announcement, calculated as the difference between the yields of Moody's BBB rated bonds and Moody's AAA rated bonds. This calculation is used by Mody and Taylor (2003) as well in their study of the predicting power of the high-yield spread and is displayed in formula (10). All other variables of regression (9), like Year2001, are dummy variables equal to one when the takeover announcement is done in that specific year. For example, Year2001 equals one when the announcement is done in the year 2001.

This hypothesis is tested initially by executing regression (9) with only the dummy variables for the different years included. The 52-week high premium variables and the high-yield spread are thus excluded from this regression. Subsequently, regression (9) is executed exactly as shown here. The outcomes of these regressions are analysed and assessed with the different economic conditions of the market over the years kept in mind. After this, several more regressions are done in which multiple control variables are added to regression (9) each time.

3.6 Conclusion

A total of five hypotheses are tested in order to be able to develop an answer to the research question. All of these hypotheses are mainly tested by multiple regression analysis. Firstly, the relation between the offer premium and the target's 52-week high is analysed. Subsequently, the effects of the ownership characteristics of the target firm on the offer premium are studied, followed by the influence of the presence of financial distress at the firms involved in the takeover. After that, we test if the offer premiums are higher when the global economy is in a financial crisis. Finally, dummy variables and the high-yield spread are used in multiple regression analysis to try to identify a trend in offer premiums in relation to the economic condition of the market.

Chapter 4 Data

This chapter provides information about the data collection and the creation of the final sample of the research, as well as a description of the variables used and some descriptive statistics.

4.1 Data collection and sample selection

The initial sample of mergers and acquisitions is obtained from the Securities Data Company's (SDC) Mergers and Acquisitions database. The sample consists of all completed mergers and acquisitions that were announced between January 1st 2000 and December 31st 2015. To limit the chance of biased results, the takeovers involving financial targets and the takeovers with a deal value below 5 million dollars are excluded from the sample. Financial targets typically have a high leverage ratio, which could lead to biased results, as the meaning of this high leverage ratio is different than the meaning of a high leverage ratio for non-financial firms (Fama & French, 1992). Furthermore, all regulated utility firms are dropped from the sample as well, as their operating conditions and regulations differ substantially from all other firms, which makes the utility firms incomparable with the other firms in the sample (Espahbodi & Espahbodi, 2003). Firms with a SIC code between 4900 and 4999 are classified as utility firms and are thus dropped (Giroud & Mueller, 2010). The takeovers where the targets are private firms are excluded from the sample as well, as financial data and stock data of the target are required, which are usually not available for private firms. Moreover, the sample from SDC is restricted to mergers and acquisitions where the acquirer owned hundred percent of the shares after the takeover and where the percentage shares acquired in the takeover is at least fifty percent. These restrictions are added to enhance the comparability within the sample, as all mergers and acquisitions in the sample now involve a change of ownership and all acquirers now own the same percentage of shares after the transaction.

The stock data of the firms involved in the mergers and acquisitions, such as the share price and the number of shares outstanding, is retrieved from the Center of Research in Security Prices (CRSP) database. The Compustat Annual database is used to find the important financial data of the target and acquiring firms. This database provided us the firms' financial data from the most recent annual financial statements before the announcement of the takeover.

SDC's Share Ownership database is used to gather data regarding the ownership characteristics of the target firms. Unique company identifiers, in this case the CUSIPs, are used to manually obtain the ownership data for all target firms. For each of these firms, the ownership data is collected for the end of the last quarter prior to the quarter in which the merger or acquisition was announced. This data includes the percentage of shares owned by all shareholders with an ownership of at least five percent of the shares outstanding of the target firm. A number of adjustments had to be made to the raw data from the SDC Share Ownership database, as the database did not always provide the correct data, especially for the years 2000 to 2003. The database sometimes gave a total percentage

of shares owned by the shareholders above hundred percent. These observations are removed from the sample, as an ownership higher than hundred percent is not possible. Moreover, the database sometimes wrongfully marked investors as individual investors. When little information about the investor is noted on the database, it marks the investor as an individual investor, although this is not always the case. For this reason, the investor type is checked and corrected for all shareholders that are listed as individual investors. Finally, a number of shareholders and their ownership were listed twice on the database. Virtually all of these times, the database had little information on one of the two shareholders, and much more on the other, even though they had the same name. The assumption is therefore made that the shareholder with little information does not really exist. These shareholders are subsequently removed from the dataset.

The initial sample from SDC consists of 3274 completed mergers and acquisitions. However, a substantial amount of these transactions are lost during the whole data collection and data editing process. Firstly, 722 transactions are dropped due to missing offer prices in the SDC database. The offer price is essential for the study, as it is used to calculate the offer premium. These transactions are therefore useless and dropped from the sample. Furthermore, 46 transactions do not show data regarding the target's net income. Since the net income is used to determine whether or not a firm experiences financial distress, which takes an important role in the study, these transactions are dropped from the sample as well. Merging the datasets from SDC, CRSP and Compustat also led to a number of lost observations. Unique company identifiers are used to merge these datasets. The unique identifiers provided by SDC are put in the CRSP and Compustat database to get the stock and financial data for the target and acquiring firms involved in these transactions. However, CRSP did not recognize the unique identifiers of 177 of the targets, which are therefore dropped from the sample. Furthermore, CRSP did not provide stock data for the right time period for 247 of the transactions and Compustat did not provide financial data for the right time period for 159 transactions. All of these transactions are removed from the sample. Finally, 34 observations are lost due to missing or incorrect ownership data. The final sample now consists of 1889 mergers and acquisitions, for which all of the essential data is obtained.

4.2 Variable description

This section discusses all variables used in the research. These variables include the offer premium, deal characteristics, firm-specific characteristics and a few other variables. Some of these variables are already partly or comprehensively explained before. These are discussed again here to get a clear overview of all the variables used in the study.

4.2.1 Offer premium

The variable *offer premium* is the dependent variable in all regressions executed in the study. As mentioned in the methodology section, the offer premium is defined as the percentage difference

between the offer price noted in the SDC database and the target's stock price thirty days prior to the announcement. This definition is used by Baker et al. (2012) as well, who studied the effect of reference point prices, like the 52-week high price, on mergers and acquisitions. The reason to take the stock price thirty days prior to the announcement instead of the stock price at announcement is to reduce the chance that any rumours about a possible takeover influence the stock price and therefore the offer premium, which could happen when information becomes public and causes the target's stock price to rise in the month leading up to the announcement (Baker et al., 2012). To reduce the effects of any outliers in the sample, the offer premium variable is winsorized at the 1% and 99% level. This gives the lowest and the highest percent offer premiums the same value as the offer premium at 1% and 99% respectively.

4.2.2 Deal characteristics

As discussed in the literature chapter, several deal characteristics can substantially influence the offer premium. To account for these influences in the study, seven deal-specific dummy variables are included in the regressions as control variables. Two of these variables are related to the form of payment used in the transaction. These variables are *cash* and *stock*, which indicate whether the transaction is paid for with only cash or with only stock respectively. *Tender offer* is a dummy variable that shows if the transaction involves a tender offer. Furthermore, *LBO* and *hostile* are two dummy variables that display whether the offer involves a leveraged buyout and whether it involves a hostile or a friendly takeover respectively. The dummy variable *multiple bidders* is used as a proxy for the amount of competition in the takeover. It shows if a firm other than the acquirer placed an offer to acquire the target firm as well. Finally, the dummy variable *horizontal* indicates if the target firm and the acquiring firm operate in the same industry.

4.2.3 Firm-specific characteristics

On top of the deal characteristic variables, several variables related to firm-specific characteristics are included in the study as well. One of these variables is the *52-week high premium* variable, which is defined as the percentage difference between the highest stock price of the target firm of the period between 365 and 30 days prior to the announcement and the target's stock price 30 days prior to the announcement. Similar to the offer premium, this variable is winsorized at the 1 percent and the 99 percent level. This variable is initially included as a linear variable. However, this variable is subsequently split up into three separate variables to account for a possible non-linear relation between the 52-week high premium and the offer premium. According to Baker et al. (2012), the relation is stronger when the current price is closer to the highest price of the last 52 weeks, in other words when the 52-week high premium is lower. The 52-week high premium variable is therefore split up into a variable for the 52-week high premiums between 0 and 25 percent, a variable for the 52-week high premiums between 25 and 75 percent, and one for the 52-week high premiums above 75 percent. The calculation and explanation of these variables are already discussed in the methodology section (3.1).

A number of variables are included in the regressions regarding the ownership characteristics of the target firm. The dummy variable *concentrated* shows which targets have a concentrated ownership structure, which is defined as at least one of the different investor types (corporation, individual, institutional and government) owning at least 20% of the cash flow rights of the target firm (Claessens et al., 2000). The total ownership of each investor type is determined by collecting and adding up the percentages of shares owned by all shareholders of the same investor type that have an ownership of at least 5% of the shares outstanding of the target firm (Faccio & Lang, 2002). Furthermore, the dummy variables *corporation*, *individual* and *institution* indicate whether or not the ownership at the target firm is concentrated at corporations, individuals and institutions respectively. Again, the ownership is concentrated at one of these types when that specific investor type owns at least 20% of the shares outstanding of the target. It is possible that multiple investor types own more than 20% of the shares. In these cases, the ownership is concentrated with multiple blockholders. The investor type government is left out of the study, as the government did not own shares of any of the 1889 target firms in the sample. The dummy variable *foreign* shows if the shareholder of the target firm with an ownership higher than 20%, also known as the controlling shareholder, is located outside the United States. The dummy variables are chosen here as the main ownership variables over real ownership percentages, as differences in the effects of concentrated and dispersed ownership are believed to provide more valuable insights than differences in the effects of different heights of real ownership percentages.

Another important firm-specific characteristic is the financial condition of the firms involved in the takeovers. The dummy variables *distressed target* and *distressed acquirer* are added to the regressions to take the financial condition of the firms involved into account. These variables show if the target firm or the acquiring firm experiences financial distress at the time of announcement. Whether or not a firm experiences financial distress is determined on the basis of the net income of the firm over the last twelve months prior to the takeover announcement. If this net income is negative, the firm is classified as a financially distressed firm.

On top of these variables, some more firm-specific characteristics are included in the regressions as control variables. Firstly, the variables *target ROA* and *acquirer ROA* show the return on assets (ROA) of the target firm and the acquiring firm. The ROA is determined by dividing the net income of the last twelve months before the takeover announcement by the total assets of the firm. The variable *relative size target/acquirer* gives an indication of the size of the target and the acquirer relative to each other. This variable is defined as the total market equity of the target divided by the total market equity of the acquirer. This market equity is calculated by multiplying the shares outstanding of the target or acquiring firm with the stock price of that firm thirty calendar days prior to the announcement. Furthermore, the variables *target market/book* and *acquirer market/book* show the market-to-book ratios of the targets and the acquirers, which are determined by dividing the total market value of the equity of the firm by the book value of this equity. Regarding the book value of

equity, the method of determination from Baker et al. (2012) is followed, meaning the variable is calculated as total shareholder equity plus deferred taxes and investment tax credit minus the redemption value of preferred stock. These values are all directly obtained from the Compustat database. Moreover, the variables *target P/E* and *acquirer P/E* show the price-earnings ratios of the target and the acquirer respectively. These price-earnings ratios are defined as the total market value of equity of the firm divided by the net income of the last twelve months before the announcement. This P/E ratio indicates whether the firm can be classified as a growth firm or a value firm. A relatively high P/E ratio indicates a growth firm, a relatively low ratio a value firm (Fama & French, 1998). The variable *stock price volatility* indicates how much the target's stock price fluctuates over time, and is measured as the standard deviation of the target's stock price over the period between 365 and 30 days prior to the announcement. The eight firm-specific control variables just discussed are all winsorized at the 1% and the 99% level to control for possible outliers. Finally, the variable *leverage* displays the target's leverage ratio, calculated as the target's total debt divided by the total assets.

4.2.4 Other variables

The last few variables are related to the time period and the economic circumstances. The dummy variables *crisis2001* and *crisis2007-2009* show if the takeover announcement took place in the first or second financial crisis respectively. The periods of financial crisis are mainly defined as the crisis periods according to the NBER, which consist of the periods from March 2001 to November 2001 and from December 2007 to June 2009. However, the crisis periods are also based on the value of the S&P 500, which leads to slightly different crisis periods. This definition is used to check the robustness of the results. The variable *HYSpread* shows the height of the high-yield spread at the time of the takeover announcement. This high-yield spread is used as a proxy for the credit market conditions and is calculated as the difference between the yields of Moody's BBB rated bonds and Moody's AAA rated bonds. These bond yields are retrieved directly from the FRED Economic Data database.

4.3 Descriptive statistics

In this section, some descriptive statistics of the sample of mergers and acquisitions are covered. Table 1 shows the first part of these statistics, including the distribution of mergers and acquisitions over the different time periods in the sample. For all variables that are winsorized, the table shows the values after winsorization. One thing that stands out in table 1 is that in crisis periods, as expected, a larger part of the targets experience financial distress compared to the non-crisis periods. In the crisis periods, the target was in distress in around 52% of the takeovers, whereas over the whole sample, the target was distressed in only 39% of the takeovers. Moreover, the offer premiums appear to be higher in periods of financial crisis, especially in the crisis from around the end of 2007 to 2009. After all, the mean offer premium was more than twice as high in 2009 than it was in each of the years between

Table 1

Descriptive statistics of the mergers and acquisitions sample per year

This table provides a number of descriptive statistics for the sample of 1889 completed mergers and acquisitions that were announced between 2000 and 2015. The sample is split up in years to get an overview of the differences in the M&A statistics over time. In this table, M&A shows the number of mergers and acquisitions that were announced in each time period. Distressed target, distressed acquirer and distressed target & acquirer show how many targets and acquirers involved in the takeovers in that specific time period were experiencing financial distress. Concentrated ownership shows the number of M&As in which the ownership at the target firm was concentrated. Corporation, Individual, Institution and Foreign display the number of takeovers in which that specific investor types owned at least 20% of the shares of the target firm. Offer premium and 52-week high premium show the means of the offer premiums and 52-week high premiums for each time period. The offer premium and the 52-week high premium are both winsorized at the 1% and 99% level.

Year	M&A	Distressed Target	Distressed Acquirer	Distressed Target & Acquirer	Concentrated ownership	Corporation	Individual	Institution	Foreign	Offer premium %	52-week high premium %
2000	188	78	43	32	82	11	17	67	2	48.11	99.77
2001	183	97	40	31	103	17	43	63	3	50.47	295.09
2002	100	59	21	15	64	4	30	42	0	49.62	105.96
2003	130	61	23	18	84	6	27	66	1	46.36	85.23
2004	111	38	14	11	80	9	27	49	3	30.55	37.30
2005	143	37	16	9	106	3	27	85	0	29.61	50.67
2006	155	40	12	8	109	4	22	95	1	30.62	30.18
2007	151	39	8	2	107	8	24	85	1	32.68	30.66
2008	93	44	13	8	77	4	12	67	0	49.98	145.38
2009	84	47	18	14	58	10	8	44	1	65.02	175.33
2010	115	39	6	3	84	3	13	71	1	46.14	34.04
2011	104	40	5	3	77	3	14	65	1	46.76	43.61
2012	91	32	7	5	66	4	9	59	3	38.42	39.64
2013	92	29	18	6	72	1	9	66	2	37.57	19.30
2014	77	31	13	7	61	1	7	57	2	39.56	25.69
2015	72	32	9	6	56	2	5	52	1	39.02	44.96
2001 Crisis	143	77	33	26	82	13	32	52	3	50.07	263.07
2007-2009 Crisis	145	72	24	17	116	11	18	97	1	59.35	176.64
Full sample	1889	743	266	178	1286	90	294	1033	22	42.17	85.98

Table 2
Summary statistics of the variables
This table gives the number of observations, the mean, the median, and the standard deviation for nearly all variables used in the study. These statistics are calculated over the whole sample of mergers and acquisitions. Definitions and descriptions of the variables are provided in section 4.2. All continuous variables and ratios, with the exception of *leverage*, are winsorized at the 1% and the 99% level. All other variables are dummy variables. For these variables, the mean value shows the percentage of takeovers in which the variable is equal to 1.

Variable	Observations	Mean	Median	St. Deviation
Dependent variable:				
Offer premium	1889	0.4217	0.3252	0.4267
Deal characteristics:				
Cash	1889	0.6342	1.0000	0.4818
Stock	1889	0.1361	0.0000	0.3429
Tender offer	1889	0.2287	0.0000	0.4201
LBO	1889	0.1271	0.0000	0.3331
Hostile	1889	0.0048	0.0000	0.0689
Multiple bidders	1889	0.0577	0.0000	0.2332
Horizontal	1889	0.3536	0.0000	0.4782
Firm-specific explanatory variables:				
52-week high premium	1889	0.8598	0.2464	2.0277
Concentrated	1889	0.6808	1.0000	0.4663
Corporation	1889	0.0476	0.0000	0.2131
Individual	1889	0.1556	0.0000	0.3626
Institution	1889	0.5469	1.0000	0.4979
Foreign	1889	0.0116	0.0000	0.1073
Distressed target	1889	0.3933	0.0000	0.4886
Distressed acquirer	1214	0.2191	0.0000	0.4138
Target firm-specific control variables:				
Target ROA	1889	-0.0659	0.0201	0.2815
Target P/E	1889	12.0175	10.6296	77.7193
Target market/book	1889	2.6211	1.7636	4.2883
Stock price volatility	1889	2.5749	1.5402	3.1701
Leverage	1889	0.2056	0.1163	0.2498
Acquirer firm-specific control variables:				
Acquirer ROA	951	0.0294	0.0522	0.1462
Acquirer P/E	950	19.5232	18.2605	91.6903
Acquirer market/book	879	4.3722	2.7690	6.4169
Relative size target/acquirer	957	0.2264	0.1002	0.2920
Other variables:				
Crisis2001	1889	0.0757	0.0000	0.2646
Crisis2007-2009	1889	0.0768	0.0000	0.2663

2004 and 2006. The 52-week high premium is also substantially higher in periods of financial crisis, which makes sense, as a lot of firms experience a significant decline in stock price when the market

goes through a rough period. The difference between the stock price 30 calendar days prior to the announcement and the highest stock price of the last year is much higher in these cases. Furthermore, distressed acquirers seem to be more likely to acquire or merge with a distressed target than a healthy target. After all, in 178 of the 266 takeovers in which the acquirer was experiencing financial distress in the sample, the target was in distress as well. Another thing that stands out is that the ownership at the target firms is concentrated for the majority of the takeovers. However, corporations and foreign companies own a large part of the shares of the target in substantially fewer takeovers than individuals and particularly institutions.

Table 2 shows the second part of the descriptive statistics, which include the means, medians, and standard deviations of the variables used in the study. Similar to the first table, this table shows the values of the variables after winsorization. For all dummy variables, the mean value shown in the table shows the percentage of takeovers in which the dummy takes the value 1. For example, the mean of 0.0757 for the variable Crisis2001 means that 7.57% of the 1889 takeovers were announced in the financial crisis that took place in 2001. The table shows that the mean offer premium is 42.17%, whereas the median is only 32.52%. This difference is caused by the presence of a greater variation between the highest offer premiums and the median than between the lowest premiums and the median. This table also shows that the form of payment is cash only in the majority of the mergers and acquisitions in the sample. Furthermore, it is shown that only very few of the takeovers in the sample, 0.48% to be precise, are classified as hostile takeovers. Moreover, on average, the targets in the sample are smaller and have a lower return on assets than the acquirers. The statistics of the target P/E ratio and the acquirer P/E ratio show that the acquirers in the sample will have relatively more earnings growth on average than the targets. After all, growth firms have relatively high P/E ratios, and the average P/E ratio of the acquirers in the sample is higher than the average P/E ratio of the targets. As discussed in the literature section, the earnings growth of the target firm relative to the acquiring firm is positively correlated with the offer premium, which means that the lower P/E ratios and thus the lower earnings growth of the target firms go together with lower offer premiums. Regarding the standard deviations, particularly the 52-week high premium and the stock price volatility stand out. The standard deviation exceeds 2 for both of these variables, which means that it is higher than 200%. This is mostly caused by the two crisis periods, as the stock price of a lot of firms collapsed in these periods, leading to large differences in the variables 52-week high premium and stock price volatility. The number of observations is substantially smaller for the variable distressed acquirer and the four acquirer-specific control variables compared to all other variables. The reason for this is that acquirer financial data or acquirer stock data had to be obtained in order to calculate these variables. However, this data was not available in the databases for a lot of acquirers in the sample. The downside to this is that the regressions in which any of these variables are included will have fewer observations than the regressions in which these variables are not included.

4.4 Conclusion

The data is collected from multiple databases. The mergers and acquisitions data is collected from the SDC Mergers and Acquisitions database, the stock data is collected from the CRSP database, and the firms' financial data is obtained from the Compustat database. The ownership data of the target firms is manually collected from SDC's Share Ownership database. For each takeover, the ownership percentages of all shareholders that own at least 5% of the shares of the target firm are obtained. The initial sample from SDC consists of 3274 completed mergers and acquisitions that were announced between 2000 and 2015. After merging the three different datasets together and after making sure the data meets a number of essential conditions, the final sample is formed, consisting of 1889 takeovers. Furthermore, a description of all variables is provided, together with some descriptive statistics. All continuous variables, except the variable leverage, are winsorized at the 1% and the 99% level.

Chapter 5 Empirical Results

In this chapter, the results of all performed tests will be discussed in the same order as the hypotheses are set up. First, the regressions used to find a possible relation between the 52-week high premium and the offer premium are shown and analysed. Subsequently, the effects of ownership characteristics of the target firms are discussed, followed by the effects of financial distress at the firms involved in the takeovers and the presence of an economic crisis at the time of the announcement of the takeover. Finally, the results regarding a possible trend in offer premiums over time are discussed.

5.1 52-week high premium

Table 3 shows the outcomes of the regressions that are performed to find the effects of the target's 52-week high premium on the offer premium in mergers and acquisitions. Model A shows the outcomes of regression (3), in which a linear effect of the 52-week high premium is tested. As table 3 shows, there is a significant positive linear relation between this 52-week high premium and the offer premium according to our model. The variable has a coefficient of 0.0495, which means that a 10% higher 52-week high premium leads to an almost 0.5% higher offer premium. Model B shows the outcomes of regression (4), in which the 52-week high premium is split up into three different variables to test whether a non-linear relation exists between the 52-week high premium and the offer premium. A significant non-linear relation is found here, where the marginal effects of the 52-week high premium on the offer premium are highest for the smallest 52-week high premiums. The marginal effect for 52-week high premiums below 25% is found to be significant at the 1% level, with a coefficient of 0.7533. This coefficient means that a 10% increase in the 52-week high premium goes together with an increase in offer premium of around 7.5%. The marginal effect of the 52-week high premiums between 25% and 75% is also significant at the 1% level, but the magnitude of this effect is much smaller. In this case, a 10% increase in the 52-week high premium leads to an increase in the offer premium of around 3.7%. In contrast to the first two variables, the variable that represents the 52-week high premiums above 75% does not show a significant relation with the offer premiums in model B.

When comparing models A and B, it is concluded that a non-linear effect of 52-week high premiums is better able to explain differences in offer premiums than a linear effect, which is supported by the adjusted r-squared of both models. The r-squared of a model indicates how much of the variation in the outcome variable can be explained by the explanatory variables in the model. The adjusted r-squared shows this as well, but adds an adjustment to this percentage to account for the number of variables included in the model. The adjusted r-squared thus makes it able to compare the explanatory power of two or more models that have a different number of variables included. Models A and B have an adjusted r-squared of 0.055 and 0.126 respectively, which means that model A is able to explain 5.5% of the variance in offer premiums and model B 12.6%. Because of this, it is concluded

Table 3

Regression results: 52-Week high premium

This table provides the results of the multivariate regressions performed to find a relation between the 52-week high premiums and the offer premiums. Model A and model B show regression (3) and (4) respectively. In models C – F, a number of control variables are added to regression (4) each time. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F
Constant	0.3792***	0.2240***	0.1861***	0.2573***	0.3239***	0.3229***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high premium	0.0495***					
	(0.000)					
52-week high 0% - 25%		0.7533***	0.6998***	0.7394***	0.6316***	0.5913***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 25% - 75%		0.3695***	0.3841***	0.4116***	0.2053**	0.2589***
		(0.000)	(0.000)	(0.000)	(0.014)	(0.002)
52-week high >75%		0.0179	0.0204*	0.0253**	0.0125	0.0180
		(0.101)	(0.052)	(0.034)	(0.265)	(0.127)
Control variables:						
Cash			0.0828***			0.0105
			(0.000)			(0.724)
Stock			-0.0412			-0.0725*
			(0.261)			(0.057)
Tender offer			0.0992***			0.1021***
			(0.000)			(0.000)
LBO			-0.1094***			-0.2182***
			(0.000)			(0.000)
Hostile			0.0911			0.1245*
			(0.229)			(0.061)
Multiple bidders			0.0355			0.0463
			(0.388)			(0.286)
Horizontal			-0.0425**			-0.0345
			(0.029)			(0.147)
Target ROA				0.0503		0.0402
				(0.425)		(0.567)
Target P/E				-0.0001		-0.0000
				(0.391)		(0.839)
Target market/book				0.0010		-0.0040*
				(0.625)		(0.075)
Stock price volatility				-0.0180***		-0.0116***
				(0.000)		(0.005)
Leverage				0.0311		0.0719
				(0.586)		(0.346)
Acquirer ROA					-0.0302	-0.0967
					(0.803)	(0.437)
Acquirer P/E					-0.0000	0.0001
					(0.836)	(0.514)
Acquirer market/book					0.0012	0.0051**
					(0.604)	(0.037)
Relative size					-0.2920***	-0.2387***
					(0.000)	(0.000)
N	1889	1889	1889	1889	874	874
Adjusted R-squared	0.055	0.126	0.158	0.140	0.139	0.175

that a non-linear relation between the 52-week high premiums and the offer premiums gives a better representation of the reality than a linear relation. Therefore, only the variables representing the non-linear relation of the 52-week high premiums are included in the remainder of the study.

In models C to F, a number of control variables are added to model B each time as robustness checks for the relation found in this model. In model C, seven deal-specific characteristics are added. In model D and model E, five firm-specific characteristics of the target firms and four firm-specific characteristics of the acquiring firm are added respectively. Finally, in model F, all these control variables are included. The results in table 3 show that the non-linear relation between the 52-week high premium and the offer premium is very significant in all these models. The marginal effects of 52-week high premiums below 25% and between 25% and 75% are significant at the 1% significance level in almost all cases. The coefficients of these variables remain substantial as well, with the lowest one being equal to 0.2053, which still comes down to a 2% increase in offer premiums for a 10% increase in 52-week high premiums between 25% and 75%. The results regarding the marginal effects of 52-week high premiums above 75% are not univocal among the different models. In models C and D, these marginal effects are significant, but this is not the case for the other models. However, the coefficients in these models are quite low. So, the effects may be statistically significant, but there is only little impact on the offer premiums. After all, according to model C, a 10% increase in 52-week high premiums above 75% only results in a 0.2% increase in offer premiums.

The control variables in the models show some mixed results. The variables tender offer, LBO, stock price volatility and relative size are all significant at the 1% significance level in both models in which they are included. When the takeover announcement involves a tender offer, the offer premium is found to be significantly higher compared to the situations in which it involves a merger. Model F for example shows evidence for around 10% higher offer premiums for tender offers. These higher offer premiums for tender offers correspond to the theory and the findings of existing literature, as many other studies found significantly higher offer premiums for tender offers as well. The theory behind these higher premiums is that tender offers have a shorter completion time than mergers, which comes at the cost of higher premiums (Offenberg & Pirinsky, 2015). LBOs, the target's stock price volatility, and the relative size of the target compared to the acquirer on the other hand are all found to have a negative relation with the offer premium. Again, the relations found here correspond to the findings of existing literature, since Baker et al. (2012) for example found the same negative relation for LBOs and a number of studies, Gondhalekar et al. (2004) for example, found the same negative relation for the relative size. Regarding the relation between the target's stock price volatility and the offer premium, existing literature showed mixed results. However, a theory provided by the existing literature for the negative relation is that higher stock price volatility leads to higher risk, which could lead to less interested bidders, which in turn reduces the offer premium. According to model F, LBOs go together with offer premiums that are around 21.8% lower than other mergers and acquisitions. Model F also shows that a 10 percentage points increase in stock price volatility leads to a 0.1%

decrease in offer premiums. This means however that the influence of the stock price volatility is not economically significant, since the impact on the offer premium is very small. Regarding the relative size of the target, the model shows that relatively larger targets get lower offer premiums. If the relative size of the target compared to the acquirer is 0.6 for example, the offer premium is around 2.4% lower according to model F than it would be if the relative size were 0.5. Furthermore, in model C, the variable cash shows a significant positive relation with the offer premiums and the variable horizontal a significant negative relation. According to this model, the offer premium is around 8% higher when the offer consists of cash only and around 4% lower when the target and the acquirer operate in the same industry. However, these relations turn insignificant in model F, where target and acquirer firm-specific characteristics are included as well. Mixed findings are shown for the variables stock, hostile, target market/book and acquirer market/book as well. A significant negative effect of around 7% is found for stock as a method of payment in model F, but model C does not show a significant relation. Hostile offers go together with significantly higher premiums than friendly offers according to model F, albeit only at the 10% significance level. Offer premiums are around 12% higher with hostile offers according to this model. However, model C again does not support this finding. The target's market-to-book ratio and the acquirer's market-to-book ratio show a significant negative and a significant positive relation respectively with the offer premiums in model F, although the coefficients are only small and do not have much influence on the offer premiums. For instance, an increase in the target's market-to-book ratio of 1 only leads to a 0.4% decrease in offer premium. For both variables however, the significant relation is absent at models D and E. An interesting thing about the relations found for the control variables in these models is that all significant relations have the same sign as predicted by the existing literature, even for the variables that only show significant results in one of the models. On top of that, the existing literature showed mixed results regarding the influence of the form of payment on the offer premium, which is the case here as well.

In all regressions presented in table 3, robust standard errors are used. These standard errors are used to correct for the heteroskedasticity that appears to be present in these models. Whether heteroskedasticity is present in the models is determined with the Breusch-Pagan test for heteroskedasticity, which thus provides evidence for the presence of heteroskedasticity for all models in table 3. The results of these tests are shown in Appendix A. On top of the heteroskedasticity tests, all models are also tested for multicollinearity. This multicollinearity involves a situation in which two or more of the independent variables in the models are actually linearly related to each other, which could bias the results of the regression (Craney & Surles, 2002). The presence of multicollinearity is checked by looking at the Variance Inflation Factors (VIF) of the variables included in the model. Generally, a model is found to have a problematic amount of multicollinearity when one of the variables in the model has a VIF higher than 5 or higher than 10 (Craney & Surles, 2002). For all models shown in table 3, the VIFs of the variables range somewhere between 1.01 and 2.32. Therefore, it is concluded that multicollinearity is not a problem in these models.

5.1.1 The first hypothesis

As all empirical results of the multivariate regressions are discussed, an answer to the first hypothesis can now be formed. This hypothesis reads that there is a positive relation between the offer premium and the target's 52-week high premium. The empirical results discussed above provide sufficient evidence to be able to confirm the hypothesis. The results show a significant positive non-linear relation between the 52-week high premium and the offer premium. Here, the lowest category of 52-week high premiums shows the strongest relation with the offer premiums. The middle category, with 52-week high premiums between 25% and 75%, shows a strong relation with the offer premium as well. No significant marginal effects are found regarding 52-week high premiums above 75%. All of this means that changes in the highest stock price of the target firm have a larger impact on the offer premium when this highest stock price is relatively close to the current stock price 30 calendar days prior to the announcement.

5.2 Ownership structure of the target firm

The second part of the study consists of an attempt to find any influences of the ownership structure of the target firm on the offer premium. Table 4 shows the empirical results of the multivariate regressions that are performed to find these influences. According to model A, concentrated ownership at the target firm leads to significantly higher offer premiums. The coefficient of the variable concentrated is 0.0447, which shows that the offer premium is around 4.47% higher when the ownership is concentrated. This relation is significant at the 5% significance level. However, this relation starts to disappear when more and more control variables are added. In model B, the deal-specific control variables are added to the variables included in model A. Concentrated ownership is still found to have a significant positive effect on the offer premiums, but now only at the 10% significance level. Moreover, the coefficient has decreased to 0.0334 as well, which means that concentrated ownership at the target firm now only leads to 3.34% higher offer premiums. The same relation is found when a number of firm-specific characteristics of the target are included as control variables instead of deal-specific characteristics, as shown in model C. However, when firm-specific characteristics of the acquirer are included in model D, most important of which the size of the target relative to the acquirer, the relation between concentrated ownership at the target and the offer premium turns insignificant. The significant positive relation found in the first models thus disappears when we control for the size of the firms involved in the takeover[3]. Model E, in which all control variables are included, shows no significant relation between concentrated ownership and the offer premium as well.

[3] To test whether controlling for the sizes of the firms involved is indeed the cause of the variable concentrated turning insignificant, another regression is executed in which only the size of the target is added as a control variable to model A. By adding this variable, it is possible to include the same number of observations in the regression as in models A – C of table 4. Again here, the variable concentrated is insignificant, which supports our finding. The results are shown in Appendix B.

Table 4

Regression results: Ownership structure of the target firm

This table presents the results of the multivariate regressions performed to find the influences of the ownership structure of the target firm on the offer premiums. Model A shows regression (5). A number of control variables are added to this regression each time in models B - E. Model F in turn shows regression (6). In model G, only an interaction term is added to regression (6), which indicates if a foreign corporation is one of the controlling shareholders of the target firm. Finally, in models H – K, a number of control variables are added to model G each time. The ownership variables in all models here are dummy variables that show if the combined ownership of the shareholders with at least 5% stake exceeds 20.00%. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J	Model K
Constant	0.1927***	0.1644***	0.2320***	0.3060***	0.3154***	0.2032***	0.2041***	0.1752***	0.2412***	0.3175***	0.3242***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 0% - 25%	0.7517***	0.6988***	0.7394***	0.6384***	0.5941***	0.7465***	0.7457***	0.6930***	0.7354***	0.6021***	0.5620***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 25% - 75%	0.3749***	0.3866***	0.4160***	0.2019**	0.2574***	0.3711***	0.3729***	0.3850***	0.4140***	0.1982**	0.2536***
	(0.000)	(0.000)	(0.000)	(0.016)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.017)	(0.002)
52-week high >75%	0.0182*	0.0205**	0.0256**	0.0131	0.0183	0.0188*	0.0189*	0.0212**	0.0264**	0.0135	0.0187
	(0.093)	(0.049)	(0.031)	(0.243)	(0.122)	(0.087)	(0.084)	(0.045)	(0.028)	(0.238)	(0.119)
Concentrated	0.0447**	0.0334*	0.0335*	0.0241	0.0109						
	(0.021)	(0.078)	(0.081)	(0.307)	(0.640)						
Corporation						-0.0271	-0.0585	-0.0479	-0.0679	0.0435	0.0286
						(0.560)	(0.212)	(0.296)	(0.148)	(0.523)	(0.683)
Individual						0.0559*	0.0575**	0.0557*	0.0465*	0.0412	0.0443
						(0.052)	(0.045)	(0.051)	(0.098)	(0.328)	(0.294)
Institution						0.0217	0.0213	0.0110	0.0137	-0.0028	-0.0158
						(0.256)	(0.262)	(0.558)	(0.468)	(0.905)	(0.502)
Foreign						0.1667	-0.0675	-0.0618	-0.0663	0.0472	0.0482
						(0.162)	(0.495)	(0.545)	(0.508)	(0.730)	(0.693)
Corporation*Foreign							0.4581**	0.3942*	0.4619**	0.5990*	0.5379*
							(0.035)	(0.066)	(0.033)	(0.055)	(0.081)
Control variables:											
Cash		0.0799***			0.0097			0.0784***			0.0114
		(0.000)			(0.744)			(0.000)			(0.706)

Stock		-0.0387			-0.0719*			-0.0414			-0.0707*
		(0.290)			(0.059)			(0.260)			(0.064)
Tender offer		0.0996***			0.1017***			0.0974***			0.0950***
		(0.000)			(0.000)			(0.000)			(0.001)
LBO		-0.1115***			-0.2217***			-0.1112***			-0.2255***
		(0.000)			(0.000)			(0.000)			(0.000)
Hostile		0.0988			0.1275*			0.1074			0.1264*
		(0.184)			(0.059)			(0.147)			(0.066)
Multiple bidders		0.0344			0.0459			0.0367			0.0481
		(0.403)			(0.292)			(0.375)			(0.260)
Horizontal		-0.0415**			-0.0347			-0.0405**			-0.0320
		(0.033)			(0.144)			(0.038)			(0.176)
Target ROA			0.0532		0.0417				0.0522		0.0391
			(0.398)		(0.557)				(0.405)		(0.573)
Target P/E			-0.0001		-0.0000				-0.0001		-0.0000
			(0.411)		(0.847)				(0.364)		(0.790)
Target market/book			0.0011		-0.0040*				0.0012		-0.0039*
			(0.581)		(0.079)				(0.558)		(0.082)
Stock price volatility			-0.0176***		-0.0115***				-0.0177***		-0.0117***
			(0.000)		(0.005)				(0.000)		(0.005)
Leverage			0.0321		0.0720				0.0346		0.0742
			(0.577)		(0.349)				(0.545)		(0.333)
Acquirer ROA				-0.0245	-0.0942					-0.0326	-0.0986
				(0.841)	(0.449)					(0.790)	(0.432)
Acquirer P/E				-0.0000	0.0001					-0.0000	0.0001
				(0.874)	(0.505)					(0.875)	(0.508)
Acquirer market/book				0.0012	0.0052**					0.0013	0.0053**
				(0.577)	(0.037)					(0.550)	(0.032)
Relative size				-0.2885***	-0.2379***					-0.2804***	-0.2310***
				(0.000)	(0.000)					(0.000)	(0.000)
N	1889	1889	1889	874	874	1889	1889	1889	1889	874	874
Adjusted R-squared	0.128	0.159	0.141	0.139	0.174	0.128	0.131	0.162	0.145	0.152	0.186

In model F of table 4, a more detailed version of the ownership structure of the target firm is included in the model. This model shows regression (6), where the ownership of the shareholders is split up into the ownership per investor type. For all investor types, this model shows what the effect on the offer premium is when that investor type is a controlling shareholder of the target firm, which is the case when the total ownership of that investor type exceeds 20.00%. For corporations, institutions and foreign investors, no significant effect on the offer premium is found. For individual investors on the other hand, a significant positive effect is found. Offer premiums are around 5.59% higher according to model F when individual investors own at least 20.00% of the shares and therefore are a controlling shareholder. This relation is significant at the 10% significance level. In model G, the interaction term corporation*foreign is added to model F. This interaction term shows the effect that the presence of a foreign corporation as a controlling shareholder has on the offer premium. The reason for the addition of this variable is that the majority of the large foreign investors in our sample are corporations. Although no significant effect on the offer premium is found for the presence of a foreign controlling shareholder in model F, the offer premiums are found to be significantly higher when a foreign corporation is a controlling shareholder of the target firm according to model G. When this is the case, offer premiums are around 45.81% higher. In the models H to K, a number of control variables are added to model G each time as robustness checks. All these models show no significant effects for corporations, institutions and the foreign controlling shareholders that are not corporations. Regarding the significant effect on the offer premiums found in model F for individual investors being a controlling shareholder of the target firm, the same phenomenon is found as was found for concentrated ownership in general in the first models of table 4. The relation namely disappears when the size of the target relative to the acquirer is included in the model as well. In the models in which this relative size is not included, the relation between individual investors being a controlling shareholder and the offer premium stays significant and positive. The variable corporation*foreign on the other hand stays significant in all models. The coefficient remains substantial as well.

A number of additional robustness checks are done regarding the influence of the ownership structure on the offer premium. All regressions shown in table 4 are executed again, but now with the total ownership percentages instead of dummy variables that show if the ownership is concentrated. The variables thus show the total ownership of all shareholders that own at least 5% of the shares of the target firm. The variable corporation for example now reflects the total ownership percentage of all corporations that own at least 5% of the shares of the target. Including these variables enables us to find if different degrees of ownership concentration have different influences on the offer premiums. The results are shown in Appendix C. Only some slightly significant results are found for the total ownership percentage and the total ownership of individual investors, but these relations disappear again as soon as a number of control variables are included as well. All in all, it appears that the degree of ownership concentration does not influence the offer premiums, although it must be noted that the total ownership percentage of all shareholders with a stake of at least 5% might not be the best

proxy for the degree of ownership concentration. This proxy is mainly used here because this one is relatively easy to apply compared to the other options, which are discussed in the limitations section.

Regarding the results of the 52-week high premium variables and the control variables, the results of table 4 are very similar to the ones found in the analysis of the first hypothesis. Again, the 52-week high premium shows a very significant non-linear positive relation with the offer premium. The control variable tender offer again shows a significant positive relation, and the variables LBO, stock price volatility and relative size show a significant negative relation. Moreover, the same mixed results are found for cash and stock as methods of payment, hostile offers, target and acquirer market-to-book ratios and mergers and acquisitions between firms from the same industry. Furthermore, robust standard errors are used again in all models of table 4 to correct for heteroskedasticity. All models are also tested for multicollinearity, but all VIFs range between 1.01 and 2.36, which are well below the threshold values of 5 and 10 that are commonly used as a sign of problematic multicollinearity.

5.2.1 The second hypothesis

All empirical results discussed in the previous section make it able to develop an answer to the second hypothesis. This second hypothesis reads that the ownership structure of the target firm significantly influences the offer premium in mergers and acquisitions. Based on the results, this hypothesis is rejected. In general, the offer premium is not affected much by the ownership structure of the target firm, although some significant effects of concentrated ownership are found in a number of regressions. The significant effects are found for concentrated ownership in general, for concentrated ownership by individual investors, and for foreign corporations as controlling shareholders. However, when the size of the target firm and the acquiring firm is taken into account, only the effect of foreign corporations as controlling shareholders remains significant. As a result, it is concluded that the ownership structure in general does not influence the offer premiums in mergers and acquisitions.

5.3 Financial distress

Table 5 shows the results of the next part of the study, which consists of a number of empirical tests to find the influences of the financial condition of both the target firm and the acquiring firm on the offer premium. As shown in model A, the offer premium is found to be significantly higher when a healthy firm acquires a financially distressed target. According to this model, the offer premium in mergers and acquisitions is around 16.30% higher when a healthy firm acquires a distressed target compared to the situations in which a healthy firm acquires a healthy target. On the other hand, the model shows no significant effect on the offer premium when a distressed firm acquires a healthy target compared to when a healthy firm acquires a healthy target. So, offer premiums are significantly higher when only the target experiences financial distress, but no significant effect is found when only the acquirer is in financial distress. When both the target and the acquirer experience financial distress at the time of the

Table 5

Regression results: Financial distress

This table provides the results of the multivariate regressions performed to find a relation between the presence of financial distress at the firms involved in mergers and acquisitions and the offer premiums. Model A is a regression with only the dummy variables for financial distress at the target, the acquirer, and both the target and the acquirer included. Model B shows regression (7) as it is illustrated in the hypotheses and methodology section. In models C – F, a number of control variables are added to the regression of model B each time. Finally, all variables except the 52-week high premium variables are included in model G. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G
Constant	0.3576***	0.2095***	0.1895***	0.2379***	0.3223***	0.3185***	0.4470***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 0% - 25%		0.8360***	0.7685***	0.8045***	0.6253***	0.5787***	
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
52-week high 25% - 75%		0.2180***	0.2433***	0.2735***	0.1997**	0.2530***	
		(0.006)	(0.002)	(0.001)	(0.017)	(0.002)	
52-week high >75%		0.0102	0.0116	0.0190	0.0135	0.0189	
		(0.366)	(0.295)	(0.118)	(0.224)	(0.104)	
Distressed target	0.1630***	0.0922***	0.0895***	0.1214***	0.0405	0.0406	0.0850**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.143)	(0.301)	(0.036)
Distressed acquirer	0.0539	0.0302	0.0618*	0.0303	0.0314	0.0538	0.0688
	(0.129)	(0.380)	(0.077)	(0.377)	(0.607)	(0.377)	(0.277)
Distressed target *	-0.1151*	-0.1516**	-0.1439**	-0.1467**	-0.1269*	-0.1143*	-0.1150
Distressed acquirer	(0.064)	(0.014)	(0.020)	(0.019)	(0.073)	(0.093)	(0.113)
Control variables:							
Cash			0.0557**			0.0092	0.0039
			(0.028)			(0.752)	(0.897)
Stock			-0.0408			-0.0729*	-0.0344
			(0.266)			(0.056)	(0.375)
Tender offer			0.0993***			0.1007***	0.1109***
			(0.000)			(0.000)	(0.000)
LBO			-0.2095***			-0.2227***	-0.2553***
			(0.000)			(0.000)	(0.000)
Hostile			0.0402			0.1330**	0.1186
			(0.568)			(0.047)	(0.157)
Multiple bidders			0.0819			0.0433	0.0367
			(0.129)			(0.312)	(0.442)
Horizontal			-0.0533**			-0.0371	-0.0445*
			(0.019)			(0.119)	(0.073)
Target ROA				0.1362		0.0503	-0.0679
				(0.104)		(0.551)	(0.400)
Target P/E				0.0001		0.0000	0.0001
				(0.423)		(0.815)	(0.468)
Target market/book				-0.0008		-0.0042*	-0.0081***
				(0.716)		(0.064)	(0.001)
Stock price volatility				-0.0138***		-0.0111***	-0.0030
				(0.000)		(0.000)	(0.460)
Leverage				0.0126		0.0693	0.0355
				(0.880)		(0.364)	(0.663)

Acquirer ROA					-0.1236	-0.1430	-0.1829
					(0.470)	(0.400)	(0.305)
Acquirer P/E					-0.0001	0.0001	0.0000
					(0.579)	(0.663)	(0.922)
Acquirer market/book					0.0011	0.0048*	0.0036
					(0.633)	(0.051)	(0.160)
Relative size					-0.2858***	-0.2361***	-0.2735***
					(0.000)	(0.000)	(0.000)
N	1214	1214	1214	1214	874	874	874
Adjusted R-squared	0.027	0.101	0.130	0.114	0.140	0.175	0.108

announcement, offer premiums are found to be significantly lower. The coefficient of -0.1151 indicates that the offer premium is around 11.51% lower when the target and acquiring firm are both in distress compared to when they are both healthy. This outcome can be explained by the idea that the most important reason for both firms to do a merger or acquisition is to strengthen their position and prevent bankruptcy, as both firms are in financial distress. This means that there is no need for a high offer premium, as both of them can already benefit a lot from combining their operational activities and thereby gaining diversification benefits in the form of economies of scale or scope.

Model B of table 5 shows that adding the 52-week high premium variables does not change the relations found in model A. However, the magnitude of the influences on the offer premiums does change. The offer premium is now only 9.22% higher when a healthy firm acquires a distressed target compared to when it acquires a healthy target, which was 16.30% in the first model. This lower effect is due to the fact that distressed targets usually experience a substantial decline in their share price, which leads to greater differences with the highest price of the last year for these firms and thus higher 52-week high premiums. By adding the 52-week high premium to the model, a part of the high offer premiums for distressed targets is explained in the model by the 52-week high premium variables and another part by the fact that the firm experiences financial distress, whereas the distressed target variable has to cover this whole effect in the first model. For the distressed target*distressed acquirer variable however, which shows if both the target and the acquirer are experiencing financial distress, the impact of adding the 52-week high premium variables works the other way around. Here, it increases the magnitude of the effect found for the presence of financial distress, since this effect is negative. Distressed firms having relatively high 52-week high premiums could explain this, as this has a positive effect on the height of the offer premium. Without the 52-week high premium variables included in the model, the positive effect on the offer premium of the high 52-week high premiums for distressed firms is also included in the dummy variable that indicates the presence of financial distress. As the effect of financial distress at both firms is negative and the effect of high 52-week high premiums is positive, this leads to a lower effect for the presence of financial distress at both firms than when both effects are separated. Adding the 52-week high premium variables separates the two different effects, which thus increases the effect found for financial distress. Now, the offer premium

is around 15.16% lower when both firms are in financial distress than when both firms are healthy, compared to 11.51% in the first model. The relation is more significant than in the first model as well.

In models C to F, a number of control variables are added again each time. As models C and D show respectively, the additions of deal-specific and target firm-specific control variables do not change the significant influences found for the combinations of distressed targets with healthy acquirers and distressed targets with distressed acquirers. Model C, with the deal-specific control variables added, does provide a new finding however regarding the effect on the offer premium for distressed firms acquiring healthy targets. Here, a significant positive effect is found. According to this model, the offer premium is around 6.18% higher when distressed firms acquire healthy targets compared to healthy firms acquiring healthy targets. However, this finding is only significant at the 10% significance level and is not found in all other models, so the relation is not very robust. In models E and F, acquirer firm-specific control variables and all control variables are added respectively. Here, the effect found for the combination of distressed targets and healthy acquirers has turned insignificant, probably caused by including the relative size of the target compared to the acquirer as well, as this is the only added variable that shows a significant relation with the offer premium. The effect found for both the target and the acquirer being in distress at time of the announcement of the takeover remains positive in both models, but the magnitude decreases a bit. Model G is added here to show again the impact of adding the 52-week high premium variables to the model. In this model, all financial distress dummy variables and all control variables are included. Here, the effect on the offer premium for the combination of distressed targets and healthy acquirers is significant again, and the effect for the combination of distressed targets and distressed acquirers turns insignificant. This underlines the explanation described above of what happens when the 52-week high premium variables are added to the model. It also shows that the most important explanation of higher offer premiums being paid for distressed targets is the fact that the difference between the current stock price and the highest stock price of the last 52 weeks is higher for these firms, and a lot of acquirers tend to offer a price that is close to this highest stock price.

The relations and effects found in all models of table 5 regarding the 52-week high premium variables and the control variables are very similar to the relations and effects found when testing the first two hypotheses in tables 3 and 4. The only new finding is that the stock price volatility is not found to have a statistically significant effect on the offer premium when the 52-week high premium variables are excluded from the model, as shown by model G. This is not a strange finding, as firms with a high 52-week high premium probably have high stock price volatility as well, since a high volatility means that the firms' stock price fluctuates a lot over time. High 52-week high premiums go together with higher offer premiums, whereas high stock price volatility is found in other models to have a negative effect on the offer premium. In model G, part of the effects of high 52-week high premiums is covered by the volatility variable, since there is no variable for the 52-week high premium included. Here, a positive and a negative effect together in one variable appear to cause an

insignificant total effect. Furthermore, robust standard errors are used again in all models of table 5 to correct for heteroskedasticity. All models are tested for multicollinearity as well, but all VIFs range between 1.02 and 4.45. These VIFs show that there is some multicollinearity in the models, but all of them are below both threshold values of 5 and 10 that are commonly used as a sign for problematic multicollinearity. Therefore, it is concluded that multicollinearity is not a problem in all of these models.

5.3.1 The third hypothesis

As all required empirical results are discussed, an answer to the third hypothesis can now be formed. This hypothesis reads that financially distressed targets get higher offer premiums than healthy targets, and financially distressed acquirers offer higher premiums than healthy acquirers. Based on the results, the first part of this hypothesis can be confirmed, the second part rejected. Distressed targets are found to get significantly higher offer premiums when the acquirer is a healthy firm. The empirical results show that these higher offer premiums can be explained by the fact that these distressed targets endure a substantial decline in stock price due to the financial difficulties, which leads to high 52-week premiums for these firms. Since acquirers often offer a price close to the highest price of the last 52 weeks, the relatively high 52-week high premiums of distressed targets lead to higher offer premiums for distressed targets than for healthy targets according to our results. On the other hand, offer premiums are found to be significantly lower when the acquirer of a distressed target is a distressed firm as well. This is probably due to the common goal of both firms to strengthen their position and prevent bankruptcy by combining their operational activities. In this case, there is no need for high offer premiums, as both firms really need the merger or acquisition. Finally, no evidence is found that indicates that distressed acquirers offer significantly higher or significantly lower premiums for healthy targets than healthy acquirers offer for these targets. Significantly higher offer premiums are found in one model, but this relation is not robust at all, since none of the other models support this.

5.4 Periods of financial crisis

Table 6 shows the results of the regressions that are done in order to find the difference in offer premiums between mergers and acquisitions announced in periods of financial crisis and mergers and acquisitions announced in non-crisis periods. Model A shows that the offer premiums are significantly higher in both crisis periods. For the mergers and acquisitions that were announced in the crisis that took place between March 2001 and November 2001 according to the NBER, the offer premium is found to be around 10% higher. For the crisis period between December 2007 and June 2009, the offer premiums are 19.44% higher according to model A. These effects are significant at the 5% and 1% significance level respectively. However, when the financial condition of the firms involved in the merger or acquisition is included in the model as well, the effects found are substantially smaller, as shown in model B of table 6. The offer premiums are no longer significantly higher in the crisis of

Table 6

Regression results: Periods of financial crisis

This table provides the results of all regressions that are performed in order to find if the offer premium is significantly higher in periods of a financial crisis compared to periods in which there is no such crisis. Model A is a regression with only two dummy variables for the two crises that occurred in our sample period according to the NBER. In model B, the variables that indicate the presence of financial distress at the firms involved in the takeovers are included as well. Model C shows regression (8), as it is shown in the hypotheses and methodology section. In models D – G, a number of control variables are added to model C each time. Finally, all variables except the 52-week high premium variables are included in model H. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
Constant	0.3991***	0.3466***	0.2099***	0.1903***	0.2381***	0.3188***	0.3163***	0.4294***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 0% - 25%			0.8319***	0.7662***	0.8007***	0.6189***	0.5751***	
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
52-week high 25% - 75%			0.2064**	0.2357***	0.2631***	0.1735**	0.2378***	
			(0.010)	(0.003)	(0.001)	(0.038)	(0.004)	
52-week high >75%			0.0114	0.0123	0.0202	0.0136	0.0187	
			(0.323)	(0.277)	(0.107)	(0.225)	(0.111)	
Distressed target		0.1577***	0.0927***	0.0899***	0.1227***	0.0417	0.0424	0.0848**
		(0.000)	(0.001)	(0.001)	(0.001)	(0.131)	(0.282)	(0.038)
Distressed acquirer		0.0511	0.0303	0.0613*	0.0303	0.0303	0.0528	0.0649
		(0.149)	(0.383)	(0.081)	(0.380)	(0.618)	(0.383)	(0.291)
Distressed target * Distressed acquirer		-0.1144*	-0.1512**	-0.1440**	-0.1464**	-0.1296*	-0.1161*	-0.1182*
		(0.065)	(0.015)	(0.020)	(0.020)	(0.069)	(0.091)	(0.099)
Crisis 2001	0.1016**	0.0365	-0.0282	-0.0185	-0.0284	0.0196	0.0139	0.0719
	(0.020)	(0.430)	(0.554)	(0.700)	(0.544)	(0.705)	(0.794)	(0.187)
Crisis 2007-2009	0.1944***	0.1360**	0.0479	0.0286	0.0418	0.0776	0.0403	0.1214**
	(0.000)	(0.013)	(0.363)	(0.573)	(0.416)	(0.170)	(0.451)	(0.030)
Control variables:								
Cash				0.0556**			0.0109	0.0108
				(0.030)			(0.712)	(0.723)
Stock				-0.0383			-0.0702*	-0.0312
				(0.290)			(0.062)	(0.414)

Tender offer				0.0979***			0.0975***	0.1004***
				(0.000)			(0.001)	(0.001)
LBO				-0.2115***			-0.2208***	-0.2473***
				(0.000)			(0.000)	(0.000)
Hostile				0.0443			0.1366**	0.1296
				(0.528)			(0.044)	(0.134)
Multiple bidders				0.0818			0.0414	0.0302
				(0.129)			(0.337)	(0.535)
Horizontal				-0.0529**			-0.0379	-0.0461*
				(0.019)			(0.116)	(0.064)
Target ROA					0.1363		0.0492	-0.0595
					(0.103)		(0.560)	(0.460)
Target P/E					0.0001		0.0000	0.0001
					(0.400)		(0.768)	(0.381)
Target market/book					-0.0009		-0.0042*	-0.0076***
					(0.698)		(0.065)	(0.001)
Stock price volatility					-0.0137***		-0.0109***	-0.0034
					(0.000)		(0.009)	(0.406)
Leverage					0.0121		0.0666	0.0282
					(0.883)		(0.375)	(0.717)
Acquirer ROA						-0.1325	-0.1464	-0.1829
						(0.440)	(0.391)	(0.306)
Acquirer P/E						-0.0001	0.0001	0.0000
						(0.612)	(0.660)	(0.868)
Acquirer market/book						0.0012	0.0048*	0.0037
						(0.600)	(0.053)	(0.150)
Relative size						-0.2821***	-0.2338***	-0.2605***
						(0.000)	(0.000)	(0.000)
N	1889	1214	1214	1214	1214	874	874	874
Adjusted R-squared	0.016	0.033	0.101	0.129	0.112	0.141	0.174	0.115

2001. For the crisis between 2007 and 2009, significantly higher offer premiums are still found compared to other periods, but the magnitude of these effects has decreased. The offer premiums are now around 13.60% higher in this period, which was 19.44% in the first model. The smaller effects and the lower significance of these effects after including the financial distress dummy variables are as expected, since acquisitions in which one or more distressed firms are involved are more likely to occur in a crisis period. Usually, the target firm will be the distressed firm in the acquisition, as shown by our descriptive statistics as well. The target experiences financial distress in 39% of the sample, whereas only 22% of the acquirers are distressed firms. So, since target firms are more likely to be distressed in crisis periods and since distressed targets get higher offer premiums when the acquirer is a healthy firm, including the financial condition of the target and the acquirer in the model on top of the crisis dummies leads to lower and less significant effects for the crisis dummies. After all, without the distress variables, all of these effects are covered by the crisis dummies. The finding that larger and more significant effects are found for the second crisis period is probably due to the difference in severity and duration of the two crisis periods.

Model C shows that adding the 52-week high premium variables makes both crisis dummies insignificant, which means that no significant effect on the offer premium is found for the market being in a financial crisis when a mergers or acquisition is announced. This holds for all models from D to G as well, in which a number of control variables are added to model C each time. No significant results are found for both crisis dummies in all of these models. However, this does not mean that the offer premiums are not substantially higher in crisis periods. After all, when the 52-week high premium variables are not included in the model, the crisis dummies do show significantly higher offer premiums during financial crises, as shown in model G as well. In this model, all variables except the 52-week high premium variables are included. Here, still no significant results are found for the crisis of 2001, but this is not the case for the crisis between 2007 and 2009. In this crisis, the offer premium is found to be around 12% higher according to this model. These findings make it able to explain why the offer premiums tend to be higher in crisis periods. The higher premiums offered in crisis periods can be explained by the current stock prices of the target firms being further away from their highest point in the last year compared to other periods. In other words, the 52-week high premiums are highest during financial crises, as the majority of firms experience a substantial decline is stock price during a crisis. The descriptive statistics of the sample, provided in table 1, show that the three years with the highest average 52-week high premiums are 2001, 2008 and 2009, which happen to be all years of financial crisis. So, the finding that the offer premiums in mergers and acquisitions are higher in crisis periods could be explained by the finding that the target firms that are acquired during a financial crisis have higher 52-week high premiums, which is found to positively influence the offer premium, as acquirers tend to offer a price close to the highest price of the last year. This explanation however is more applicable to the second financial crisis of the sample than to the first crisis, since the crisis of 2001 is already insignificant before the addition of the 52-week high premium

variables. The crisis of 2001 shows no significant results anymore as soon as the financial condition of the target and the acquirer are included. When both the 52-week high premiums and the financial condition of the firms involved are excluded however, this crisis shows significantly higher offer premiums as well. A possible explanation for the lower significance of the first financial crisis is that the crisis could be not long enough or not severe enough to have the same substantial impact that the second financial crisis has. A difference in severity of the two crisis periods is indicated for example by the condition of the credit market, which remained relatively stable during the first financial crisis, but collapsed during the second crisis.

To check the robustness of the results found, all models of table 6 are done again with a different definition for the crisis periods. Here, the crisis periods are defined with the use of the highest and lowest values of the S&P 500 instead of the NBER. The results of these regressions are shown in Appendix D. These results indicate much lower effects of a financial crisis than the NBER definitions. Only the model with just the two crisis dummies shows significantly higher offer premiums for both crisis periods. None of the other models show any significant effects for both crisis periods. This means that the results found for especially the second financial crisis in table 6 are not very robust to changes in the period defined as crisis period. However, it must be noted that the NBER definitions are seen as much more reliable than the definitions of the S&P 500 values, since the NBER have done research in which multiple factors are taken into account, whereas the S&P 500 definitions are solely based on the S&P 500 values.

Regarding the effects on the offer premium of the 52-week high premium, the financial condition of the target and the acquirer, and all control variables, the results shown in table 6 are nearly the same as the results discussed and explained in the other parts of the study. Robust standard errors are used again in all models to correct for heteroskedasticity in the model. Furthermore, the VIFs are used to find out if multicollinearity is a problem in the models. All VIFs for all models of table 6 are shown in Appendix E. As can be seen in this appendix, all VIFs range somewhere between 1.01 and 4.45. The VIF is therefore again always below both threshold values of 5 and 10, which leads to the conclusion that there is some multicollinearity in the models, but not enough to cause a problem.

5.4.1 The fourth hypothesis

The fourth hypothesis can now be answered, which reads that the offer premiums of acquisitions announced during a financial crisis exceed the offer premiums of acquisitions announced in periods without a crisis. Based on the empirical results, this hypothesis can be confirmed. Generally, the offer premium is indeed found to be significantly higher in periods of financial crisis. When the two crisis periods in the sample period are compared, the crisis that took place between December 2007 and June 2009 according to the NBER is found to have more significant and larger effects on the offer premium. Moreover, the results provide an explanation of the higher offer premiums found during periods of financial crisis. After all, financial crises are found to have no significant effect on the offer

premium when the crisis dummies and the 52-week high premium variables are both included in a regression. This indicates that the offer premiums are higher during financial crises mostly because the 52-week high premiums of the target firms are higher during such crises, and because higher 52-week high premiums are found to have a positive effect on the offer premium.

5.5 Trend in offer premiums

Table 7 provides all results for the regressions performed in an attempt to identify a trend in offer premiums over time in relation to the economic condition of the market. Model A shows how much higher or lower the offer premiums are each year compared to the year 2000. No other factors are taken into account here, as only the year dummies are included in the model. A number of interesting findings are obtained from this model. The first thing, which is quite unexpected, is that the overall level of offer premiums in 2001 is not significantly higher than in the year 2000. Since the majority of 2001 is classified as a financial crisis with both the NBER definition and the S&P 500 definition, you would expect the premiums in this year to be significantly higher, as higher offer premiums are found during financial crises. Furthermore, this model shows that 2009 is the only year in which the offer premiums are significantly higher than the premiums in the year 2000. The second financial crisis still continued during the first half of 2009, but ended then according to the NBER. That the offer premiums are still significantly higher in this year indicates that the impact that financial crises have on offer premiums gets stronger when the crisis goes on for a longer period and does not stop as soon as the crisis is over. This makes sense, as more firms are expected to get into financial trouble when a crisis goes on for a longer period. This financial trouble will cause a decline in stock price for these firms, which leads to higher 52-week high premiums when the firm is acquired somewhere in this period. This in turn, is found to lead to higher offer premiums. The finding of offer premiums getting higher when the crisis continues for a longer period also supports the idea mentioned in the previous section that the crisis of 2001 is found to have substantially lower and less significant effects on the offer premium than the second crisis because of the short duration of this first crisis. After all, the second crisis does not show significantly higher offer premiums in the first year of the crisis as well, as no significantly higher offer premiums are found for the year 2008. Moreover, this model indicates that there does not exist a trend in offer premiums for the months and years leading up to the beginning of a financial crisis. When a trend would exist, the premiums are expected to already move in a certain direction in the period leading up to the crisis. This is not the case here, as the offer premiums are found to be significantly lower than in the year 2000 for every year between 2004 and 2007, with effects of around 15% to 18% for each of these years. Since the second crisis started at the end of 2007, there is no indication of a trend in offer premiums. After all, the premiums would not have been significantly lower in 2007 when a trend would have existed. Finally, regarding the years as from 2012, the offer premiums are found to be quite stable over the years, with some small fluctuations.

Table 7

Regression results: Trend in offer premiums

This table shows the results of the multivariate regressions performed to find if a trend in offer premiums could be identified in relation to the economic condition of the market over time. Model A is a regression with only dummy variables included for each year, where the year 2000 is used as the base year, which means that each year is compared to the year 2000. Model B shows regression (9) as it is illustrated in the hypotheses and methodology section. The variable HY-spread included here shows the high yield spread, which is used as a proxy for the credit market conditions. In models C – F, a number of control variables are added to the regression of model B each time. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F
Constant	0.4811***	0.1366**	0.1161**	0.2046***	0.2874***	0.3301***
	(0.000)	(0.010)	(0.040)	(0.000)	(0.000)	(0.000)
52-week high 0% - 25%		0.7304***	0.6812***	0.7069***	0.6500***	0.6197***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 25% - 75%		0.3330***	0.3486***	0.3809***	0.1685**	0.2334***
		(0.000)	(0.000)	(0.000)	(0.047)	(0.000)
52-week high >75%		0.0165	0.0184*	0.0248**	0.0157	0.0214*
		(0.121)	(0.072)	(0.033)	(0.166)	(0.072)
HY-spread		0.1581***	0.1547***	0.1580***	0.1170**	0.1045**
		(0.004)	(0.004)	(0.003)	(0.027)	(0.042)
Year dummies:						
2001	0.0236	-0.0540	-0.0485	-0.0795	-0.0966	-0.1125*
	(0.650)	(0.289)	(0.329)	(0.109)	(0.120)	(0.061)
2002	0.0151	-0.0813	-0.1013	-0.1142	-0.1511**	-0.1871***
	(0.819)	(0.249)	(0.150)	(0.103)	(0.034)	(0.005)
2003	-0.0175	-0.0359	-0.0418	-0.0835	-0.0263	-0.0608
	(0.734)	(0.494)	(0.426)	(0.119)	(0.700)	(0.364)
2004	-0.1756***	-0.0952**	-0.0917**	-0.1294***	-0.0698	-0.0907
	(0.000)	(0.026)	(0.032)	(0.003)	(0.235)	(0.129)
2005	-0.1849***	-0.1323***	-0.1360***	-0.1688***	-0.1629***	-0.1799***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.002)	(0.000)
2006	-0.1749***	-0.1190***	-0.1217***	-0.1596***	-0.1626***	-0.1898***
	(0.000)	(0.003)	(0.003)	(0.000)	(0.002)	(0.000)
2007	-0.1542***	-0.0908**	-0.1192**	-0.1262***	-0.1317**	-0.1758***
	(0.001)	(0.044)	0.011)	(0.005)	(0.016)	(0.001)
2008	0.0188	-0.1732**	-0.2122***	-0.2193***	-0.1488	-0.2137**
	(0.763)	(0.019)	(0.003)	(0.003)	(0.120)	(0.019)
2009	0.1692**	-0.0483	-0.0683	-0.0748	-0.0735	-0.1056
	(0.026)	(0.507)	(0.337)	(0.301)	(0.364)	(0.169)
2010	-0.0197	0.0095	-0.0300	-0.0315	-0.0085	-0.0410
	(0.689)	(0.852)	(0.557)	(0.542)	(0.893)	(0.515)
2011	-0.0135	-0.0007	-0.0206	-0.0366	0.0069	-0.0222
	(0.808)	(0.989)	(0.694)	(0.481)	(0.940)	(0.804)
2012	-0.0968**	-0.1062*	-0.1313**	-0.1455***	-0.1359**	-0.1855***
	(0.043)	(0.052)	(0.020)	(0.008)	(0.027)	(0.003)
2013	-0.1053**	-0.0072	-0.0338	-0.0452	-0.0338	-0.0664
	(0.032)	(0.876)	(0.467)	(0.332)	(0.586)	(0.287)
2014	-0.0854	0.0096	-0.0048	-0.0143	-0.0142	-0.0191
	(0.127)	(0.854)	(0.927)	(0.783)	(0.837)	(0.768)
2015	-0.0909*	-0.0676	-0.0881*	-0.0810	-0.0894)	-0.1079*
	(0.062)	(0.178)	(0.081)	(0.123)	(0.143)	(0.080)

Control variables:						
Cash			0.0884***			0.0253
			(0.000)			(0.400)
Stock			-0.0444			-0.0765**
			(0.220)			(0.046)
Tender offer			0.0810***			0.0771***
			(0.001)			(0.009)
LBO			-0.1095***			-0.2321***
			(0.000)			(0.000)
Hostile			0.0906			0.1217**
			(0.247)			(0.045)
Multiple bidders			0.0371			0.0484
			(0.353)			(0.264)
Horizontal			-0.0416**			-0.0366
			(0.034)			(0.122)
Target ROA				0.0626		0.0478
				(0.328)		(0.511)
Target P/E				-0.0000		-0.0000
				(0.672)		(0.954)
Target market/book				0.0016		-0.0042*
				(0.421)		(0.056)
Stock price volatility				-0.0197***		-0.0121***
				(0.000)		(0.002)
Leverage				0.0317		0.0644
				(0.596)		(0.437)
Acquirer ROA					0.0125	-0.0574
					(0.921)	(0.658)
Acquirer P/E					0.0000	0.0001
					(0.998)	(0.384)
Acquirer market/book					0.0010	0.0049**
					(0.669)	(0.048)
Relative size					-0.2924***	-0.2389***
					(0.000)	(0.000)
N	1889	1889	1889	1889	874	874
Adjusted R-squared	0.038	0.146	0.175	0.162	0.159	0.195

In model B, the 52-week high premium and the high-yield spread are added to take the condition of the market into account. As discussed earlier, the high-yield spread is used here as a proxy for the condition of the credit market. An increase in the high-yield spread means that the credit market conditions get worse. Model B shows that offer premiums get significantly higher when the credit market conditions get worse. An increase in high-yield spread from 1 to 2 for example is found to lead to an increase in offer premium of around 15.81%. This relation is significant at the 1% significance level. This finding provides a good explanation for the much larger effects found for the second crisis in our sample compared to the first crisis. The difference in effects can be explained by the difference in credit market conditions between the two financial crises. After all, the credit market condition is found to be a significant determinant for the height of the offer premiums, and the credit market was in a much better condition during the first financial crisis than during the second financial crisis. The credit market completely collapsed in the second crisis, which is not the case for the first crisis. The high-yield spread during these two crises illustrates this. After all, the high-yield spread did

not get above 1.45 during the whole year 2001. During the second crisis on the other hand, the high-yield spread had a maximum value of 3.50 and was above 2.00 for more than eight months.

Furthermore, now proxies for the condition of the market are included in model B, the effects found for some of the year dummies change substantially. The years with the most significant change are 2008 and 2009, which is nothing strange, since the condition of the market went through the most fundamental changes in these two years, especially the credit market. The offer premiums are now found to be significantly lower in 2008 compared to the year 2000. This is not a small difference as well, since the model shows around 17.32% lower offer premiums in 2008. This shows that the offer premiums are massively influenced in 2008 by the higher 52-week high premiums for the target firms compared to other years and by the considerably worse credit market conditions. In model A, the influences of the market conditions on the offer premiums appeared to be relatively low in this year, but model B shows that this is not the case. The offer premiums are thus not only affected by the second year of the financial crisis as model A made us believe, but by the first year as well. The offer premiums are massively influenced by the economic conditions in 2009 as well, since the offer premiums are around 16.92% higher than in the year 2000 according to model A, but are no longer found to be significantly higher in model B. No significant changes between model A and B are found for the year 2001. As explained before, the lower influence of the market conditions in the first crisis compared to the second crisis are mostly due to the better credit market conditions in the first crisis. Furthermore, model B supports the finding of model A that no trend in offer premiums exists in the period leading up to the financial crisis. After all, the years 2004 to 2007 still show very similar results to each other. In fact, no trend in offer premiums is found at all. The premiums are only found to be significantly influenced by the market conditions; in particular the conditions of the credit market. Offer premiums increase when the credit market gets worse and decrease when the credit market improves.

A number of control variables are added to the regression in each of the models from C to F. When there would be a clear pattern in the offer premiums over the years in which they closely follow the condition of the market, one would expect that the differences among the years would more or less disappear entirely when all other influential factors besides the market condition, like the relative size of the firms, are controlled for as well. So, as more control variables are added, similar effects should be found for all year dummies. After all, the differences in offer premiums over the years would then be explained by the variables included in the model, among which thus the condition of the market. However, this is not found in the models of table 7. Although the differences between the years do get smaller, as can be seen by more years having significantly negative effects, more years nearing the significance level, and all of the effects having a negative sign, the effects found are still not the same for each year when every variable is included in model F. Especially the offer premiums in the year 2000 are still significantly higher than most years for some reason, which is the reason significantly lower effects are found for most years instead of insignificant effects. All in all, these models give no

reason to think that there exists a real trend in offer premiums in relation to the condition of the market. However, the offer premiums are found to be substantially influenced by significant changes in the market conditions, as the 52-week high premium variables and the high-yield spread are very significant in all models.

Regarding the effects of the control variables on the offer premium, very similar results are shown again as the ones from the first four hypotheses. Another thing that corresponds to the previous hypotheses is that robust standard errors are used again in all models of table 7 to correct for heteroskedasticity. Furthermore, multicollinearity is tested again. None of the models of table 7 have a problematic amount of multicollinearity, as all VIFs are somewhere between 1.02 and 2.91.

5.5.1 The fifth hypothesis

An answer to the fifth and final hypothesis can now be formulated, as all empirical results are presented and analysed. This hypothesis reads that the offer premium follows a clear pattern over the years in relation to the economic condition of the market. Based on the results described above, it is concluded that this hypothesis has to be rejected. A clear pattern in offer premiums over the years is not found. However, substantial changes in the economic condition of the market do significantly influence the offer premiums according to our models. When the general market collapses, more firms get financially distressed and the majority of the firms in the market will experience a substantial decline in their share price. Both of these things are found to lead to significantly higher offer premiums through larger differences with the highest stock price of the target firm of the most recent year. Moreover, these effects appear to get larger when the crisis continues for a longer period of time, although no binding evidence is found for this. Furthermore, the offer premiums are found to have a significant relation with the condition of the credit market. Small differences in these conditions do not have a large effect on the offer premiums. However, when the credit market conditions get considerably worse, which was the case in the second financial crisis in the sample, or considerably better, the offer premiums are found to get significantly higher or significantly lower respectively.

5.6 Conclusion

A number of relations are found in this study between certain variables and the height of the offer premiums. Firstly, the 52-week high premium of the target firm is found to have a significant positive non-linear relation with the offer premium, where the smallest 52-week high premiums have the greatest marginal effects on this offer premium. This evidence supports the idea that acquirers offer a price close to the highest price of the last year. Furthermore, no significant relation is found between concentrated ownership and the offer premium when the size of the target relative to the acquirer is taken into account. Another finding is that distressed targets get significantly higher offer premiums than healthy targets when the acquirer is a healthy firm. The results show that these higher offer premiums are explained by the fact that these distressed targets experience a substantial decline in

stock price due to the financial difficulties, since the significant relation disappears when the 52-week high premium variables are included as well. The offer premiums are significantly lower according to our results when the target and the acquirer are both financially distressed. No significantly different offer premiums are found when a distressed firm acquires a healthy target. Furthermore, the offer premiums are significantly higher during financial crises, especially for the crisis that took place between 2007 and 2009. Like the effects of distressed targets, the effects of financial crises can be explained by the large declines in the stock prices during financial crises according to the results. Finally, no clear trend in offer premiums is found, but the offer premiums are found to be substantially influenced by the economic condition of the market, especially by the condition of credit market.

Chapter 6 Conclusion

This chapter consists of three parts. First, a summary of the main results of the study is provided, which ends with a clear answer to the research question. Subsequently, the limitations of this study are discussed, followed by a number of recommendations for future research.

6.1 Summary of the results

General market conditions fluctuate a lot over the years. Sometimes, the market conditions deteriorate for a longer period of time, which is known as a financial crisis. These changing market conditions can have major consequences, but in what way do changes in these conditions affect the offer premiums in mergers and acquisitions? The main goal of this study is to be able to answer this based on empirical results. The precise research question is as follows: *To what extent are offer premiums influenced by the different economic and financial conditions during and around years of financial crises?*

Five hypotheses are testes with the use of multivariate regressions to eventually be able to formulate an answer to this question. A sample of 1889 mergers and acquisitions between 2000 and 2015 is used for this. Firstly, it is tested whether a positive relation exists between the 52-week high premium of the target and the offer premium. The 52-week high premium is the difference between the highest stock price of the target of the last 52 weeks prior to the announcement and the stock price of the target 30 days prior to the announcement. A significant non-linear relation is found between these variables. This indicates that acquirers use the target's highest stock price of the last 52 weeks as a reference point when determining the offer price and tend to offer a price close to this 52-week high price. Here, the smallest 52-week high premiums have the largest marginal effects on the offer premium. The marginal effects of 52-week high premiums between 25% and 75% are significant as well, but these effects are lower than for the 52-week high premiums below 25%. The 52-week high premiums above 75% are found to have no significant marginal effects in most regressions.

Subsequently, the influences of the ownership structure on the offer premium are researched. In general, the ownership structure of the target firm does not significantly influence the height of the offer premium. Although concentrated ownership in general and concentrated ownership by individual investors are initially found to lead to significantly higher offer premiums, these relations disappear when there is controlled for the relative size of the target compared to the acquirer. Only one significant relation is found in this case, which is that the offer premium is significantly higher when a foreign corporation is one of the controlling shareholders of the target firm.

In the third part of the empirical analysis, it is tested if the financial condition of the target and the acquirer in mergers and acquisitions influence the height of the premiums offered. The results show that the financial condition does have a significant influence. On top of that, the results provide an explanation for this influence as well. The premiums are significantly higher for distressed targets compared to healthy targets when the acquirer is a healthy firm. These higher offer premiums can be

explained by distressed targets having higher 52-week high premiums than healthy targets, since adding the 52-week high premiums removes the significance of the distress variable. These higher 52-week high premiums lead to higher offer premiums, as acquirers offer a price close to the 52-week high price. When the acquirer is a distressed firm as well however, the offer premiums are significantly lower, probably due to the fact that both firms need the acquisition to reduce their financial difficulties. Furthermore, no significantly different offer premiums are found between mergers and acquisitions in which a distressed firm acquires a healthy target and mergers and acquisitions in which a healthy firm acquires a healthy target.

Subsequently, it is tested if the offer premiums are higher in mergers and acquisitions that are announced during financial crises than in mergers and acquisitions that are announced in periods without a financial crisis. The results show that the offer premiums are indeed significantly higher during financial crises, although the crisis that took place from 2007 to 2009 is found to have a greater impact on the offer premiums than the crisis of 2001. On top of that, the same explanation as for distressed targets is found for the higher offer premiums during financial crises. This explanation consists of the majority of firms experiencing a substantial decline in stock price during a financial crisis, which leads to higher 52-week high premiums for the target firms. These higher 52-week high premiums cause the offer premiums to be significantly higher during a financial crisis.

Finally, tests are performed to check if a clear trend in offer premiums over time exists in relation to the economic condition of the market. The results provide no evidence for the existence of such a trend. However, the economic condition of the market does influence the offer premiums, in particular the condition of the credit market. The high-yield spread, which is used as a proxy for the condition of the credit market, has a significant positive relation with the offer premiums. This means that offer premiums get significantly higher when the condition of the credit market deteriorates. This significant relation between the credit market condition and the offer premium explains the difference in impact between the crisis of 2001 and the crisis that occurred between 2007 and 2009.

Now the results are summarized, it is time to formulate an answer to the research question. Differences in economic and financial conditions affect offer premiums in multiple ways. Financial distress at the target firm leads to higher offer premiums when the acquirer is a healthy firm and to lower offer premiums when the acquirer is a distressed firm as well. Although no clear trend in offer premiums is found, the economic condition of the market is found to influence the offer premiums in the way that offer premiums are higher when the condition of the market is so bad it is classified as an economic crisis. Moreover, there is a significant relation between the condition of the credit market and the offer premiums. A deterioration of the credit market condition leads to significantly higher offer premiums. The higher offer premiums for the combination of distressed targets and healthy acquirers and for mergers and acquisitions announced during an economic crisis can both be explained by the 52-week high premiums being higher for the targets in these takeovers than the 52-week high

premiums of other targets. These higher 52-week high premiums lead to higher offer premiums, as acquirers tend to offer a price close to the highest stock price of the target firm of the last 52-weeks.

6.2 Limitations of the study

Like all studies, this study has a number of limitations. Firstly, only one definition of the offer premium in mergers and acquisitions is used in the entire study. It is always good to check the robustness of the results by using multiple definitions of variables. Using multiple definitions increases the reliability of the results. Using only one definition for the offer premium thus limits the reliability of the results found.

A second limitation of this study is that financial crises do not have clear starting and ending dates. Although the NBER provides a solid definition for the crisis periods and a robustness check is done as well with the highest and lowest values of the S&P 500, it remains unclear when these periods really started and when they ended. After all, these two definitions already do not correspond in the starting and ending dates of the financial crises. The influence that a financial crisis has on the offer premium can be substantially different than found in this study when a slightly longer or shorter period is used. This has to be kept in mind when interpreting the results of this study.

Furthermore, the study lacks a good proxy for the degree of ownership concentration at the target firm. The total ownership of all shareholders that own at least 5% of the shares of the target is used for this, but this is not the best proxy. This proxy is mainly used because it is the easiest one to apply, but it would have been better to use the Lerner index or the total ownership of the three largest shareholders for example. These two proxies better reflect the degree of ownership concentration and are therefore more commonly used.

6.3 Recommendations for future research

For future research about this topic, it would be interesting to take a look at the economic crises that occurred before the year 2000. Since the credit market condition appears to cause the considerable differences in the effects found between the crisis of 2001 and the crisis of 2007 to 2009, it would be good to find out if the condition of the credit market is found to have the same impact in the other crisis periods. Moreover, the impact of the credit market condition and the reason for this significant impact could be studied more closely at the same time, which could provide further insights into the influences of this credit market condition.

A second recommendation for future research is to study the influences of the financial condition of the firms involved in mergers and acquisitions more thoroughly. In this study, only dummy variables indicating whether the firms were financially distressed at the time of the announcement are included. It would be insightful to distinguish between firms that are distressed for multiple years and are close to bankruptcy and firms that are only financially distressed for less than a year. The effects on the offer premiums could be more pronounced for firms close to bankruptcy than

for firms that only recently got financially distressed. However, if the offer premium is really only affected through the higher 52-week high premiums of distressed targets, the magnitude of distress would not make a difference. The only thing that matters then is the 52-week high premium.

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Appendices

Appendix A: Breusch-Pagan test for heteroskedasticity

This table shows the results of the Breusch-Pagan test for heteroskedasticity for all models of table 3. The models in this table are thus the same as the models in table 3, in which the results are shown for the relation between the 52-week high premium and the offer premium. This Breusch-Pagan test is done for all performed regressions throughout the study, but the results are only shown for these models, since the outcome is the same in every model. The null hypothesis of this test is homoskedasticity, which means that the error variance is constant. The alternative hypothesis is heteroskedasticity. The presence of ***, **, or * behind the value of Chi^2 shows if the result is significant at the 1%, 5%, and 10% significance level respectively.

	Model A	Model B	Model C	Model D	Model E	Model F
Chi^2	656.67***	655.38***	517.14***	653.39***	138.76***	128.58***
Prob > Chi^2	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Appendix B: The influence of concentrated ownership after controlling for target size

This table shows the results of an extra regression that is performed to show the impact of the inclusion of the size of the target and the acquirer on the relation found between concentrated ownership and the offer premiums. The dependent variable in this model is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The variable *concentrated* is a dummy variable that shows if the ownership at the target firm is concentrated. The variable *target size* indicates the size of the target and is defined as the logarithm of the market value of equity of the target firm. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A
Constant	0.7537***
	(0.000)
52-week high 0% - 25%	0.6676***
	(0.000)
52-week high 25% - 75%	0.2922***
	(0.000)
52-week high >75%	0.0119
	(0.269)
Concentrated	0.0273
	(0.152)
Target size	-0.0419***
	(0.000)
N	1889
Adjusted R-squared	0.152

Appendix C: Robustness check with total ownership percentages instead of dummy variables

This table presents the results of the regressions performed as robustness checks for the influences of the ownership structure of the target firm on the offer premiums. All dummy variables used initially in table 4 are now replaced with the total ownership variables. In model A, the 52-week high premium variables are included together with the variable *total ownership*, which shows the total ownership of all shareholders with at least 5% stake in the target firm. A number of control variables are added to this regression each time in models B - E. In model F, the variables *corporation*, *individual*, *institution* and *foreign* are included instead of the total ownership. The first three variables show the total ownership of all corporations, individuals and institutions with at least 5% ownership of the target firm respectively. Foreign shows the total ownership of foreign controlling shareholders. In model G, only an interaction term is added to this regression, which indicates the total ownership of only the corporations that are foreign controlling shareholders. Finally, in models H – K, a number of control variables are added to model G each time. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J	Model K
Constant	0.1971***	0.1687***	0.2412***	0.2923***	0.3074***	0.1960***	0.1964***	0.1701***	0.2398***	0.3014***	0.3143***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 0% - 25%	0.7458***	0.6948***	0.7361***	0.6346***	0.5932***	0.7462***	0.7464***	0.6949***	0.7374***	0.6146***	0.5776***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 25% - 75%	0.3715***	0.3843***	0.4128***	0.1991**	0.2552***	0.3724***	0.3732***	0.3851***	0.4136***	0.1972**	0.2516***
	(0.000)	(0.000)	(0.000)	(0.018)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.018)	(0.002)
52-week high >75%	0.0179	0.0203*	0.0253**	0.0131	0.0183	0.0184*	0.0186*	0.0209**	0.0259**	0.0134	0.0183
	(0.100)	(0.052)	(0.034)	(0.245)	(0.121)	(0.091)	(0.088)	(0.047)	(0.030)	(0.239)	(0.125)
Total ownership	0.0784*	0.0529	0.0436	0.0856	0.0426						
	(0.097)	(0.254)	(0.356)	(0.164)	(0.485)						
Corporation						-0.0687	-0.0929	-0.0904	-0.1269	0.1475	0.0513
						(0.489)	(0.354)	(0.357)	(0.208)	(0.337)	(0.747)
Individual						0.1293*	0.1312*	0.1180	0.0875	0.1278	0.1151
						(0.084)	(0.079)	(0.111)	(0.236)	(0.237)	(0.300)
Institution						0.0732	0.0774	0.0448	0.0458	0.0361	-0.0062
						(0.215)	(0.194)	(0.443)	(0.443)	(0.623)	(0.932)
Foreign						0.2217	0.0287	-0.0109	0.0272	-0.0505	-0.0654
						(0.308)	(0.912)	(0.966)	(0.917)	(0.857)	(0.803)
Foreign corporations							0.4315	0.3463	0.4616	1.1522	1.1068
							(0.379)	(0.473)	(0.347)	(0.261)	(0.236)

Control variables:											
Cash		0.0815***			0.0105			0.0786***			0.0098
		(0.000)			(0.723)			(0.000)			(0.740)
Stock		-0.0386			-0.0706*			-0.0395			-0.0695*
		(0.290)			(0.063)			(0.280)			(0.068)
Tender offer		0.0991***			0.1007***			0.0999***			0.0981***
		(0.000)			(0.000)			(0.000)			(0.000)
LBO		-0.1112***			-0.2213***			-0.1113***			-0.2200***
		(0.000)			(0.000)			(0.000)			(0.000)
Hostile		0.0957			0.1272*			0.1074			0.1256*
		(0.211)			(0.064)			(0.153)			(0.070)
Multiple bidders		0.0348			0.0457			0.0368			0.0466
		(0.396)			(0.295)			(0.376)			(0.289)
Horizontal		-0.0419**			-0.0348			-0.0408**			-0.0315
		(0.032)			(0.142)			(0.037)			(0.188)
Target ROA			0.0524		0.0423				0.0499		0.0361
			(0.407)		(0.550)				(0.429)		(0.611)
Target P/E			-0.0001		-0.0000				-0.0001		-0.0000
			(0.405)		(0.850)				(0.390)		(0.792)
Target market/book			0.0010		-0.0040*				0.0009		-0.0042*
			(0.621)		(0.076)				(0.650)		(0.065)
Stock price volatility			-0.0176***		-0.0113***				-0.0176***		-0.0114***
			(0.000)		(0.006)				(0.000)		(0.006)
Leverage			0.0316		0.0721				0.0337		0.0750
			(0.582)		(0.349)				(0.558)		(0.328)
Acquirer ROA				-0.0176	-0.0911					-0.0195	-0.0879
				(0.886)	(0.465)					(0.874)	(0.486)
Acquirer P/E				-0.0000	0.0001					-0.0000	0.0001
				(0.955)	(0.477)					(0.964)	(0.491)
Acquirer market/book				0.0013	0.0051**					0.0012	0.0051**
				(0.568)	(0.038)					(0.600)	(0.040)
Relative size				-0.2846***	-0.2362***					-0.2792***	-0.2313***
				(0.000)	(0.000)					(0.000)	(0.000)
N	1889	1889	1889	874	874	1889	1889	1889	1889	874	874
Adjusted R-squared	0.127	0.158	0.140	0.140	0.175	0.127	0.127	0.158	0.141	0.144	0.178

Appendix D: Crisis dummies with S&P500 definitions

This table provides the results of the regressions that are performed as robustness checks for the findings of higher offer premiums in periods of financial crisis compared to periods in which there is no such crisis. Here, the crisis periods are based on the highest and lowest values of the S&P 500 instead of the NBER. Model A is a regression with only two dummy variables for the two periods of financial crises that occurred in our sample period. In model B, the variables that indicate the presence of financial distress at the firms involved in the takeovers are included as well. Subsequently, the 52-week high premium variables are added in model C. In models D – G, a number of control variables are added to the list of variables from model C each time. Finally, all variables except the 52-week high premium variables are included in model H. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The first number behind each variable is the coefficient of that variable in the model; the number between parentheses shows the p-value. The presence of ***, **, or * behind a coefficient indicates statistical significance at the 1%, 5%, or 10% significance level respectively. Robust standard errors are used.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
Constant	0.4055***	0.3520***	0.2164***	0.1964***	0.2418***	0.3290***	0.3243***	0.4436***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52-week high 0% - 25%			0.8263***	0.7627***	0.7987***	0.6124***	0.5723***	
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
52-week high 25% - 75%			0.2294***	0.2553***	0.2839***	0.2093**	0.2683***	
			(0.004)	(0.001)	(0.000)	(0.011)	(0.001)	
52-week high >75%			0.0139	0.0142	0.0222*	0.0172	0.0219*	
			(0.231)	(0.213)	(0.077)	(0.133)	(0.066)	
Distressed target		0.1601***	0.0909***	0.0886***	0.1208***	0.0407	0.0412	0.0854**
		(0.000)	(0.001)	(0.001)	(0.001)	(0.140)	(0.291)	(0.036)
Distressed acquirer		0.0522	0.0291	0.0600*	0.0294	0.0307	0.0529	0.0671
		(0.142)	(0.406)	(0.090)	(0.396)	(0.617)	(0.389)	(0.285)
Distressed target * Distressed acquirer		-0.1122*	-0.1552**	-0.1479**	-0.1493**	-0.1313*	-0.1168*	-0.1159
		(0.071)	(0.012)	(0.016)	(0.017)	(0.063)	(0.087)	(0.110)
Crisis 2001 S&P 500	0.0733*	0.0098	-0.0674	-0.0513	-0.0578	-0.0700	-0.0590	-0.0003
	(0.062)	(0.821)	(0.131)	(0.248)	(0.196)	(0.120)	(0.191)	(0.995)
Crisis 2007-2009 S&P 500	0.1292**	0.0920	0.0049	-0.0171	-0.0047	0.0150	-0.0269	0.0610
	(0.012)	(0.123)	(0.929)	(0.751)	(0.931)	(0.806)	(0.645)	(0.322)
Control variables:								
Cash				0.0517**			0.0055	0.0052
				(0.046)			(0.851)	(0.865)

Stock				-0.0392			-0.0689*	-0.0318
				(0.285)			(0.072)	(0.416)
Tender offer				0.1014***			0.1041***	0.1064***
				(0.000)			(0.000)	(0.000)
LBO				-0.2104***			-0.2270***	-0.2528***
				(0.000)			(0.000)	(0.000)
Hostile				0.0453			0.1382**	0.1249
				(0.535)			(0.046)	(0.133)
Multiple bidders				0.0832			0.0479	0.0356
				(0.122)			(0.264)	(0.460)
Horizontal				-0.0526**			-0.0361	-0.0459*
				(0.022)			(0.132)	(0.066)
Target ROA					0.1393*		0.0567	-0.0657
					(0.096)		(0.500)	(0.415)
Target P/E					0.0001		0.0000	0.0001
					(0.463)		(0.879)	(0.440)
Target market/book					-0.0009		-0.0042*	-0.0080***
					(0.697)		(0.066)	(0.001)
Stock price volatility					-0.0133***		-0.0107**	-0.0028
					(0.000)		(0.010)	(0.494)
Leverage					0.0160		0.0747	0.0341
					(0.846)		(0.324)	(0.665)
Acquirer ROA						-0.1291	-0.1449	-0.1882
						(0.452)	(0.393)	(0.294)
Acquirer P/E						-0.0001	0.0001	0.0000
						(0.542)	(0.725)	(0.909)
Acquirer market/book						0.0012	0.0048**	0.0035
						(0.588)	(0.049)	(0.165)
Relative size						-0.2861***	-0.2413***	-0.2722***
						(0.000)	(0.000)	(0.000)
N	1889	1214	1214	1214	1214	874	874	874
Adjusted R-squared	0.007	0.028	0.102	0.130	0.114	0.142	0.176	0.107

Appendix E: Variance Inflation Factors (VIF) for the results of hypothesis 4

This table shows the Variance Inflation Factor of all variables for all models of table 6, in which the results are shown regarding the effects that financial crises have on the offer premiums. The models shown here are thus exactly the same as in table 6. The dependent variable in all models is the offer premium, defined as the percentage difference between the offer price from SDC and the stock price of the target 30 calendar days prior to announcement. The VIFs shown here give an indication of the amount of multicollinearity in the models. Generally, it is concluded that a problematic amount of multicollinearity is present in the model when one or more VIFs in the model is higher than 5 or higher than 10.

	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
52-week high 0% - 25%			1.84	1.85	1.85	1.85	1.88	
52-week high 25% - 75%			2.33	2.37	2.44	2.28	2.44	
52-week high >75%			1.41	1.42	1.63	1.43	1.65	
Distressed target		1.39	1.50	1.51	2.49	1.45	2.52	2.44
Distressed acquirer		2.69	2.70	2.77	2.71	4.36	4.45	4.43
Distressed target * Distressed acquirer		3.30	3.38	3.39	3.43	3.83	3.91	3.88
Crisis 2001	1.01	1.02	1.09	1.10	1.10	1.09	1.12	1.06
Crisis 2007-2009	1.01	1.01	1.08	1.10	1.09	1.09	1.13	1.06
Control variables:								
Cash				1.52			1.61	1.61
Stock				1.46			1.49	1.46
Tender offer				1.18			1.19	1.19
LBO				1.02			1.03	1.03
Hostile				1.02			1.05	1.04
Multiple bidders				1.02			1.06	1.06
Horizontal				1.04			1.07	1.06
Target ROA					2.09		2.17	1.88
Target P/E					1.41		1.47	1.46
Target market/book					1.18		1.19	1.21
Stock price volatility					1.24		1.38	1.24
Leverage					1.03		1.08	1.07
Acquirer ROA						2.31	2.41	2.38
Acquirer P/E						1.40	1.47	1.47
Acquirer market/book						1.05	1.22	1.13
Relative size						1.10	1.31	1.30
N	1889	1214	1214	1214	1214	874	874	874