Investor Sentiment and Labor: A U.S. Perspective

Jonathan van der Meer
Erasmus University Rotterdam

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Abstract

I investigate whether US investor sentiment affects the US labor market. I search for an effect at both the industry-, as well as at the firm-level. Analyzing a panel of 28 US manufacturing industries, I find that in normal times (non-recession years), higher sentiment leads to lower employment growth and higher real wages growth in more externally dependent industries. I find the opposite to hold for years during which the US is in an economic recession. These results, inconsistent with the theoretical model considered, seem to be driven by industries with a moderate elasticity of labor supply. Industries with (in)elastic labor supply have employment (real wages) growth which is positively affected by sentiment, while real wages (employment) growth is unaffected. Analyzing a large panel of US firms, I find that higher sentiment leads to lower employment growth in more externally dependent firms whose shareholders have a better ability to monitor managers. This decrease is less pronounced in recession years. In additional analyses, I find that sentiment has a stronger effect on the employment growth of firms issuing equity. I also find that sentiment leads to larger employment growth in more active firms, which are those firms that have invested more in the previous year. Finally, I find some evidence that, at least in normal times, employment growth of firms whose stock prices are more sensitive to sentiment is impacted to a larger extent by sentiment than that of firms whose stock prices are less sensitive to sentiment. Overall, the results provide further support for the view that sentiment has real effects.

Contents

1. Introduction

This thesis investigates the effect which investor sentiment, a belief about future cash flows and investment risks that is not justified by the facts at hand, has on labor in the United States. It introduces a concept hailing from the field of behavioral finance to the research into the impact of finance on the real economy. It studies how the deviation of reality from the idea that prices of assets in the financial markets fully reflect rational expectations, has an impact on employment and wages.

So far, academics have performed a limited amount of research into the effect of sentiment on labor. McLean and Zhao (2014) find that employment is less sensitive to Tobin's Q and more sensitive to cash flow during recessions and low sentiment periods. They establish a correlation between employment growth and investor sentiment, but do not investigate the existence of a causal effect of the latter on the former.

Montone and Zwinkels (2015) argue that higher investor sentiment should lead to firms issuing more equity and raising their investments. This would lead to an increase in the demand for labor, therefore increasing both the level of employment, as well as wages. The authors support their arguments with a modified version of the theoretical model considered by Pagano and Pica (2012) and investigate some of the predictions derived from this model. They find that higher sentiment among US investors leads to higher employment growth in manufacturing industries dependent on external finance situated in countries with greater financial development (Montone and Zwinkels, 2015). The authors also find that higher sentiment among US investors leads to higher real wages growth in externally dependent manufacturing industries situated in countries with greater financial development and which have a relatively inelastic supply of labor. They therefore establish a causal relationship between US investor sentiment and both employment as well as real wages abroad.

I make an attempt to add to this existing literature on the relationship between investor sentiment and labor by investigating whether US investor sentiment also has an impact on employment and wages in the US itself. This investigation consists of two sets of analyses. Firstly, I use the data and methods of Montone and Zwinkels (2015) to determine whether there is evidence for a causal effect of US investor sentiment on both employment and wages in a panel of 28 US manufacturing industries. The data consists of elements from the 2006 version of the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) database and a number of self-created variables. As done by Montone and Zwinkels (2015), who conjecture that investor sentiment might exacerbate the effect of crises on the labor market, I search for evidence of such a dark side of finance in the US. I do this by investigating whether higher sentiment in the prior year has a negative effect on

both employment and wages if the US economy finds itself in a recession in the following year.

In the second set of analyses, I consider a large panel of firms extracted from the Compustat database. I combine firm-level financial data with data from various other sources to find whether any causal effect of sentiment on employment found at the industry level is also observable at the US firm level and to determine whether there are sources of firm heterogeneity which influence this relationship. While potentially very interesting, I could not attempt a similar investigation into the effect of sentiment on wages at the firm-level, due to a lack of the required data on wages.

In the cross-industry investigation, I find that higher US sentiment leads to lower (higher) employment growth and higher (lower) real wages growth in more externally dependent industries in a subsequent normal (economic recession) year. While the results for real wages growth are in line with the findings of Montone and Zwinkels (2015) and the predictions of the theoretical model that they introduce, the results for employment growth are the opposite of what is to be expected. I argue that two additional mechanisms through which sentiment might influence labor, both having a larger effect in more externally dependent firms (and by extension, industries), could be instrumental in generating the observed results. Firstly, sentiment might, in normal times, cause an upwards shift in the labor supply curve as employees observe (perceive) an increase in their net worth as a result of sentiment-inflated asset prices. This leads to employees requiring a higher wage for the same amount of work hours, due to the diminishing marginal utility of wealth. Secondly, sentiment might, again in normal times, lead to timed productivity-enhancing replacement investments by some firms, which could cause a sentiment-induced downwards shift of the labor demand curve of those individual firms, and, by extension, of the industries to which these firms belong. However, the observation that results inconsistent with the model considered by Montone and Zwinkels (2015) are only found in the subsample of firms with a moderate elasticity of labor supply (determined based on the level of human capital of the industry) shed doubt on the existence of these alternative mechanisms.

Analyzing the panel of firms, I find evidence that higher sentiment leads to lower employment growth in more externally dependent and more highly monitored firms in a subsequent non-recession year. This negative effect on the employment growth differential is decreased, but not fully absent, if an economic recession follows the year of higher sentiment. These results are in line with the findings for the analyses of the full industry-level sample. In additional analyses, I attempt to create a further understanding of the relationship between sentiment and employment, mostly by looking for evidence of the existence of cross-sectional patterns. I find evidence that sentiment leads to larger employment growth in more active

firms compared to in less active firms. I also find that the effect of sentiment on the employment growth differential between highly externally dependent firms whose shareholders have a good ability to monitor the managers and less externally dependent firms whose shareholders have a worse ability to monitor the managers, is larger in the subsample of firms which partake in a seasoned equity offering in the prior year. This is to be expected, as these are the firms supposed to be acting on sentiment according to two of the mechanisms through which sentiment might affect labor discussed in this thesis. In further analyses, I find some evidence that the relationships found at the industry-level for industries with a moderate and low elasticity of labor supply are also found among firms within these industries. This is not found for industries with a high elasticity of labor supply. Finally, I find some evidence that, at least in normal times, the employment growth differential of firms differing in their external dependence and the monitoring ability of their shareholders is more impacted by sentiment for firms whose stock prices are more sensitive to sentiment than for firms whose stock prices are less sensitive to sentiment.

Despite several limitations, foremost among them that I do not find overwhelming evidence that the results of the firm-level analysis are robust to other ways of specifying external dependence, I conclude that there is evidence for the existence of a causal effect of US investor sentiment on labor in the US. This provides support for the belief that sentiment of the financial markets can have real effects. However, there is no certainty regarding the mechanisms through which it is that sentiment influences labor. It is therefore imperative that further research, both theoretical and empirical, is performed to further our understanding of the likely complex ways through which sentiment affects labor, to make it clear what the exact mechanism(s) behind the results reported in this thesis is (are).

This thesis proceeds as follows. In Section 2, I discuss the literature relevant to my research. The methods employed in the cross-industry and firm-level analyses are discussed in Section 3, while the data considered are discussed in the fourth section. The results of my investigations are reported on in Section 5. Section 6 concludes.

2. Literature Review

The research in this thesis is part of the field trying to establish how finance impacts the real economy, and specifically, employment. I make an attempt to create a better understanding of the effect which investor sentiment, an important concept hailing from the field of behavioral finance, has on employment. This thesis therefore partakes in the ongoing effort of academics to determine how irrational elements in the behavior of our species, affect our lives.

This section firstly delves into the existing literature on the effect of finance on economic growth and employment. Then I introduce the concept of investor sentiment and examine the existing literature on the effect that it has on financial markets. Following that, I conduct an inquiry into the literature attempting to find how investor sentiment influences firm decisions, most importantly, those relating to employment. Having discussed the relevant literature, I discuss the goals of my thesis and present several predictions regarding the findings of my research. Finally, I discuss a potential alternative mechanism through which sentiment might affect labor.

2.1. Related Literature

In order to investigate what effect finance has on the real economy, many researchers have analyzed the relationship between financial development and economic growth. Much of the early research in this field analyzed country-level data and has only established an association between the extent of financial development and economic growth. An example is the paper by King and Levine (1993A), where the authors construct an endogenous growth model in which financial systems mobilize savings to finance the most promising productivity-enhancing activities (as evaluated by the market). This diversifies the risk associated with innovative activities and improves the probability of successful innovation, which accelerates economic growth. In their empirical analysis, the authors find that financial systems and the extent of their development seem to be important for productivity growth and economic development. These findings are supported by a second, more empirically extensive paper by the same authors, in which they find that four different measures of financial development are strongly associated with real per capita GDP growth, the rate of physical capital accumulation and improvement of efficiency with which said physical capital is employed (King and Levine, 1993B). Demirgüç-Kunt and Maksimovic (1996) argue that an undeveloped public equity market may lead to firms having to pass-up growth opportunities. They find a positive relation between financial development and the proportion of firms whose growth exceeds the one prompted by self-financing, indicating that there is a positive relation between financial development and economic growth. Using two different measures which might proxy for the extent of financial development, Levine and Zervos (1998) find that it can predict economic growth, capital accumulation and productivity improvements. The trio of Beck, Levine, and Loayza (2000A) find that legal and accounting reforms strengthening creditor rights, contract enforcement and accounting practices can boost financial development, whose exogenous' component can in turn accelerate economic growth. Controlling for biases associated with simultaneity and unobserved country-specific effects, the same authors find,

in a different paper, a positive link between financial intermediary development and both real per capita GDP growth and total factor productivity growth (Beck, Levine, and Loayza, 2000B). In a more recent paper, Michelacci and Schivardi (2013) find that countries with more access to business risk diversification opportunities (which should be increasing with the extent of financial development) exhibit higher productivity growth, value added growth, investment growth and business creation rates.

It is clear that the country-level research consistently establishes a positive association between financial development and economic growth. In attempts to find whether there is also a causal relationship, some researchers have turned to investigating changes in financial market regulation, which provide natural experiments useful in establishing causality. In one such papers, Jayaratne and Strahan (1996) find that liberalizing US intrastate bank branching reforms lead to increases in the rates of real per capita growth in income and output. Analyzing the effect of changes in state-level banking regulation on economic growth during the period 1900 to 1940, Dehejia and Lleras-Muney (2007) find that some forms of financial development (bank branching) accelerate growth, while other forms (deposit insurance) hinder it. This finding adds an important nuance towards the claim that financial development has a positive relationship with growth: while financial development can contribute to growth, the institutional mechanism through which financial development is induced seems to matter for whether there is a positive or negative effect.

The last line of research investigating the relationship between financial development and economic growth considers industry-level data. The most important paper in this category was authored by Raghuram Rajan and Luigi Zingales. In their paper, Rajan and Zingales (1996) attempt to establish a causal relationship between financial development and economic growth, by investigating one of the rationales posed by academics in this field for why financial development might affect economic growth. The idea is that financial development reduces the cost of external finance to firms, leading to more investment (mostly by firms having a shortage of internal funds) and, consequently, growth of the economy. To find whether this is the case, the authors investigate whether industrial sectors that are relatively more in need of external finance develop disproportionally faster in countries with more developed financial markets. This would imply that financial development facilitates economic growth. Analyzing a sample covering many industries in a large number of countries throughout the 1980s, the authors find evidence supporting an affirmative answer to the question that they raise (Rajan and Zingales, 1996). They have therefore possibly found what they dub the "smoking gun" in the debate about causality in the relationship between financial development and economic growth. While not without its critics (e.g. Fisman and Love (2007)), the paper has made an important contribution to this field.

Having established that much of the research supports a positive relation between financial development and economic growth, I turn to discussing the literature investigating the effect that financial development has on employment. A very important contribution to this field is a paper by Pagano and Pica published in 2012. In their paper, the authors find that standard measures of financial development are associated with greater employment growth in non-OECD countries, but not associated with labor productivity or real wages growth (Pagano and Pica, 2012). They do not find such results for OECD countries, which indicates that financial development may only have an impact on employment up to a certain level. The authors also touch upon a possible 'dark side' of finance with the finding that during banking crises, employment grows less in industries that are more dependent on external finance and those located in the more financially developed countries. This last finding adds another element to the literature investigating the effects of financial crises on employment, which has established that there is an increased inability of attracting external finance during crises (Campello et al., 2011), which leads to less investments and even makes firms (especially financially constrained ones) cut in employment (Campello, Graham, and Harvey, 2010; Milanez, 2012). This negative employment effect seems to be most pronounced in small firms operating in industries with high financing needs (Duygan-Bump, Levkov, and Montoriol-Garriga, 2014). Next to having a possible dark side present during times of crisis, finance might also have a less desirable effect on employment outside of crisis periods, as found by Schäfer and Steiner (2014), who report that a high level of financial development affects the employment of firms with low managerial capital (proxied by firm size) negatively, while firms with high managerial capital benefit from a more developed financial system.

Note that other papers, such as the ones by Braun and Larrain (2005) and Kroszner, Laeven, and Klingebiel (2007), have established that a dark side of finance impacting the real economy in times of crisis might also be observed outside of the labor market. The former authors find, by analyzing production growth rates for 28 manufacturing industries in 111 countries between 1963 and 1999, that those industries which are more dependent on external finance are hit harder during recessions. This differential response to recessions across industries is more dispersed in countries with poorer financial contractibility and when assets are softer or less protective of financiers (Braun and Larrain, 2005). The authors of the latter paper analyze the effect of banking crises on growth of the value added of industries. They find that those industries which are highly dependent on external finance tend to experience a substantially greater contraction of value added during a banking crisis in countries with a more developed financial system than in less developed ones (Kroszner, Laeven, and Klingebiel, 2007).

As with research investigating the relationship between financial development and eco-

nomic growth, papers delving into the relationship between financial development and employment have often considered natural experiments, which were oftentimes created by changes in regulation of financial markets. Bertrand, Schoar, and Thesmar (2007) find that deregulation of the French banking industry in the 1980s is associated with faster employment growth in more bank-dependent sectors. In the US, bank deregulation seems to also have had a positive effect on employment growth, especially in industries with higher labor intensity (Boustanifar, 2014). The effect which bank deregulations have on wages is not so clear. Boustanifar (2014) finds no effect, while Beck, Levine, and Levkov (2010) find that the deregulations have led to a larger demand for, and consequently, higher wage rates of, unskilled workers.

As the literature on the effect of financial development on economic growth and employment has been discussed, attention is now given to the concept central to this paper: investor sentiment. Investor sentiment is a belief about future cash flows and investment risks that is not justified by the facts at hand (Baker and Wurgler, 2007). It signifies the optimism or pessimism of investors about securities in general and is an indication of their propensity to speculate (Baker and Wurgler, 2006). It leads to demand for securities which is not justified by fundamentals (see Baker (2009) for the derivation of a model of demand and supply for securities when there is investor sentiment) and can cause mispricing. Much research has been done on the effect which investor sentiment has on financial markets. It has been connected with overvaluation of markets and low cumulative long-run stock returns as prices revert to intrinsic values (Brown and Cliff, 2005). The mispricing, surprisingly, has been found to be caused mostly by institutional investors and not by individual investors, the group of investors which theory predicts to be the effectors (DeVault, Sias, and Starks, 2014). Other papers have established that investor sentiment predicts the cross-section of stock returns in many different countries, and even across countries (Baker, Wurgler, and Yuan, 2010), seeming to have a larger effect on securities whose valuations are highly subjective and which are difficult to arbitrage (Baker and Wurgler, 2006; Baker and Wurgler, 2007; Hribar and McInnis, 2012). Some have proposed to consider such securities as having a high sentiment beta (Glushkov, 2006). The impact of sentiment on stock returns has been found to be higher in countries which have less market integrity and which are culturally more prone to herd-like behavior and overreaction (Schmeling, 2009). The return predictability of sentiment has been found to be most pronounced in an expansion state, when investors' optimism increases (Chung, Hung, and Yeh, 2012). Investor sentiment has also been found to predict high market trading volume when at extreme levels (Tetlock, 2007) and to increase positive feedback trading (Kurov, 2008). Positive sentiment has been found to lead to a downward revision of the market price of risk (Verma and Soydemir, 2009) and sen-

timent traders have been found to undermine the positive mean-variance tradeoff (Yi and Yuan, 2010). More support for the latter is found by Antoniou, Doukas, and Subrahmanyam (2015), who find that the security market line accords with the capital asset pricing model by taking on an upward slope in pessimistic sentiment periods, but that it is downward sloping during optimistic periods. The latter is likely to be caused by noise traders being more bullish about high beta stocks when sentiment is optimistic, while behaving more in accordance with rationality in pessimistic periods. Investor sentiment also seems to play a (possibly significant) role in several known asset pricing anomalies, boosting the returns of long-short anomaly investment strategies (Stambaugh, Yi, and Yuan, 2011; Antoniou, Doukas, and Subrahmanyam, 2013; Hao, Chou, and Ko, 2014). Investor sentiment has even been shown to play a significant role in the effect of monetary policy on the stock market (Kurov, 2010).

It is clear that sentiment has a large influence on financial markets through the effect that it has on the actions of investors. Academics have also investigated whether investor sentiment has an effect on firm decisions. Research has mostly inquired into the effect of sentiment on financing and investment decisions. Regarding financing decisions, research finds that equity (debt) issuance increases (decreases) with sentiment and that this effect on capital structure is persistent (Baker and Wurgler, 2002; Lamont and Stein, 2005; Cai, Jiang, and Lee, 2013). In analyzing the effect of sentiment on firms' investment decisions, academics have identified at least three possible ways for sentiment to influence investments. The first way is proposed by Morck et al. (1990). They argue that managers may infer information from stock prices. Sentiment-influenced prices can therefore cause managers to infer different expected cash flows and discount rates, which influences investment decisions. This theory is supported by the finding that a shift from high to low sentiment increases the discount rate of firms, regardless of whether they have relatively good or poor investment opportunities (Schaller, 2012). The second path through which sentiment can influence investments is introduced by Polk and Sapienza (2009), who argue that management caters to investors to increase short-term firm value by investing more when the firm is overpriced (as a result of sentiment) and invest less when the firm is undervalued. This leads firms to invest in negative NPV investments when overpriced and to refrain from investing in positive NPV investments when undervalued. The last avenue through which sentiment has been found to influence firms' investment decisions is posited by Baker, Stein, and Wurgler (2002), who find that stock prices have a stronger impact on the investment of "equity-dependent" firms (which need external equity to finance marginal investments). Undervaluation resulting from sentiment can therefore lead to such a firm not investing, as management prefers to wait (or even has to wait) until the undervaluation has disappeared (effectively decreasing the cost of

external equity) before issuing new equity and investing the proceeds. The aforementioned three papers, together with others, establish that firms' decisions with respect to a variety of investment "types" (e.g. CAPEX, R&D, SG&A including advertising (Luo, Jiang, and Cai, 2014) and M&A (Lamont and Stein, 2005)) seem to be influenced by investor sentiment, also in other countries than the US (Chirinko and Schaller, 2001).

Seeing that investor sentiment seems to affect firms' investment decisions, one would expect employment to be affected by investor sentiment as well, as many types of investments lead to changes in the required workforce. The effect of investor sentiment on employment has been a relatively unexplored topic, having been covered by only two papers. It does however merit further investigation. The first paper written on this topic was authored by McLean and Zhao (2014). They conduct an analysis of the effect of investor sentiment on employment growth at the firm-level. The authors establish that employment growth is less sensitive to Tobin's Q and more sensitive to cash flow during periods of low investor sentiment. They also find that financially dependent firms have higher employment growth during high sentiment years, but not during low sentiment years. This indicates that the availability of external finance has an effect on the employment growth of financially dependent firms, but not on that of less dependent firms. The analyses do not establish a causal relationship, however the paper's results are an important contribution to the literature.

The second paper in this field was written by Montone and Zwinkels (2015). The authors investigate the effect which investor sentiment has on employment growth and real wages growth. They introduce a modified version of the theoretical model outlined in (Pagano and Pica, 2012) to help derive their predictions. The model describes, in a two-industry, n-country setting, how a manager/entrepreneur raises funding for a risky project with a Cobb-Douglas production function (constant returns to scale) through equity financing, in a world where there is asymmetric information regarding the probability of default of the project and where investors (including both arbitrageurs as well as noise traders) are biased in their estimation of this probability due to sentiment. Investors cannot verify the firm's cash flow, which creates a moral hazard issue: the manager can appropriate part of the firm's cash flows for himself. The extent to which the manager can privately benefit from the firm's cash flows is a decreasing function of the level of development of the financial system, which puts limits on the appropriation due to, for example, the possibility of shareholders to monitor the manager. The manager maximizes his expected private benefit, given the production function of the firm and the firm's capital (equal to the initial money of the firm and the money to be raised from outside investors) with respect to the amount of labor to be hired. The level of optimal labor is therefore a function of the capital of the firm. The authors then show that within this framework, sentiment affects the amount of capital due

to influencing the amount of funds which can be raised from outside investors. Through this then they show that, as long as the elasticity of labor supply is finite, the optimal level of employment for the project is affected by sentiment. When the model is in equilibrium, sentiment increases both employment as well as wages in the country where the project is executed, which does not necessarily have to be the country where the manager's firm is situated and money is raised. For both employment and wages, the impact of sentiment is an increasing function of the ability of shareholders to monitor the manager (positively influenced by the financial development of the country in which the project is situated) and the external dependence of the firm, the latter of which is determined by its profitability, as more profitable firms are those that rely more on the stock market in the model.

Important to note is that this growth in the number of employees leads to a sub-optimal level of employment: the increase in employment growth is not driven by an improvement in the economic outlook or production technology, and therefore is inefficient and productivity decreasing. As a result, the employment is likely to be of a frictional nature.

Based on the outcomes of the model, the authors make three predictions. Firstly they predict that an increase in US investor sentiment should lead to higher employment growth worldwide, especially in externally dependent industries situated in countries with a high level of financial development. The second prediction is similar, but relates sentiment to growth in real wages worldwide. Lastly, the authors predict that the effect of investor sentiment on employment growth (real wages growth) will be large (small) if the elasticity of labor supply is high and vice versa.

In order to test their predictions, Montone and Zwinkels (2015) analyze the effect of lagged US investor sentiment on employment and real wages growth in 28 manufacturing industries in 113 countries (excluding the US) for the period 1970 to 2003. Considering lagged sentiment allows for an investigation into a possible causal effect of sentiment on labor, as the reverse (investor sentiment increases because of future decreases in labor productivity abroad) seems unlikely. Due to the inclusion of country-year fixed effects, the authors cannot investigate the direct effect of sentiment on employment and real wages growth, as sentiment is solely time-varying. Instead, they look into the effect which sentiment has on the employment and real wages growth differentials between industries with a high external dependence situated in countries with a high level of financial development and industries with low external dependence situated in countries with a low level of financial development. The authors find that higher investor sentiment in the US leads to the expected increase in the employment growth differential, but do not find an effect for real wages growth.

The authors then investigate through which of the two potential channels, US foreign direct investments or US portfolio investments, US investor sentiment affects employment

abroad. They find evidence that it does so through the former. Following this inquiry, the authors investigate several potential cross-sectional patterns and find, among other results, that the effect of investor sentiment on the employment growth differential is only present in countries with below-median scores on several different measures of employee protection. This indicates that investor sentiment might only lead a manager to hire more employees if these employees are not costly or hard to lay off, supporting the idea that sentiment-driven overhiring represents frictional employment.

In an effort to find evidence to confirm their second and third prediction, Montone and Zwinkels (2015) identify and investigate subsamples differing in their elasticity of labor supply. They predict that one might find an effect of sentiment on the real wages growth differential if only countries with a low elasticity of labor supply are considered. The authors argue that the elasticity of labor supply is dependent on the level of human capital of the firm (higher human capital would lead to labor supply being less elastic due to better salary negotiation positions of employees), and therefore analyze subsamples of industries situated in countries with a high and low level of human capital. Here they find that the positive effect of investor sentiment on the employment growth differential only seems to be present in countries with a low level of human capital, whereas a positive effect of investor sentiment on the real wages growth differential is found in countries with a high level of human capital (i.e. low elasticity of labor supply).

Finally, the authors investigate whether there is evidence of a dark side of finance. They conjecture that a financial crisis in a given country may have a stronger negative impact on employment, especially in externally dependent industries in financially developed countries, conditional on the level of US sentiment in the previous year. The "easy hiring" that follows high sentiment might translate into "easy firing" under financial downturns. This would mean that sentiment increases labor instability. The authors find evidence for this: a financial crisis prompts a highly significant drop in the employment growth differential between industries with a high level of external dependence in highly financially developed OECD companies and industries with a low level of external dependence in less financially developed OECD countries if one conditions on the previous year's level of US investor sentiment. The authors also find that a banking crisis following a period of high investor sentiment leads to a significant decrease in employment growth in countries with a large amount of US FDI. These results provide further support for the idea that there is a flipside to financial development.

2.2. Goals and Predictions

Having discussed the existing literature investigating the effect of investor sentiment on employment, I address what the research in this thesis attempts to add to the field. I attempt to contribute to the existing literature on the relation between investor sentiment and employment through employing two distinct methods. Firstly, I perform an industry-level analysis similar to the one conducted by Montone and Zwinkels (2015). This analysis focuses solely on the US, as an investigation into a possible causal effect of US sentiment on employment in US industries has not yet been attempted. Important to note is that this analysis is far less rigorous than the one on which it is based, stemming from it being an investigation of solely one country, which provides for a limited set of characteristics to take into account in the analysis. The cross-industry analysis can be seen as a preliminary investigation for the second method in which this thesis will attempt to add to the existing literature.

The second way in which my research attempts to add to the literature is by including an investigation into the effect of investor sentiment on employment at the firm-level in the US. This creates the possibility to control for many firm characteristics, and thus isolate the effect of sentiment on employment. The goal is to find whether any causal effect of sentiment on employment found at the industry level is also observable at the US firm level and to find whether there are sources of firm heterogeneity which influence this relationship. As of yet, such a study has not been conducted.

Important to note for both analyses is that I include year fixed effects. I therefore do not investigate the direct effect of sentiment on employment growth and real wages. In the cross-industry analysis, I investigate whether sentiment causes changes in the employment and real wages growth differentials between highly externally dependent industries and little externally dependent industries. In the firm-level analysis, I investigate whether sentiment causes a change in the employment growth differential between firms with a high dependence on external finance whose shareholders are well able to monitor the managers and firms with a low dependence on external finance whose shareholders are not well able to monitor the managers.

Based upon the model developed by Montone and Zwinkels (2015), and their findings, I would predict the following to be found in the cross-industry investigation:

1. An increase in US investor sentiment should lead to an increase in the employment growth differential between US industries with a high and a low dependence on external finance in the following year, as the US is a financially developed country.

2. An increase in US investor sentiment should lead to a higher real wages growth differential between US industries with a high and a low dependence on external finance in the following year, as the US is a financially developed country.

3. The effect of US investor sentiment on the employment and real wages growth differentials is negative if the US economy is in a recession in the following period.

The predictions with regards to the findings of this thesis' firm-level analysis would be as follows:

1. An increase in US investor sentiment should lead to an increase in the employment growth differential between firms with a high dependence on external finance whose shareholders are well able to monitor the managers and firms with a low dependence on external finance whose shareholders are not well able to monitor the managers, in the following year.

2. The effect of sentiment on the employment growth differential is negative if the economy is in a recession in the following period.

However, creating expectations in this way ignores another effect which sentiment might have on the labor market.

2.3. Alternative Mechanism through which Sentiment might affect Labor

In their theoretical model, Montone and Zwinkels (2015) do not model labor supply, instead assuming it to be a generic upwards sloping function. One could argue that the supply of labor in the US could be a function of sentiment as well, meaning that a change in sentiment causes the supply curve of labor to shift in (Hours Worked, Wage) space. The potential mechanism through which sentiment might affect labor supply, discussed next, has its basis in sentiment being a known determinant of asset prices.

Increases in sentiment generally lead to the prices of many assets, namely, stocks, being inflated. Many investors will therefore see the value of their portfolio of assets increase as a result of an increase in sentiment, especially those assets which might be hard to value and/or difficult to arbitrage. As a consequence of positive sentiment, employees (all, in some way, investors in assets) might therefore see their net worth increase, due to their investments (savings invested in securities, defined contribution pension plans etc.) having increased in value. This increase in net worth might lead some employees to decide to work less, or require a higher wage for the same amount of hours worked, due to the decreasing marginal utility of

wealth decreasing their optimal level of hours worked at the current wage level. It could even be that the extreme optimism of high sentiment might lead some employees to perceive an increase in one of their most valuable assets: their human capital. Such a perceived increase in the value of their human capital means that some employees would think that their future earnings (potential) will be higher than it was before (pre-sentiment increase). This could lead to some of them deciding to work less in the present (i.e. an income effect, based on a perceived value increase). Based on the above, one could therefore expect the labor supply curve to shift upwards if sentiment increases. A downward shift seems unlikely. It is possible that this upwards shift of the labor supply curve as a result of an increase in US sentiment is only strongly present in the US itself. While there are some spillovers of sentiment-induced asset price changes to other countries, the effect of US investor sentiment on the labor supply in other countries could still be rather limited. Moreover, the US is quite exceptional in the amount of wealth invested by the public in the stock market, meaning that sentiment-induced inflation of asset prices (predominantly of stocks) could have a relatively large effect on the net worth of US employees compared to the effect that it would have on the net worth of employees in other countries. The sentiment-induced shift in the labor supply curve might therefore be more pronounced in the US. This could explain why Montone and Zwinkels (2015) find no indication of labor supply in countries other than the US being affected by changes in US investor sentiment. Note that they do not explicitly investigate this.

In the context of the analyses in this thesis, it is important to determine whether there could also be a differential effect of sentiment on the labor supply curve shift between more and less externally dependent firms (and by extension, industries) and between firms whose shareholders are more and less able to monitor the manager. The latter seems unlikely, but the former could be the case. Baker and Wurgler (2006) find that the stock prices of firms with a high or low level of usage of external finance, which is linked to the external dependence of the firm, are more heavily impacted by changes in sentiment than firms with a moderate level of external finance. Highly externally dependent firms might therefore see their stock prices rise more as a result of sentiment compared to stock prices of firms with a moderate level of external dependence. This would serve to increase the (perceived) net worth of employees of externally dependent firms to a larger extent (e.g. through the value of investments in own-company stock or perceived human capital value inflation) and could therefore lead to a larger shift in the labor supply curve of such firms compared to moderately externally dependent firms. One would expect to also observe this pattern at the industry level. The supply curve shift might also be larger for highly dependent firms compared to firms with a very low external dependence. Firstly, this could be the case if the effect of sentiment on the stock prices of highly externally dependent firms is larger

than for firms with a low level of external dependence, as is the case with highly versus moderately externally dependent firms. Secondly, it could be that employees of firms with a low external dependence are aware that their employers are likely to be in distress, the reality of which dampens their personal positive exuberance (serves as a reality check) and lets them be less influenced by the sentiment of the overall market in choices relating to their employer. Through these two mechanisms then, it could be that the labor supply curves of more externally dependent firms (and by extension, industries) experience a more pronounced shift as a result of an increase in sentiment.

A sentiment-induced upwards shift of the labor demand curve would lead to an increase in both employment as well as wages, affecting externally dependent firms more. Both the employment and real wages growth differentials between more and less externally dependent firms would therefore be expected to increase. However, if the labor demand curve shift is joined by an upwards shift of the labor supply curve, which again is larger in magnitude in externally dependent firms, the real wages growth differential will experience an even larger positive widening, while the positive effect on the employment growth differential is partly, or even fully, negated. The upwards shift in the labor supply curve could even lead to the total effect of sentiment on the employment growth differential becoming negative. Whether the employment growth differential increasing effect outweighs the decreasing effect depends on the relative magnitude of the shifts in, and the elasticities of, the labor supply and demand curves of more and less externally dependent firms. One would expect this to extend to industries as well.

One would expect that the upwards shift in the labor supply curve resulting from high sentiment in normal times, which is more pronounced in externally dependent firms, is reversed in times of a recession. This might be because employees realize that their previous exuberance with regards to for example their future earnings capacity, or the value of their investments, was unfounded. It could also be that they might fear that a fall in asset prices (i.e. their net worth) is imminent. The labor supply curve might then drop down to where it was before the rise in sentiment, or potentially even overshoot if employees overreact. This downwards shift in the supply curve for a firm would lead to an increase in the amount of employment and a decrease in real wages paid. Considering that the downwards pressure on the labor supply curve is likely to be more pronounced in more externally dependent firms, a recession following a period of high investor sentiment would entail an increase in the employment growth differential and a decrease in the real wages growth differential between more and less externally dependent firms. Again, this would likely apply to industries as well.

The consideration that sentiment might also affect the supply of labor could be a potential

explanation if if I find results which are the opposite of what the theoretical model predicts. Later on in this thesis, it will become clear whether there is indeed some evidence for this to be the case.

3. Methodology

This section details the methods used in the cross-industry and firm-level analyses.

3.1. Cross-Industry Analysis

The methods used to extend the research of Montone and Zwinkels (2015) to the US are akin to those employed in their paper. The cross-industry analysis therefore consists of estimating panel regressions of employment growth and real wages growth on a set of regressors. To maximize the comparability of my results to theirs, I use the same data when possible. The main regressions are specified as follows:

$$y_{it} = \beta_1 Share_{it-1} + \beta_2(S_{t-1} \times ED_i) + u_i + u_t + \epsilon_{it} \tag{1}$$

Where y_{it} represents two dependent variables in industry i at time t: growth in employment and real wages growth. Nominal values have been transformed into real values using the US Producer Price Index for All Commodities. $Share_{it-1}$ is the industry's share of y_{it} in the total manufacturing sector in the previous year. $Share_{it-1}$ is important to include as it allows for controlling for the convergence effect across industries over time. S_{t-1} indicates the US investor sentiment in the previous year, defined as the lagged index of investor sentiment created by Baker and Wurgler (2006), which has been orthogonalized to several business cycle indicators. ED_i is the reliance on external finance of firms in industry i, based on the measure developed for different manufacturing industries by Rajan and Zingales (1996) (the RZ value). It equals the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average). u_i are industry fixed effects and u_t are year fixed effects. These fixed effects are included to control for any industry or year fixed effect in the panel data. The choice for these types of fixed effects was made based on both economic reasoning, as well as statistical analysis. This is discussed further in the results section. White standard errors are used in each regression. The main difference with this baseline specification compared to the one employed by Montone and Zwinkels (2015) stems from my cross-industry analysis considering only one country, the US. The country-level measure of financial development

and country-year fixed effects can therefore not be used, having been replaced by nothing for the former and year fixed effects for the latter.

This thesis also searches for more evidence of the existence of a dark side of finance. To this end, regressions of the following form are estimated:

$$\begin{aligned} y_{it} = \beta_1 Share_{it-1} + \beta_2(ED_i \times Crisis_t) + \beta_3(S_{t-1} \times ED_i) + \\ \beta_4(S_{t-1} \times ED_i \times Crisis_t) + u_i + u_t + \epsilon_{it} \end{aligned} \tag{2}$$

Where $Crisis_t$ is a dummy variable, taking on the value of one for years during which the US is in an economic recession. Crises were chosen to be defined as economic recessions, even though Montone and Zwinkels (2015) consider banking/financial crises, for two reasons. Firstly, the US has a market-based financial system. Economic recessions are therefore likely to be a more relevant measure of times during which US firms will have trouble financing their operations, which would be disruptive to all firms. Secondly, there is only one financial crisis year (1988, according to the list of banking crises created by Laeven and Valencia (2010)) in the period analyzed in the cross-industry investigation, which leads to interaction terms including a financial crisis dummy not being estimated, but dropped from the regressions. It is therefore also by necessity that I consider economic recessions instead of financial crises.

3.2. Firm-Level Analysis

The methods used to conduct the investigation into the effect of sentiment on employment growth at the firm-level are similar to those employed in the industry-level analysis. The estimated regressions are of the form shown in equation 3.

$$\begin{aligned} GEMP_{ft} = \beta_1 ED_{ft-1} + \beta_2 MA_{ft-1} + \beta_3(ED_{ft-1} \times MA_{ft-1}) + \beta_4(S_{t-1} \times ED_{ft-1}) + \\ \beta_5(S_{t-1} \times MA_{ft-1}) + \beta_6(S_{t-1} \times ED_{ft-1} \times MA_{ft-1}) + \\ \beta \times X + u_f + u_t + \epsilon_{ft} \end{aligned} \tag{3}$$

Where $GEMP_{ft}$ represents the growth in employment at time t for firm f, calculated as the percentage growth in the number of employees (in thousands) as reported by the company (EMP in Compustat). ED_{ft-1} is the dependency on external finance of firm f at time t - *1*, defined as a firm's score on the Kaplan and Zingales (1997) (KZ) index of financial constraints. Dedicated paragraphs below explain the method used to calculate this score and give the reason for why the KZ index is considered as a suitable measure of external dependence. MA_{ft-1} is a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the previous

year, and represents the ability of shareholders to monitor the firm and thereby limit the manager's ability to appropriate a part of the firm's profits. Again, dedicated paragraphs below detail why this specific measure was chosen and why I operationalize it as I do. S_{t-1} again is defined as the lagged orthogonalized index of investor sentiment created by Baker and Wurgler (2006). X is a vector of other potentially relevant, lagged control variables included in analyses of the robustness of the results obtained with the baseline specification. u_f and u_t are respectively firm and year fixed effects. Standard errors are clustered by firm. Why these specific dimensions of fixed effects were chosen and the decision to include cluster-robust standard errors was made, is discussed in the results section.

As done by Baker, Stein, and Wurgler (2002), I calculate the KZ index score for each firm-year as a linear combination of several ratios. This is done in accordance with the following equation:

$$KZ_{ft} = -1.002\frac{CF_{ft}}{A_{ft-1}} - 39.368\frac{DIV_{ft}}{A_{ft-1}} - 1.315\frac{C_{ft}}{A_{ft-1}} + 3.139LEV_{ft} + 0.283Q_{ft} \qquad (4)$$

Where CF_{ft} is firm f's cash flow at time t, calculated by adding depreciation (DP) to earnings before extraordinary items (IB). A_{ft-1} are the total assets of firm f lagged one period. DIV_{ft} is the amount of cash dividends that the firm f has paid over period t, equal to the sum of dividends paid to common and preferred shareholders (DVC and DVP). C_{ft} is the cash balance of firm f at time t (CHE). LEV_{ft} is a measure of a firm's leverage, equal to the ratio of long-term debt (DLTT) plus the short-term portion of long-term debt (DLC) to the sum of long-term debt, the short-term portion of long-term debt and total Stockholders' Equity (SEQ). Q_{ft} is a measure of Tobin's Q, defined as the market value of assets over the book value of assets (AT). The market value of assets is calculated by removing the book value of equity (sum of shareholder's equity and balance sheet deferred taxes, respectively the CEQ and TXDB data items from Compustat) from the sum of the market value of equity (price per share at fiscal year-end times the total number of common shares outstanding, respectively the PRCC_F and CSHO data items from Compustat) and book value of assets. As advised by Baker, Stein, and Wurgler (2002), I Winsorize the different elements (at the ratio level) included in the KZ score at the 1st and 99th percentile.

One of the advantages of using the KZ index score in the firm-level analysis over considering the RZ measure of external dependence used in the cross-industry analysis to proxy for firm-level external dependence, is that the former is firm-specific and time-variant, whereas the RZ measure is constant and measured at the industry-level. One can expect there to be significant intra-industry differences in the external dependence of firms and that this changes over time. One of the disadvantages is that the aforementioned equation to estimate

a firm's KZ index score has been created using data only of firms belonging to manufacturing industry. The exact coefficients in equation 4 might therefore be less suitable to quantify the external dependence of non-manufacturing firms, although this has not been mentioned as an issue by Baker, Stein, and Wurgler (2002). A second disadvantage of the KZ index is that its time-varying nature might lead it to capture a substantial amount of noise, which is avoided to some extent with the RZ measure. A third disadvantage is that the KZ index is a measure of the financial constraints of a firm, which is not entirely the same as a firm's dependence on external finance. However, Baker, Stein, and Wurgler (2002) find that the KZ index is also a good measure of a firm's equity dependence, which is a concept closely related to a firm's external dependence. One could even argue that the KZ index being a measure of equity dependence, rather than the broader external dependence, makes it even more relevant for the investigations in this thesis. Due to this observation and the aforementioned advantages, I consider the KZ index to be a suitable measure for the firm's dependence on external finance.

The rationale for considering analyst coverage as a proxy for the monitoring ability of shareholders is that managers of firms being covered by analysts will have a more difficult time to wastefully spend company funds (e.g. through so-called empire building) or otherwise appropriate a part of the firm's profits for themselves, as they are being watched closely by influential professionals who publish their opinion on the firm widely. Analyst coverage can therefore be seen as improving the ability of shareholders to monitor the firm. A dummy variable was chosen over a measure incorporating the amount of estimates for two reasons. Firstly, the distinction between any coverage by analysts and no coverage at all is expected to be more indicative of the difference in monitoring ability of shareholders than the degree to which firms are covered by analysts, which is expected to be more of a reflection of firm size. Secondly, an analyst coverage dummy variable allows for more intuitive interpretation of the results.

The first six terms in equation 3 form the elements of the baseline regressions. In analyses of the robustness of the results of this baseline regression, I add several control variables, which might be important "real" determinants of employment growth, to the regressions. The variables considered are firm size, Tobin's Q, cash flow generation, cash reserves and sales growth. Each variable is included in first lag form in the regressions. Firm size, Tobin's Q, cash flow and cash balance are covariates commonly considered to capture a lot of otherwise unobserved firm heterogeneity (Milanez, 2012) and are therefore staples to include in regressions analyzing firm decisions. As such, similar variables (although at times operationalized differently) have been included in analyses of firms' employment decisions before, and will therefore be considered as control variables in my analyses (Milanez, 2012; Duygan-

Bump, Levkov, and Montoriol-Garriga, 2014; McLean and Zhao, 2014). Sales growth is considered as a control variable as it needs to be made clear that any significant effect of sentiment on employment growth is not due to sentiment being a proxy for the real economy affecting the firm (e.g. demand for the firm's products having increased, leading to a larger demand for employees).

Size is defined as the log of total assets (AT in Compustat). Tobin's Q is the same as the one used in calculating the KZ index for each firm-year observation. This also holds for cash flow, however, here it is scaled by total capital of the previous year, which is defined as the total net property, plant and equipment (PPENT). This cash flow measure is similar to the one employed by Polk and Sapienza (2009). Cash reserves are defined as the firm's cash and short term investments (CHE) scaled by total assets. Sales growth is defined as the percentage growth in net sales.

As is done in the cross-industry analysis, I search for more evidence of a dark side of finance in the firm-level analysis as well. Equation 5 depicts the general form of these regressions:

$$\begin{aligned} GEMP_{ft} = {} & \beta_1 ED_{ft-1} + \beta_2 (ED_{ft-1} \times Crisis_t) + \beta_3 MA_{ft-1} + \\ & \beta_4 (MA_{ft-1} \times Crisis_t) + \beta_5 (ED_{ft-1} \times MA_{ft-1}) + \\ & \beta_6 (ED_{ft-1} \times MA_{ft-1} \times Crisis_t) + \beta_7 (S_{t-1} \times ED_{ft-1}) + \\ & \beta_8 (S_{t-1} \times ED_{ft-1} \times Crisis_t) + \beta_9 (S_{t-1} \times MA_{ft-1}) + \\ & \beta_{10} (S_{t-1} \times MA_{ft-1} \times Crisis_t) + \beta_{11} (S_{t-1} \times ED_{ft-1} \times MA_{ft-1}) + \\ & \beta_{12} (S_{t-1} \times ED_{ft-1} \times MA_{ft-1} \times Crisis_t) + \beta \times X + u_f + u_t + \epsilon_{ft} \end{aligned} \tag{5}$$

Where $Crisis_t$ again is a dummy variable with the value one for years during which the US is in an economic recession. The vector X again includes other potentially relevant control variables, some of which might be interacted with the recession dummy, included in investigations of the robustness of the results.

4. Data

In this section I describe the data used to analyze the effect of investor sentiment on labor in the US. The reason that the US is analyzed is manifold. Firstly, the US is the only country for which a widely accepted measure of investor sentiment is available (Baker and Wurgler, 2006; Baker and Wurgler, 2007; Baker, Wurgler, and Yuan, 2010). Secondly, the availability of relevant data — predominantly at the firm-level — is highest for the US. Lastly, previous research on the effect of investor sentiment on employment has either analyzed what

the causal effect of US investor sentiment is on industries in other countries (Montone and Zwinkels, 2015) or has investigated an association between sentiment and employment growth in firms in the US, without establishing whether there is a causal relationship (McLean and Zhao, 2014). As this thesis attempts to extend the findings of these previous papers — respectively by partly replicating industry-level research results for the US and by more explicitly analyzing the effect of investor sentiment on employment at the firm level — it makes sense to stick to analyzing data on the US.

I start with introducing the measures of investor sentiment and crises. Following that, I describe the data used in the cross-industry analysis. Finally, I discuss the data used in the analysis of the effect of investor sentiment on labor at the firm level.

4.1. Investor Sentiment

The measure of investor sentiment considered in this thesis is the yearly index of investor sentiment developed by Malcolm Baker and Jeffrey Wurgler (2006), which covers the period 1965 to 2010 and can be downloaded from the website of Jeffrey Wurgler[1]. This measure of investor sentiment is a composite index, constructed by taking the first principal component of a number of proxies for investor sentiment suggested in previous works. Each of the six proxies for investor sentiment — the closed-end fund discount; the NYSE share turnover; the number of and average first-day returns on IPOs; the equity share in new issues; and the dividend premium — has first been orthogonalized to several macroeconomic indicators, before taking their first principal component to construct the index. These macroeconomic indicators are the growth in the industrial production index, the growth in consumer durables, nondurables and services and a dummy variable for NBER recessions. The advantage of orthogonalizing each investor sentiment proxy before taking their first principle component is that this allows one to distinguish between a common sentiment component and a common business cycle component. In other words, it allows one to identify, for example, when the number of IPOs is high for *no* good reason by removing business cycle variation (Baker and Wurgler, 2006). The final index is standardized with a mean of zero and a standard deviation equal to one.

As proposed by Montone and Zwinkels (2015), investor sentiment is included in a lagged form in the analyses, as this allows for an investigation into a causal effect of investor sentiment on employment. This is so as a situation of reverse causality (future changes in the US labor market affect current US investor sentiment) is unlikely. This is supported by the findings of Montone and Zwinkels (2015): higher US sentiment predicts an increase in

[1] http://people.stern.nyu.edu/jwurgler/data/Investor_Sentiment_Data_v23_POST.xlsx

(inefficient) employment in many countries. That a future decrease in labor productivity causes investors to become exuberant about the stock market in the present seems quite unlikely. The reverse story also seems unlikely if one considers the possible relation between sentiment and labor supply: it would not make sense for the financial markets to become exuberant in anticipation of employees deciding to require a higher salary for working the same amount of hours in the future. Overall then, including sentiment in lagged form seems to allow for an investigation of a causal relationship between sentiment and the labor market.

4.2. Recessions

In order to find for more evidence of a dark side of finance, I investigate whether the effect of investor sentiment on the labor market differs during crises. As discussed in the literature review, research has found that both financial/banking crises as well as economic recessions are linked to a possible negative effect of finance on the real economy. Seeing that the US is a market-based economy, and due to a lack of financial crises years in the time-period considered for the cross-industry analysis, I focus on investigating economic recessions. I consider the list of recessions reported by the National Bureau of Economic Research[2]. As the recessions are reported on a quarterly basis while my analyses consider data of a yearly frequency, I define crisis years as those years where the US has experienced an economic recession during any quarter of the year.

4.3. Cross-Industry Analysis

The data used for the investigation into the effect of US investor sentiment on the labor market at the level of US industries were extracted from a dataset graciously provided by Dr. Montone, which merges the 2006 version of the UNIDO INDSTAT-3 database with a number of self-created variables, such as an industry's reliance on external finance. The UNIDO INDSTAT-3 database contains yearly industrial statistics (e.g. number of employees, total value added) of multiple industries in a large number of countries. The database covers the years 1963 to 2004. For the US, data are available for the majority of industries from 1963 to 2002, but all observations for the year 1996 are missing. In my analyses, I only consider the data from 1966 onwards. This is as the sentiment index is included in the regressions in first lag form, resulting in a loss of the first year (1965) that the sentiment index is available, as well as those years preceding the availability of the index. Next to limiting the number of years analyzed, I also limit the number of industries investigated. I only consider data from the 28 manufacturing industries included in the research of Montone

[2] http://www.nber.org/cycles.html

and Zwinkels (2015), to stay as true as possible to their investigation. The reason that they only consider these 28 manufacturing industries in their analyses is that this reduces the dependence on country-specific factors such as natural resources (Montone and Zwinkels, 2015).

Several descriptive statistics on the aggregate of the data available on the US industries are presented in Table 1. In total there are 996 industry-year observations for each variable. The average yearly growth in employment across all industries over the whole sample period was -0.78%, while the average yearly growth in real wages was 1.27%. The negative mean growth in employment over the sample period was likely caused by the ongoing transition of the US from a manufacturing economy to a service economy, with those remaining manufacturing industries being continually impacted by further automation. The positive mean real wages growth could have been caused by an increase in the level of human capital of the average employee over time, resulting, for example, from improved education. Looking at the volatilities, I find that it is higher for the growth in the number of employees than for real wages growth (5.91% vs 4.21%). The descriptive statistics of the Rajan and Zingales (1996) measure of dependence on external finance (RZ score) show that this score varies between -0.45 and 1.14 across the industries, with a mean of 0.24 and a standard deviation of 0.33.

To get more insight into how the industries might differ in their characteristics, Table 2 presents the means of yearly growth in employment and real wages, and the RZ score for each of the 28 manufacturing industries. The average yearly employment growth seems to have been the highest in the industry for the fabrication of plastic products (3.89%) and professional equipment (2.00%), while being the lowest in the footwear (-6.96%) and apparel (-3.89%) industries. The latter two are likely a result of the outsourcing of the production of clothes to cheaper countries such as China and Mexico over the sample period. Employees in the tobacco (3.00%) and refineries (1.94%) industries have had the largest average growth rate of their real wages throughout the sample, while employees in the printing and publishing (0.56%), and food products (0.85%) industries have seen their real wages grow with the smallest average yearly growth rate. The industries most reliant on external finance seem to be the plastic products (1.14) and professional equipment industries (0.96). The industries least reliant on external finance seem to be the tobacco and pottery industries, with a RZ score of respectively -0.45 and -0.15.

4.4. Firm-Level Analysis

The sample of firms considered for the firm-level analysis consists of all US firms in the Compustat yearly data database during the period 1975 to 2011. Quarterly data would have been preferred to data of yearly frequency due to the possible frictional nature of sentiment-driven employment, however, this was not possible due to the data on the number of employees being unavailable in the quarterly Compustat dataset. I have chosen this specific time period as data on I/B/E/S analyst estimates were only available from 1976 onwards. The sample then starts in 1975 in lieu of 1976 as some of the variables (e.g. cash flow over lagged capital) are constructed with lagged data . While the Baker and Wurgler (2006) Investor Sentiment Index only covers the years from 1965 to 2010, I include it in the analyses in first lag form. This means that 2011 firm-years can also be included in the analyses. Note that the employment growth variable spans the period 1977 to 2011, given that 1977 is the first year where data for all (lagged) variables are available.

To match fiscal years with calendar years, I consider all end-of-fiscal-year data for firm-years with the fiscal year ending before June to belong to the previous calendar year. End-of-fiscal-year data for firm-years with a fiscal year ending in June or later are considered to concern the current calendar year. Following McLean and Zhao (2014), I exclude financial firms (SIC between 6000 and 6999) and utility firms (SIC between 4900 and 4999) from my analyses, due to the large amount of regulation in these industries. Like Baker, Stein, and Wurgler (2002), I exclude firm-year observations with total assets less than $10 million or negative book values of equity, as these small or distressed firms might behave too differently from the overall sample. Lastly, as these observations are probably erroneous, I remove all firm-year observations which adhere to one of the following criteria: negative capital expenditures, negative cash, negative short-term portion of long-term debt, negative depreciation and amortization, negative inventory, negative sales, negative balance sheet deferred taxes, negative R&D expenses, negative SG&A expenses and negative dividends. As a result of these actions, the dataset contains 170,536 firm-year observations.

Panel A of Table 3 shows descriptive statistics for the full sample of firms. The dependent variable employment growth has a high mean (28.14%) and extremely high volatility (1,818.51%). The high mean and large volatility are caused by extreme positive outliers: there are 64 firm-year observations where employment growth is more than 5,000% and the maximum value is close to 566,567%. The value of employment growth at the 99^{th} percentile already is quite high (189.27%), which also serves to contribute to high average values. At the other end of the spectrum, the minimum values might represent substantial absolute drops in the level of employment, but these minimum values for the growth rates have an almost negligible effect on the simple averages compared to the large positive values. These

large outliers might have an undue influence on the results of the analyses, which is why I Winsorize employment growth at the 1st and 99th percentile. The mean and standard deviation of the Winsorized variables are substantially lower. Looking at the descriptive statistics of the independent variables, it becomes clear that several of these variables are plagued by extreme maxima and minima as well. I therefore choose to Winsorize the variables for Tobin's Q, Cash Flow over Lagged Capital, Investments (1), Investments (2), Growth in Sales, and two of the alternative measures of external dependence considered in analyses of robustness of the main results, the Firm-level, Time-aggregated and Firm-level, Time-varying RZ scores, at the 1st and 99th percentile. This does a good job of bringing down the means and especially the volatilities to more reasonable levels. Interestingly, the statistics of the industry-level RZ-scores calculated here, differ quite a lot from the descriptive statistics of the RZ variable used in the cross-industry analysis. The minimum (-4.07) and maximum values (6.00), as well as the mean (0.37) and standard deviation (0.67) are all larger in absolute sense. This might be due to the fact that the cross-industry analysis uses RZ scores calculated over the 1980s, while in the firm-level analysis I calculate RZ scores over the period 1987 to 2011 (the cash flow from operations data item is only available from 1987 onwards for the firm-year observations in the sample). Many industry- or country-wide developments could have taken place since the eighties that could have led to this wider dispersion of industry-level RZ scores as calculated for the firm-level analysis, compared to those calculated for the cross-industry analysis.

5. Results

In this section I present the results of my empirical analyses. I start with discussing the tests done to determine whether the Baker and Wurgler (2006) Investor Sentiment Index is in fact stationary. Following that, I discuss the results relating to the cross-industry investigation of the effect of investor sentiment on the labor market. Finally, I present the results of my investigation into the effect of investor sentiment on employment at the firm level.

5.1. Stationarity of the Baker and Wurgler Investor Sentiment Index

In order to avoid creating spurious regressions, it is vital to test for the presence of a unit root in the variables included in the analyses. To investigate whether the Baker and Wurgler (2006) Investor Sentiment Index is non-stationary, I perform both the modified Dickey-Fuller t test (DF-GLS test) proposed by Elliott, Rothenberg, and Stock (1996), as well as the Phillips-Perron test proposed by Phillips and Perron (1988). The decision to perform

multiple types of tests, both different from the "standard" (augmented) Dickey-Fuller test, stems from these two tests both having differing, but important characteristics due to which they are considered superior. Specifically, the DF-GLS test has been found to have significantly greater power than previous versions of the augmented Dickey-Fuller test, while the Phillips-Perron test is robust to unspecified autocorrelation and heteroscedasticity in the disturbance term of the test equation. I determine the optimal lag length for the DF-GLS test using the Ng and Perron (1995) sequential t test, which has been found to perform better than the alternatives in most cases (Wu, 2010).

Table 4 presents the results of tests performed to determine the stationarity of the Baker and Wurgler (2006) Investor Sentiment Index over the full period that data for this index are available (1965 to 2010). By construction the index has a mean of zero and a unit variance. Moreover, based on a visual inspection of the data, the index does not seem to exhibit a trend. For these reasons, the DF-GLS test without a trend and the Philips-Perron test assuming no constant seem to be the tests that fit the data best. The results from the DF-GLS test assuming no trend do not reject the null hypothesis that the variable contains a unit root. The results from the Phillips-Perron test lead to the opposite conclusion: the variable seems to be generated by a stationary process. Seeing that this variable is critical in every analysis in this thesis, it is of vital importance that the probability of it actually containing a unit root (and consequently, possibly causing spurious results) is low. The conflicting results from the stationarity tests should make one hesitant to incorporate the variable in its current form into the analyses. However, looking at papers using the Baker and Wurgler sentiment index (e.g. this thesis' main references (McLean and Zhao, 2014; Montone and Zwinkels, 2015) and the paper published by Baker and Wurgler themselves (Baker and Wurgler, 2006)) it becomes clear that academics have never included the sentiment index in its differenced form. Due to this precedent set by numerous academics, I judge it safe to include the Baker and Wurgler (2006) Investor Sentiment Index in its levels form in the regressions, also considering that this makes most economic sense and would ease interpretation.

5.2. Cross-Industry Analysis

5.2.1. Pre-testing

Stationarity

In order to determine whether the variables included in the cross-industry investigation contain no unit root, I perform both the Levin, Lin, and Chu (2002) as well as the Breitung (2000) unit root tests. The decision to perform these two specific tests was made primarily

due to the power of these procedures for moderately-sized panels. Both tests require a balanced panel. As data are missing for two industries (Petroleum and Coal; and Printing and Publishing) from 1997 onwards and data for 1996 is not available at all, I perform the tests using data spanning the period 1967 to 1995. The results from the stationarity tests are presented in Table 5. The specifications deemed most realistic for each variable, based on a visual inspection of the data, have been bolded. As can be seen, all relevant tests for the existence of a unit root in the two dependent variables strongly reject the null hypothesis. These variables can therefore safely be included in the regressions at levels. Testing the independent variables for a unit root leads to a different conclusion. While some tests reject the null hypothesis (notably one of the relevant LLC specifications for the share of wages), no variable, in any specification, rejects the null hypothesis in both tests. It is therefore possible that these variables were generated by a non-stationary process. I have done the analyses while including the first difference of the share variables (which are stationary) and while including the share variables at levels. Results for the relevant coefficients (the interaction between sentiment and an industry's level of external dependence) do not differ meaningfully between the two approaches (the same coefficients are significant, the signs of the coefficients are the same and the magnitudes of the coefficients are almost equal). For brevity, I therefore only report those results where the share variables are at levels, which is also in line with the approach of Montone and Zwinkels (2015).

Multicollinearity

Before performing the main analyses, it is important to establish to what extent multicollinearity might be an issue. To this end, I look at the condition number of the combination of variables potentially included in the regressions. Specifically, these variables are the industry's RZ score, the Baker and Wurgler (2006) Investor Sentiment Index and the industry's share of the dependent variable. I determine the condition number twice: once using only the values of the independent variables of those industry-year observations for which there is a value for employment growth and the industry's lagged share of employment is considered and once for where there is a value for real wages growth and the industry's lagged share of real wages is considered. The condition numbers are 2.97 for the former and 9.13 for the latter. A condition number higher than approximately 15 would be a cause for concern, a condition number higher than 30 one for serious concern. Judging from the condition numbers depicted in the table, multicollinearity should not be much of an issue in the cross-industry investigation.

Fixed Effects

In analyses of panel data, fixed effects along a certain dimension are often used as a method to encapsulate all variables varying along that specific dimension which affect the dependent variable and to include them in the analysis. This helps one to avoid omitted variable bias. For this reason, I also consider including fixed effects in the regressions. The dimensions of fixed effects considered in the cross-industry investigation are industry and time. Factors varying along these dimensions could potentially have an impact on the dependent variables considered in the cross-industry investigation. For instance, the general structure of businesses in each industry could create industry-specific, time-invariant differences in the dependent variables. Time-varying, country-wide phenomena such as the business cycle or federal labor tax reforms could in turn have an industry-level impact on the dependent variables considered.

While including fixed effects along a certain dimension might make sense conceptually, one has to keep in mind that including fixed effects in the analysis adds extra variables (dummies) to the regressions. If in reality the impact of the variables encapsulated by the fixed effects on the dependent variables is small, the increased complexity of the model might not come with a sufficiently better fit. To see whether the addition of industry and year fixed effects to the regressions leads to sufficiently better models for the data, I compare four different regression specifications for each dependent variable. The specifications either include no fixed effects; industry fixed effects; year fixed effects; or industry and year fixed effects. The variables included in the regressions are those variables that would be included in a no fixed effects model, so both lagged investor sentiment as well as lagged external dependence are considered. To determine the best model, I look at the coefficient of determination (R^2), the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). The results of this analysis for both dependent variables can be seen in Panel A of Table 6. Apparent from the rather limited decrease in the AIC and BIC, and the large decrease in the R^2, solely including industry or year fixed effects does not provide for a better tradeoff between fit and complexity than including no fixed effects, for regressions considering either of the dependent variables. However, when including both industry and year fixed effects, the AIC, BIC and especially the R^2 show a substantial improvement. Next to support from economic arguments, it is clear that there is also overwhelming statistical support for including fixed effects along these two dimensions.

Important to note is that the statistics software employed to perform the analyses in Table 6 (Stata) does not allow for specifying multiple fixed effects using built-in panel regression commands. The year fixed effects were therefore manually included using year dummies.

Apparently, this procedure did not trigger the built-in measures against multicollinearity when considering the investor sentiment variable in the regressions with both industry as well as year fixed effects, leading to the coefficient for investor sentiment not having been omitted automatically. Seeing that the solely year-varying investor sentiment variable should have been excluded from the regressions when year fixed effects have been included, this forced manual inclusion of both the year dummies as well as the investor sentiment variable might have influenced the results. For this reason, I do the same analysis as presented in Panel A of Table 6, but excluding the external finance and investor sentiment variables, which should both be omitted when including industry and year fixed effects in the regressions. The results of this investigation, presented in Panel B of Table 6, show even better why including both industry and year fixed effects is the best option, regardless of the dependent variable considered.

Having chosen the type of fixed effects to potentially include in the analyses, it is also important to explicitly test whether including these fixed effects is preferred to allowing for random effects. This is done by performing the Wu-Hausman-Durbin test, usually termed the Hausman test. The null hypothesis of this test is that the random effects model is consistent. As the random effects model is more efficient, random effects are preferred under the null hypothesis. The alternative hypothesis is that the random effects model is inconsistent, while the fixed effects model is at least consistent. Thus, under the alternative, fixed effects are preferred. I perform the Hausman test on the restricted models including both industry and year fixed effects from Panel B of Table 6. The test statistics are 63.4 and 47.8 for the regressions with employment respectively real wages growth as the dependent variable. These both correspond to a p-value of 0.0000. The null hypothesis is rejected for both dependent variables. Including both industry and year fixed effects in the analyses is therefore superior to considering random effects.

Cluster-robust Standard Errors

It can be the case that observations within a certain group (e.g. observations of the same industry over time or of multiple industries within a year) are correlated in some unknown way, which induces correlation of the errors within a group, but not across groups (Nichols and Schaffer, 2007). Such "clustered" errors can lead to the standard errors of coefficients being wrong, with incorrect inference as a possible consequence. Using cluster-robust standard errors provides a possible remedy for this problem and has become standard practice in analyses of panel data, as such datasets oftentimes have multiple dimensions which could potentially cause clustering in the errors (e.g. the panel ID variable or time). While

one could decide to include cluster-robust errors in each regression, regardless of whether there is evidence for clustering of errors taking place, this might cause more hurt than healing in some datasets. Specifically, in datasets with a small number of clusters along a certain dimension (less than 50), inference using the cluster-robust estimator may be incorrect more often than when using conventional standard error estimators (Nichols and Schaffer, 2007). Seeing that the dataset used in the cross-industry investigation has quite a small number of clusters in each potentially relevant dimension (industry and time), using cluster-robust errors without clear evidence supporting the existence of clustering in the errors can be erroneous. For this reason, I investigate whether there is evidence for clustering in the errors and whether the use of cluster-robust errors is warranted.

Petersen (2009) poses that comparing standard errors of a model with cluster-robust standard errors along a certain clustering dimension to standard errors of the same model using White standard errors can provide one with an indication of the presence of a temporary or permanent cluster-caused effect. In the case of a permanent effect, including fixed effects along the cluster's dimension can produce unbiased standard errors. As I include industry and year fixed effects in my regressions, the existence of a permanent industry or year effect would not bias the standard errors. However, if the cluster effect is temporary, including fixed effects will not lead to unbiased standard errors. In this situation one should use cluster-robust standard errors. Table 7 provides, for both dependent variables, a comparison of the standard errors of the coefficients in the baseline regressions using industry- or time-clustered standard errors with the same regressions using White standard errors. The standard errors of the variables in regressions employing industry-clustered errors and where employment growth is the dependent variable are between 1 to 1.9 times the White standard errors. When the dependent variable is real wages growth, these numbers drop to around 0.5 to 1 times the White standard errors. Petersen (2009) provides the rule of thumb that the errors clustered along the panel variable dimension (in this case industry) should at least be three to four times as large as the White standard errors to conclude that there is evidence for the presence of a panel variable effect, which evidently is not the case here. Regarding the presence of a time effect, Petersen (2009) argues that one should find time-clustered errors at least two to four times larger than White standard errors. As this is not the case for any coefficient in any of the regressions, I deem the presence of a (temporary) time effect unlikely. Based on the results of this investigation, I decide not to use cluster robust standard errors in the cross-industry investigation. I do, however, use White heteroscedasticity-consistent standard errors.

5.2.2. Empirical Results of the Cross-Industry Analysis

Main Results

Having performed the necessary pre-analyses tests, I now discuss the results of my investigation into the effect of investor sentiment on labor at the US industry level. Models 1 to 4 in Table 8 present the coefficient estimates of the regressions with the specifications as stated in equations 1 and 2. The results obtained when employment growth (models 1 and 2) as well as real wages growth (models 3 and 4) are considered as the dependent variables, are shown. The even-numbered models are those where I condition the analysis on the state of the economy (i.e. the regression specifications depicted in equation 2).

The coefficient for the interaction of sentiment with external dependence is not significant in any of the uneven-numbered models, making inference void of meaning. Significant results are found when conditioning the analysis on the state of the economy. The results for real wages growth (model 4) are quite in line with the predictions of the model of Montone and Zwinkels (2015): higher investor sentiment seems to lead to larger real wages growth in externally dependent industries. To illustrate, in normal times, a one standard deviation increase in investor sentiment creates a change in the real wages growth differential between industries at the 75^{th} and 25^{th} percentile in terms of external dependence of 0.14 percentage points, based on the coefficient estimates of model 4. Considering that the mean real wages growth over the time period analyzed is 1.27%, the effect of sentiment is definitely economically significant. This finding is in line with those of Montone and Zwinkels (2015), who find that higher sentiment has a positive effect on the growth in real wages in externally dependent industries of financially developed countries with a high level of human capital, a group of countries in which one would surely place the US.

The interaction of sentiment with external dependence and the dummy indicating years of economic recessions is significant and negative for the regression where real wages growth is the dependent variable. The absolute value of the coefficient is larger than the coefficient signifying the effect of sentiment on externally dependent industries in normal times, indicating that externally dependent industries might be hit extra hard in recession years following periods of high sentiment. A one standard deviation increase in investor sentiment in a period preceding an economic recession leads, next to a positive effect of 0.14pp, to a decrease in the real wages growth differential between industries at the 75^{th} and the 25^{th} percentile in terms of external dependence of -0.21pp in the year of the recession. The total effect of the prior increase in investor sentiment therefore is a 0.07pp decrease in the real wages growth differential in a following recession year. The joint effect of the recession and investor sentiment more than erodes the positive effect of sentiment on real wages growth

found in normal times. Interestingly, the effect of an economic recession on the real wages growth of externally dependent industries during years of a recession seems to be positive in the absence of sentiment (a 0.30pp differential between the 75^{th} and 25^{th} percentile of industries in terms of external dependence). This is an opposite result to what Pagano and Pica (2012) suggest one would find. In their analysis they do not find any significance at all for an effect of financial crises on wages growth of externally dependent industries in a large number of countries. Important to note is that I investigate economic recessions and not financial crises, which could lead to different findings. However, one would expect an economic recession in the US to have a similar impact as financial crises elsewhere (specifically: bank-based economies), considering that the US is a market-based economy.

Next I discuss the results for the growth in employment. Based on the model developed by Montone and Zwinkels (2015) and the findings of their empirical investigation, one would expect the effect of sentiment on employment growth in externally dependent industries to be either insignificant (sentiment is expected to affect labor predominantly through wages in a high human capital country such as the US) or, if significant, to be positive. I find the unexpected: the coefficient for the interaction between sentiment and external dependence is significantly negative. A one standard deviation increase in sentiment in the prior year causes a drop in the employment growth differential between industries at the 75^{th} and 25^{th} percentile in terms of external dependence of 0.30pp, based on the coefficient estimates in model 2. A sizable result, considering that the mean employment growth over the sample period analyzed is -0.78%. The coefficient for the interaction of external dependence with the recession dummy is negative and significant, which is a similar result to what Pagano and Pica (2012) find, but which is not found by Montone and Zwinkels (2015), who find that the coefficient for the interaction term of external dependence, financial development and financial crises is not significant when an interaction term of US sentiment, US FDI and financial crises is included in their regressions. The significantly negative coefficient for the interaction of external dependence with the recession dummy provides support for the idea that there is a dark side to finance. However, this negative effect seems to become less severe in the presence of investor sentiment, as the interaction between sentiment, external dependence and the recession dummy is positive. A one standard deviation increase in investor sentiment has a positive effect on the employment growth differential between industries at the 75^{th} and 25^{th} percentile in terms of external dependence of 0.73pp, making the total impact on the employment growth differential of such a prior increase in sentiment equal to +0.43pp if there is a recession in the following year. This increase is not enough to fully negate the negative effect of a recession on the employment growth differential of industries with more and less dependence on external finance, as the employment growth differential

between industries at the 75^{th} and 25^{th} percentile in terms of external dependence is around -1.38pp in such a year, if sentiment is absent.

Before jumping to the task of finding a viable explanation for the results reported above, which are at odds with the predictions of the theoretical model of Montone and Zwinkels (2015), it is crucial that I rule out that the findings are actually caused by sentiment being a proxy for something else entirely. Montone and Zwinkels (2015) pose that sentiment might proxy for the level of liquidity in the US stock market. They investigate whether this is the case by introducing interactions of a measure of aggregate liquidity with those variables with which sentiment is interacted, and looking at whether the coefficients of the interactions containing sentiment are affected. The measure of aggregate liquidity considered by them is the Pastor and Stambaugh (2003) Level of Monthly Aggregate Liquidity, available on Lubos Pastor's website[3]. The monthly aggregate liquidity time series is converted to an annual one by calculating the yearly average. In models 5 to 8 of Table 8, I present the results of a similar inquiry. The significance and magnitude of the interaction terms including sentiment do not change much, with only the coefficient for the interaction of sentiment, external dependence and the recession dummy in the regression where real wages growth is the dependent variable becoming insignificant. Important to note is that the coefficient was barely significant to begin with. None of the interactions including liquidity are significant. Overall the results of this investigation do not point towards sentiment being a proxy for the level of aggregate liquidity.

Having established the above, I turn to trying to find a possible explanation for the findings of models 1 to 4 in Table 8. In trying to explain the unexpected findings for employment growth, one should not look at those results in isolation, but rather look at those results in tandem with those obtained for real wages growth, seeing that both are jointly caused by the demand and supply for labor. The model outlined in the literature review poses that sentiment affects the labor market through inducing a change in the demand for labor by firms. An increase in sentiment is expected to shift the demand curve for labor upwards in normal times, while leading to a downwards shift if a crisis follows the period of higher sentiment. These shifts are expected to be more pronounced in externally dependent firms, leading to an increase (decrease) being expected in the employment and real wages growth differentials between industries of high and low external dependence in a normal (recession) period, as a result of an increase in sentiment. The observation that, during normal times, sentiment seems to positively affect the real wages growth differential and negatively affect the employment growth differential, point towards the model being incomplete. Mayhaps then that the second mechanism through which sentiment might potentially affect labor

[3] http://faculty.chicagobooth.edu/lubos.pastor/research/

discussed in the literature review — sentiment inducing shifts in the labor supply curve — is indeed present.

As discussed before, an upwards shift in the labor supply curve during normal times as a result of an increase in sentiment, more pronounced in externally dependent industries, would lead to an increase respectively decrease in the real wages and employment growth differentials between more and less externally dependent firms (and by extension, industries). During crisis periods this would lead to a decrease, respectively increase in the real wages and employment growth differentials. The observed results could therefore be explained by sentiment affecting both the labor demand and supply curves.

Important to note here is that, assuming labor supply and demand are not of too differing elasticities and not extremely (in)elastic, the sentiment-induced upwards shift of the labor supply curve should be quite large relative to the upwards shift of the labor demand curve to cause the total sentiment-induced labor market effect to be employment growth differential decreasing. One should wonder whether this is realistic. Perhaps then that there is an additional way through which sentiment affects the labor market. One potential alternative mechanism, discussed next, again relates sentiment to changes in the demand for labor.

Economists have long considered capital to be fixed in the short run. Changes in the level of capital of a firm therefore happen in lumps, observed at specific points in time. Newly acquired capital is likely to be more productive than existing capital due to technological advancements made since the acquisition of the existing capital. This implies that improvements in capital productivity of a firm would be observed at specific points in time. New projects undertaken as a result of higher sentiment, or existing projects expanded in size, are likely to comprise of such investments in more productive capital than the existing capital of the firm. This new capital, being more productive, is likely to require less employees to produce the optimal output than the existing capital. This could serve to somewhat dampen the positive employment effect of an increase in sentiment. More formally, a labor "substitution" effect could exist alongside the already discussed "income" effect on labor from a sentiment-influenced capital injection.

Next to a dampening of the positive effect of sentiment on employment growth, there could be an additional mechanism through which sentiment might affect the demand for labor by firms. Alongside wanting to expand the output capacity of their firm by partaking in new projects or expanding existing ones, managers also have to deal with physical depreciation of their existing production capacity; old machines need to be replaced at some point. New capital with which such old capital is replaced is likely to be more productive due to ongoing technological developments, and therefore likely to require less employees for the optimal level of production. As with partaking in new, or expanding existing, projects, it would

make sense for managers to time such replacement investments to happen when raising the funds for them is relatively easy and cheap. Managers could for example consider a multi-year period during which the replacement investments have to take place and choose the exact moment to do it depending on whether funding is cheap and easy to acquire. High investor sentiment can provide for a funding environment satisfying these criteria. Higher sentiment might therefore not only induce managers to raise funding for projects to expand the size of the business by partaking in new, or expanding existing, projects, but could also influence the timing of productivity-improving replacement investments. The latter could potentially be of large influence. There might be many companies which have little avenues for growth (i.e. have little interesting projects), but could benefit massively from replacing existing, close to obsolete assets for more productive ones. An increase in investor sentiment could therefore induce a downwards shift of the labor demand curve for many firms, leading to a decrease in both the level of employment of, as well as the wages paid by, these firms. Such an effect could be observable at the industry level as well.

It is likely that the downwards pressure on the demand curve of a firm resulting from a higher level of investor sentiment, be it due to the manager timing replacement investments or the manager partaking in expansion projects with more productive capital, is observed to a larger extent in externally dependent firms. These firms will be more reliant on the availability of external finance to be able to partake in any investment, be it investments in replacement capital or participations in new, or expansions of existing, projects. It would therefore make sense to see a larger sentiment-induced downward shift in the demand curve for externally dependent industries. Depending on the relative magnitudes of the shifts in, and the elasticities of, the labor demand and supply curves of more and less externally dependent firms, a net downwards shift of the demand curve combined with an upwards shift of the supply curve can lead to the observed overall effect on the employment and real wages growth differentials reported earlier. These results could be found with relatively small shifts in the labor supply curve, compared to the strictly upwards sentiment-induced demand and supply curves shifts scenario.

Important to note is that it is possible that the replacement investment timing mechanism of sentiment is less present if a recession follows the period of high sentiment. It is likely that the replacement investments are not done immediately when the sentiment-driven funding is raised, it could even take a few months for the investments to start. Moreover, the investment process is likely to take quite some time, and might even be done in stages. If a recession hits the economy in the year after a firm has raised money (timed to coincide with a period of high sentiment), its manager could decide to postpone (part of) the replacement investments until the economy is again out of the rut which it finds itself in. The funding raised would then

be held by the firm to be used to complete the replacement investments later, or could be used as a buffer for the company to survive through the economic downturn. The potential downwards shift of the labor demand curve as a result of higher sentiment would then be less strongly present, or even absent, in recession years following a period of high sentiment than during normal years. If this additional mechanism through which sentiment might affect the demand for labor is of considerable strength compared to the mechanism posed by the model, its absence during recession years could be part of the explanation for why a positive coefficient is found for the interaction of sentiment, external dependence and crises in the regression where employment growth is the dependent variable. Combined with a pronounced downwards shift in the labor supply curve during years of a recession following a period of high sentiment, the absence of the replacement investment timing mechanism of sentiment in recessions years could push the total effect of sentiment on the employment growth differential between more and less externally dependent industries to be positive.

We now therefore have three potential mechanisms through which investor sentiment might affect employment and wages in normal times, all expected to be more strongly present in more externally dependent firms, and, by extension, industries: an upwards shift of the demand curve through managers using relatively cheap financing to partake in new projects, or expand the size of existing ones; a downwards shift in the demand curve due to managers timing productivity-enhancing (replacement) investments; and an upwards shift in the supply curve due to employees observing, or perceiving, an increase in their net worth or potential future net worth. Of course, all these mechanisms might work in tandem. During a crisis following a period of high sentiment, the first and the last are expected to work in the opposite direction to how they operate in normal times, while the middle is expected to be absent. The relative magnitudes of the different effects (both within, as well as between, high and low externally dependent firms), together with the elasticities of the labor supply and demand curves, would determine the total effect on the real wages and employment growth differentials.

Additional Analysis - Human Capital

In an effort to create a further understanding of the effect of investor sentiment on labor, I try to determine whether the results of the analyses done in the previous subsection differ for industries with different elasticities of labor supply. Based on the model discussed in the literature review, one would expect that the effect of investor sentiment on the real wages growth differential would be stronger, and the effect on the employment growth differential weaker, in industries where labor supply is less elastic. One would of course expect to find

the opposite in industries with a relatively elastic supply of labor. To investigate whether this is the case, I perform the analysis discussed next.

To determine the elasticity of labor supply of each industry, I first quantify their level of human capital, which is expected to be positively related to the degree of inelasticity of labor supply. This is as higher human capital strengthens the position of employees in wage negotiations (Montone and Zwinkels, 2015). To quantify industry-level human capital, I borrow from research done for the European Central Bank by Ciccone and Papaioannou (2006). In their 2006 working paper, the authors investigate whether high levels of human capital foster economic growth by facilitating technology adoption. They analyze a sample of 37 manufacturing industries, which includes the 28 industries analyzed in (Montone and Zwinkels, 2015) and this thesis' cross-industry analysis, but considers some subcategories of the 28 manufacturing industries as separate industries (e.g. drugs separately from chemicals). Three measures of human capital intensity are reported for each industry: the average years of schooling of employees (HCINT), the ratio of hours worked by employees with at least 12 years of schooling (necessary for completing secondary school) to total hours worked (HCINT(SEC)) and the ratio of hours worked by employees with at least 16 years of schooling (necessary for completing college) to total hours worked (HCINT(COL)). Data for these measures come from the 1980 US Integrated Public Use Microdata Series.

I specify industries to have a high, medium or low level of human capital separately for each of the three measures of human capital intensity. This is done based on the quartile to which that industry's value for the measure belongs. In creating the quartiles, I consider only the 28 parent industries and ignore the subcategories. Here I make the assumption that the subcategories are of limited size relative to their parents, so that considering them together (as is done in my dataset) does not significantly alter the human capital intensity of the industry as reported by Ciccone and Papaioannou (2006), who consider the parent industry excluding the subcategory. For each measure, I consider industries with a high, medium and low level of human capital to be respectively those for which the value of the measure of human capital intensity considered is in the highest; second or third; and lowest quartile of all 28 values of that measure. I also construct two additional measures of the level of human capital of the industries by combining information of each of the three measures of Ciccone and Papaioannou (2006). For the first combined measure, HCINT(COMB) (combined), the level of human capital is considered high if the industry is in the highest quartile for each of the Ciccone and Papaioannou (2006) measures, low if it is in the lowest quartile for each measure and medium otherwise. The second combined measure, HCINT(COMBRES) (combined and restricted), considers an industry to have a high level of human capital if the industry is in the highest quartile for each measure, low if it is in the lowest quartile for

each measure and medium if it is in the second or third quartile for each measure. While this combined measure does remove a few industries from the analyses (those which score medium on at least one of the measures, but not on all), it might provide for the best sample of industries with a medium level of human capital. Table 9 lists the 28 industries considered, their values for the three Ciccone and Papaioannou (2006) measures of human capital intensity and their degree of human capital according to each of the five measures of the level of human capital.

The results of the investigation into the effect of investor sentiment on labor in industries with differing levels of the elasticity of labor supply are presented in Table 10. Here, I consider the same regression specifications as those of models 1 to 4 of Table 8 and run the regressions on subsamples of industries differing in their level of human capital. For reasons of brevity, I only report the results obtained using the HCINT(COMB) measure of human capital. Results are similar, both in terms of significance of coefficients as well as in their magnitude, for each method of determining the level of human capital of the industries. I therefore consider it fine to solely report the results obtained using the HCINT(COMB) measure.

As expected, the coefficients for the interaction term between investor sentiment and external dependence are positive and significant when real wages growth is the dependent variable and the sample of high human capital industries is considered. The coefficient is not significant when employment growth is the dependent variable, which supports the view that in industries with a relatively inelastic supply of labor, investor sentiment affects labor mostly through changes in real wages. This is also supported by the finding that the coefficient for this interaction in model 8 (with real wages growth as the dependent variable) is of much larger magnitude than its equivalent in the full sample (model 4 of Table 8, 0.0081 versus 0.0039). Finally, the coefficient for the interaction of sentiment and external dependence of model 8 is larger than its equivalent for the group of industries with a medium level of human capital (model 10, which is 0.0047). Interestingly, the interactions between external dependence, sentiment and the recession dummy are not significant for the high human capital group for any of the dependent variables.

The results for the subsample of industries with a medium level of human capital (models 3, 4, 9 and 10) are similar to those for the full sample in sign and significance. However, the triple interaction term of external dependence, sentiment and the recession dummy is not significant when real wages growth is the dependent variable (model 10), which it is when considering the full sample of industries. The magnitudes of the significant coefficients are slightly larger than the magnitudes of their full sample equivalents, which is likely due to the full sample containing subsamples of industries where the effect of sentiment on the depen-

dent variable is insignificant (e.g. high human capital industries for employment growth), which serves to dampen the observed effect of sentiment on the dependent variable in the full sample. The results for the group of industries with a medium level of human capital support the idea that there might be more mechanisms at work through which sentiment affects labor, other than sentiment shifting the labor demand curve upwards.

Finally, I discuss the results for the group of industries with a low level of human capital. The coefficient of the interaction between external dependence and sentiment is insignificant when real wages growth is the dependent variable. This is in line with what is expected for industries with a relatively high elasticity of labor supply; sentiment should affect the labor market in these industries mostly through employment. What is unexpected, in light of the results obtained when considering the full sample of industries, is that the coefficient of this interaction is significantly positive when employment growth is the dependent variable in models 5 and 6. One would expect to find the coefficient here to be negative, and larger in magnitude than for the full sample. The latter is the case if one considers absolute values: the absolute value of the coefficient in model 6 of Table 10 is substantially larger than its equivalent in model 2 of Table 8 ($|0.0456|$ versus $|0.0083|$). That the coefficients are significantly positive is actually completely in line with what the theoretical model predicts and with what Montone and Zwinkels (2015) find in industries in countries other than the US. This might mean that the alternative mechanisms through which sentiment might affect the labor market discussed in this thesis are actually non-existent and that the results found in the whole sample (driven by the group of industries with a medium level of human capital) are caused by something else entirely.

It could also be that the positive effect on demand caused by an increase in sentiment is relatively strong in the subsample of industries with a low level of human capital and that its positive effect on employment growth might then not be nullified by the potential substitution effect in labor demand and the potential upwards shift in the labor supply curve. This could be the case if relatively many extra employees are needed when a firm with a low level of human capital partakes in new projects (e.g. because labor productivity is lower). This would then lead to a larger increase in labor demand in highly externally dependent industries and cause a positive widening of the employment and real wages growth differentials (although mostly in the former).

Of course, it could also be that the labor demand substitution effect and the upwards shift of the labor supply curve are less pronounced in the subsample of industries with a low level of human capital. However, that the negative effect of sentiment on labor demand would be less in lower human capital industries seems unlikely. One would rather think that there are more possibilities for automation or other labor-replacing investments in indus-

tries with a lower level of human capital, meaning that the productivity-enhancing effect (and consequently the employment-decreasing effect) of sentiment-driven (replacement) investments in this subsample of industries would be expected to be as large as, or larger than, in the full sample of industries. As the negative effect on labor demand is expected to be larger in externally dependent industries, one would expect the negative effect on the employment growth differential between more and less externally dependent industries not to be negligible in the subsample of industries with a low level of human capital.

Regarding the upwards shift in the labor supply curve, one could think of a reason for why it could be less pronounced in this subsample of industries. Mayhaps that employees in such industries earn less (wages are likely to be positively influenced by the level of human capital of employees) and therefore have less savings, pension buildup and investments. Their net worth (and as a result of that, the work/leisure trade off) might therefore not be influenced much in absolute terms by the increase in asset prices as a result of higher sentiment, considering its potentially negligible size. The upwards shift in the labor supply curve could therefore be relatively small for firms in industries with a low level of human capital. The employment growth differential between more and less externally dependent industries within the group of industries with a low level of human capital would then also likely not be heavily influenced by a potential upwards shift of the labor supply curve as a result of an increase in sentiment. This could lead to the positive effect of the upwards shift in the labor demand curve on the employment growth differential to overpower the negative effect stemming from the upwards shift in the supply curve.

Depending on the relative strengths of these three possible mechanisms through which sentiment might affect labor in industries with a low level of human capital, the findings observed for this subsample of industries might be found as they are and still be consistent with the alternative mechanisms through which sentiment might affect the labor market introduced earlier. However, one does wonder whether the manufacturing industries analyzed really differ to such a degree that the effect of sentiment on labor supply and demand is so drastically different in the different subsamples.

5.2.3. Final Thoughts on the Cross-Industry Analysis

The results of the investigation discussed in this subsection of the thesis provide an interesting insight into how sentiment influences different types of industries in different ways. Many results were quite unexpected, but could potentially be explained by sentiment having multiple mechanisms through which it affects the labor market which are unaccounted for by the theoretical model considered in this thesis.

However one wonders whether the strength of these alternative mechanisms — sentiment

shifting the labor supply curve upwards in normal times and sentiment affecting labor demand negatively due to affecting the timing of productivity enhancements — relative to the strength of the mechanism posed by the theoretical model, required to cause the observed findings, is realistic. One should therefore wonder whether there is not a different mechanism at work. Moreover, the finding that the results inconsistent with the basic model considered are only present in the subsample of industries with a medium level of human capital, provide some support for the notion that other, unidentified, mechanisms might be the cause of the deviations of reality from the predictions of the model. Further empirical research into how sentiment might affect both labor demand and supply in firms (and by extension, industries) with differing degrees of elasticity of labor supply, supported perhaps by a more complex theoretical model, would definitely be needed to fully understand the likely complex ways through which sentiment affects employment and wages, so that it becomes clear what the exact mechanism(s) behind the results reported in this section is (are).

Regardless of the exact reason why sentiment affects the labor market in the way this cross-industry analysis has shown, the firm-level analysis might generate more knowledge on whether this relationship is observable at the firm-level and which firm characteristics might influence the extent to which sentiment has an impact on firms' employment.

5.3. Firm-Level Analysis

5.3.1. Pre-testing

Stationarity

In order to determine whether the variables included in the firm-level analysis contain a unit root, I perform both the Fisher-type Dickey-Fuller as well as the Fisher-type Philips-Perron unit root tests. While other types of unit root tests might have been better than the two Fisher-type tests (they have less restrictive alternative hypotheses), these alternative tests would all require the data to be strongly balanced and/or to be without gaps, both of which do not hold for the firm-level dataset. Due to the yearly nature of the data considered, I specify the tests to have one Newey-West lag in calculating the standard errors. The results from the stationarity tests are presented in Table 11. Almost all tests for the existence of a unit root in any of the variables strongly reject the null hypothesis. Most variables are therefore likely to have been generated by a stationary process and can safely be included in the regressions at levels. The only tests which do not reject the null hypothesis are two Phillips-Perron tests where the cross-sectional means have not been removed and the variable analyzed is an alternative measure of monitoring ability based on the number of I/B/E/S

analyst estimates which a firm receives during the year. Seeing that all of the Dickey-Fuller tests do reject the null hypothesis, it cannot be said with certainty that this measure of monitoring ability is in fact non-stationary. For this reason, I include this variable in the regressions at levels, but also consider a log transformed version of the variable, which is stationary, to see if similar results are obtained.

Multicollinearity

As done in the pre-testing of the cross-industry analysis, I again try to establish to what extent multicollinearity might be an issue. To do so, I determine the condition number for the combination of variables included in the analyses, taking into consideration those firm-year observations where there is a value for the dependent variable (employment growth). The variables considered are investor sentiment, external dependence, monitoring ability of shareholders, size, Tobin's Q, cash flow, cash over assets, sales growth and investments. I find the condition number to be 9.6734, so multicollinearity should not be much of an issue in the cross-industry investigation.

Fixed Effects

I again consider including fixed effects along several dimensions in the regressions of the firm-level analysis to encapsulate all variables varying along those specific dimensions which affect the dependent variable. The dimensions of fixed effects considered are firm, industry (defined at the four-digit SIC code level), time and combinations of these. The industry and year fixed effects would be included for a similar reason as in the cross-industry analysis. Firm fixed effects could account for the potential effect of firm characteristics such as corporate culture on the dependent variable.

Originally, I considered the following specifications: no fixed effects; firm fixed effects; year fixed effects; industry fixed effects; firm and year fixed effects; firm and industry fixed effects; industry and year fixed effects; firm, year and industry fixed effects; industry-year fixed effects; and firm and industry-year fixed effects. Only seven of these ten combinations can be reported on, as regressions including both firm and industry fixed effects, or both firm and industry-year fixed effects, could not be performed with the statistics software employed.

Panel A of Table 12 reports the results of the investigation into the tradeoff between fit and complexity for the different combinations of fixed effects mentioned above. The regression specification is that of the baseline regression shown in equation 3, with the addition of lagged sentiment as a regressor. This makes it the specification which I would

analyze in a no fixed effects context. To determine the best model, I again look at the R^2, the AIC and the BIC.

Based on the AIC and the BIC including both firm and year fixed effects seems to provide the best tradeoff between fit and complexity (lowest AIC and BIC). When judging based on the R^2, including both industry and year fixed effects seems to lead to the best fit (highest R^2). In Panel B of Table 12 I consider a restricted model, which excludes the lagged sentiment regressor and compares a specification with firm and year fixed effects with one including industry and year fixed effects. This would be the correct specification for the model including both firm and year fixed effects. Based on the substantially lower information criteria, the limited decrease in the coefficient of determination, more support from economic arguments and presence in relevant studies (e.g. (McLean and Zhao, 2014)), I choose to include firm and year fixed effects in my firm-level analyses. Doing so will also allow for the substitution of an industry-varying measure of external dependence for the firm-year varying KZ index in determining the robustness of the main results, which cannot be done if the combination of industry and year fixed effects is considered.

Having chosen the type of fixed effects to be considered for the firm-level analyses, I again test whether including these fixed effects is preferred to allowing for random effects using the Wu-Hausman-Durbin test on the restricted model including both firm and year fixed effects (Panel B of Table 12). The test statistic is 661.12, corresponding to a p-value of 0.0000. The null hypothesis is therefore rejected. Based on the results in this subsection, I decide to include both firm and year fixed effects in the firm-level regressions.

Cluster-robust Standard Errors

Table 13 presents the results of an inquiry into the potential existence of temporary cluster effects in the data along a number of dimensions. I again compare clustered standard errors with regular White standard errors for the coefficients of the regression including firm and year fixed effects in Panel B of Table 12. The clustering dimensions considered are firm, time and industry. A combination of the industry and time dimensions (industry-year-clustered errors) is also considered. The clustered errors for each coefficient tend to be around 0.90 to 1.10 times the regular White standard errors, except for the errors of two coefficients in the time-clustered error model (which are around 1.41 and 1.62). None of these clustered errors therefore exceed the lower bound of two or three times the White standard errors (depending on the dimension considered) for there to be evidence for the presence of clustering in the errors.

Nichols and Schaffer (2007) argue that there should be little to no cost of using clustered standard errors along a certain dimension if the number of clusters along this dimension is

large. Since there are a large number of clusters of firms (12,021 in the regression considered in the firm-clustered standard errors model in Table 13), it might be a good idea to consider firm-clustered standard errors anyway, even though there is no strong evidence for the presence of a temporary cluster effect. Using firm-clustered standard errors would sweep up any temporary firm-clustering in the data (however small) and would, as the firm-clustered standard errors are a bit higher than regular White standard errors, serve to bias results away from the alternative hypothesis. I therefore use such cluster-robust standard errors in the following analyses.

5.3.2. Empirical Results of the Firm-Level Analysis

Main Results - Non-crisis

Table 14 presents the main results of my investigation into the effect of US investor sentiment on employment growth at the US firm-level. Model 1 is the baseline specification introduced in Section 3 (equation 3). Of the interaction terms including sentiment, only the term including sentiment and monitoring ability is significant. The coefficient is negative, meaning that firms which are more heavily monitored seem to have an even lower growth in employment than less heavily monitored firms as a result of an increase in sentiment. In the absence of sentiment, the employment growth differential between highly monitored firms and less monitored firms already is around -3.18pp. The employment growth differential decreases by an additional 0.51pp for a one standard deviation increase in sentiment, a non-trivial result when looking at the already existing differential and the 9.15% mean of employment growth in the overall sample. The significantly negative coefficient is at odds with the latter part of the prediction created based on the model introduced in the literature review, which poses that an increase in sentiment should lead to higher employment growth in more externally dependent and highly monitored firms. However, if one considers the alternative mechanisms through which sentiment might affect the labor market discussed in this thesis, the finding might not be so surprising. While a differential response between more and less monitored firms in the upwards shift of the labor supply curve of firms as a result of an increase in sentiment seems somewhat unlikely, a differential response leading to differing degrees of the downwards shift of the demand curve does seem realistic. The shift in the demand curve, regardless of direction, is likely to be more pronounced in those firms which are more highly monitored. According to the theoretical model, such firms will be able to raise larger amounts of equity, as a larger fraction of firm profits is paid out to the external shareholders instead of being appropriated by the shareholder. This mechanism is strengthened by sentiment,

leading to more highly monitored firms being able to raise even more equity. This sentiment-driven influx of funds would then be used to invest in new (potentially more productive) capital or to replace old capital. An increase in investor sentiment could therefore have a net positive or net negative effect on the employment growth differential between more and less highly monitored firms, based on the three mechanisms discussed. The coefficient estimate observed for the interaction of sentiment and monitoring ability provides some evidence that the labor demand decreasing effect of sentiment dominates here.

Next I investigate how the results in model 1 change if several control variables, which might be important "real-economy" determinants of employment growth, are added. In each of the models 2 to 6, I add a different control variable to the regression specification of model 1. As mentioned before, all of the control variables are lagged one period. The variables considered sequentially are firm size, Tobin's Q, cash flow generation, cash reserves and sales growth. The interaction between sentiment and monitoring ability stays significant and of similar magnitude in models 2 to 6. This indicates that sentiment indeed induces a change in the real economy through affecting employment growth. The coefficient remains significant when the full batch of control variables is included at the same time (model 7). The magnitude of the coefficient for the interaction rounded to four decimals in this model is equal to that of the coefficient estimated with the baseline specification.

Interesting to note is that the coefficient for monitoring ability decreases substantially in magnitude when firm size is controlled for in the analysis. This indicates that analyst coverage might partly proxy for firm size. There is support for this to be the case in the literature; Bhushan (1989) finds that the degree of analyst coverage is very strongly correlated with firm size. For this reason, I add the interaction of sentiment with size in model 8, to see whether this drives the coefficient for the interaction of sentiment with monitoring ability into insignificance. This is not the case, the coefficient for the interaction of sentiment and monitoring ability remains close to within the range of estimates found when the interaction of sentiment with size is excluded. The dummy for analyst coverage therefore does not seem to proxy for size in its interaction with sentiment. The finding that the coefficient for the interaction of sentiment with size is significantly positive is not unexpected. Baker and Wurgler (2006) find that larger firms have stock prices which are less affected by sentiment. One would therefore expect any effect of sentiment on the labor demand of firms to be smaller in large firms. If the total effect of sentiment on labor demand is net negative, which could be the case considering the findings of models 1 to 7, the employment growth of larger firms would decrease less than that of smaller firms as a result of an increase in sentiment. This would show itself through a positive coefficient for the interaction of sentiment with size, as I find in model 8. As investigating the difference in the effect of sentiment on the employment

growth of firms differing in size is not the focus of my research, I choose to exclude the interaction of sentiment and size in further analyses. As is clear when comparing the results of model 8 with those from the other models in Table 14, this should not have a substantial effect on the magnitude nor on the significance of the coefficients of interest, namely, those belonging to interactions of sentiment with external dependence and/or monitoring ability.

It is again important to alleviate the concern that the results in Table 14 are actually driven by investor sentiment being a proxy for the level of liquidity in the US stock market. For this reason, I do a similar analysis as in the cross-industry investigation, the results of which are presented in Table 15. Many of the interaction terms including the liquidity variable are significant. However, the inclusion of these terms does not seem to have a very large effect on the size and significance of the coefficients for the interaction between sentiment and monitoring ability. Only the coefficient in model 6 loses its significance, but it was barely significant to begin with. Overall, the results in this table indicate again that sentiment does not merely reflect aggregate liquidity.

Main Results - Crisis

In Table 16, models 1 and 2, I consider the model specification introduced in equation 5, where I condition the analysis on the state of the economy. In model 1, the interaction of sentiment and the analyst coverage dummy remains significant, even increasing in magnitude. The interaction of sentiment, monitoring ability and the recession dummy is significant and positive, which can explain why the magnitude of the interaction of sentiment with the analyst coverage dummy is larger in this model than in the baseline model, where I do not condition on the presence of a recession. The coefficient loses significance when the batch of control variables of model 7 is also included in the regression. Interestingly, the interaction of sentiment and external dependence becomes significant when conditioning on the presence of a crisis. This also holds for the interaction of sentiment, external dependence and the recession dummy. The former of the coefficients is positive, the latter negative. The signs are therefore similar to the signs of the cousin interaction terms including sentiment, monitoring ability and the recession dummy. Finding that the interactions including sentiment and external dependence are only significant when conditioning on the state of the economy again shows that it is important to take into account crisis years when investigating the effect of sentiment on employment growth, which was also the case in the industry-level analysis.

Based on the coefficient estimates in model 2, the employment growth differential between better monitored firms at the 75^{th} percentile and worse monitored firms at the 25^{th} percentile

in terms of external dependence decreases by 1.42pp as a result of a one standard deviation increase in investor sentiment in the prior year, if the US does not find itself in an economic recession in the following year. If the US economy is in a recession in the year following the increase in investor sentiment, there is an additional positive effect of 0.92pp on the employment growth differential. The total effect on the employment growth differential in the recession year is therefore equal to -0.50pp. If we only look at the effect of sentiment on the employment growth differential of firms differing in their external dependence, but where shareholders have the same monitoring ability, we see that, just as in the cross-industry analysis, the total effect of an increase in sentiment in the year prior to a recession year is positive. Specifically, the employment growth differential between firms at the 75^{th} and 25^{th} percentile in terms of external dependence increases by 0.44pp as a result of a one standard deviation increase in sentiment.

In models 3 and 4, I run the same regressions as in models 1 and 2, but defining economic recessions as financial crises. Years during which the US experienced a financial crisis were obtained from the list of financial crises established by Laeven and Valencia (2010). In both models, only the interaction term of sentiment with monitoring ability is significant. The coefficients are much smaller than those in models 1 and 2, but very close in magnitude to those from models 1 and 7 in Table 14, where I do not condition on the presence of crises. Conditioning on the presence of financial crises therefore does not seem to have much of an impact on the results. This could be due to there only being five financial crisis years in the sample. In each of these five years, sentiment was actually quite close to zero, with a minimum of -0.21 in 2008 and a maximum of 0.06 in 1988. Moreover, four out of the five financial crisis years followed each other (2007 to 2010). The results could therefore be heavily influenced by a lack of financial crisis years and relatively little variation in sentiment in the available crisis years. Perhaps that with a larger amount of financial crisis years in the sample, one would find results more closely resembling those found when defining crises as economic recessions. Based on the above observations, and the knowledge that the US is a market-based economy, I decide to only consider economic recessions in further analyses.

Robustness - Alternative Measures of External Dependence

As has been mentioned before, there could be disadvantages to using a firm's score on the Kaplan and Zingales (1997) index as a measure of its external dependence. To investigate the robustness of the main results of the firm-level analysis, I therefore consider several other ways of measuring a firm's external dependence. These alternative measures are all related to the measure of external dependence of industries created by Rajan and Zingales (1996). They calculate their industry-level measure of external dependence as follows.

First, the dependence of individual firms on external finance is calculated. Rajan and Zingales (1996) argue that this can be proxied by the fraction of capital expenditures not financed with cash flow from operations. They calculate this as the ratio of capital expenditures (CAPX from Compustat) minus cash flow from operations, to capital expenditures. Cash flow from operations is calculated by adding increases in a firm's payables (AP) and decreases in a firm's inventories (INVT) and receivables (RECT) to the firm's cash flow from operations as stated by Compustat (OANCF). To smooth temporal fluctuations and reduce the effect of outliers in calculating a firm's external dependence, the numerator and denominator are both first summed over time, considering all observations available for the firm, before the division is done. This gives one value for the external dependence of the firm. The industry-level external dependence is then equal to the median value of the external dependence of those firms that the industry is comprised of. Aggregating using the industry median prevents large firms from swamping the information of small firms (Rajan and Zingales, 1996).

One of the possible disadvantages of using the firm- and time-varying KZ index as the measure of external dependence is that it could be very noisy. I therefore consider the value of the Rajan and Zingales (1996) measure of the industry to which a firm belongs as a less noisy alternative measure of the external dependence of the individual firm. I determine the industry to which the firm belongs using the first two digits of the firm's SIC code. Likewise, the industry's value for the RZ measure is calculated based on the median of the time-aggregated external dependence of firms which share the first two digits of their SIC code. The data used to construct the RZ measure span the period 1987 to 2011. Data from earlier years could not be considered as there were no values for the Compustat cash flow from operations data item for those firm-year observations.

In models 1 and 2 of Table 17 I present the results obtained using the industry-level measure of external dependence as defined in Rajan and Zingales (1996). The regression specifications considered are the same as those of model 7 of Table 14 and model 2 of Table 16. These specifications are those deemed most relevant for the focus of this thesis. They solely concern the investigation into the difference in the effect of sentiment on the employment growth of firms differing in their external dependence and the ability of their shareholders to monitor managers. Note that the external dependence term has been automatically omitted from the regressions of models 1 and 2 due to collinearity with the other terms.

As is found in the equivalent model where external dependence is measured using the KZ index, the one significant coefficient in model 1 is that of the interaction of sentiment and monitoring ability, which is almost equal in magnitude as when the KZ index is considered. The coefficient remains significant when conditioning the analysis on the presence

of economic recessions, shown in model 2. The coefficient is lower than the estimate obtained in model 2 of Table 16. Next to this decrease, there are two other large changes in the coefficients of interactions including sentiment. Firstly, the interaction of sentiment with external dependence loses significance. Secondly, the triple interaction including the previously mentioned interaction term and the recession dummy also loses significance.

One of the disadvantages of using the level of external dependence of an industry as the measure of external dependence for firms belonging to that industry is that it ignores the potentially large intra-industry differences in external dependence between the firms that the industry is comprised of. For this reason, I consider two more measures of external dependence, both related to the RZ measure of external dependence. In models 3 and 4 I define external dependence as the time-aggregated value for the external dependence of the firm. This is the firm-level measure of external dependence calculated using the method of Rajan and Zingales (1996), smoothed for temporal fluctuations. In models 5 and 6, I consider the firm-level, time-varying value of external dependence. Both of the measures have been Winsorized at the 1^{st} and 99^{th} percentile, due to the presence of extreme outliers.

Interestingly, the coefficient for the triple interaction of sentiment, external dependence and monitoring ability is significantly positive in model 3, however it disappears when conditioning the analysis on the presence of economic recessions. The finding therefore seems to not be of much meaning. In model 4, the interaction of sentiment and monitoring ability is again significant and similar of magnitude to when the industry-level RZ measure is considered. Significance of the coefficients for the interaction of sentiment and external dependence, and of the triple interaction of sentiment, external dependence and the recession dummy again shines in absence, as was the case when the industry-level RZ measure was considered. Note that the external dependence term has again been omitted due to collinearity. Defining external dependence using the firm-level, time-varying measure, in models 5 and 6, leads to all coefficients of interest being insignificant.

Finding that external dependence loses its explanatory power when considering these alternative measures of external dependence based on the measure developed by Rajan and Zingales (1996), is surprising, as significant results were found in the cross-industry analysis using a measure based on theirs. It might be that the external dependence of a firm's industry is not a good proxy for the external dependence of the firm itself and that both firm-level measures are too noisy to be suitable alternatives to the firm's score on the KZ index, even after having been Winsorized. It could also be that the significant results found for the interactions including sentiment and the firm's value on the KZ index were statistical flukes, and that more externally dependent firms are not more affected by sentiment than less externally dependent firms. However, this seems unlikely considering the findings of the

cross-industry analysis. Another reason could be that the measure of external dependence developed for manufacturing industries by Rajan and Zingales (1996) is not suitable to be used for firms not belonging to manufacturing industries. The RZ score is based on the fraction of capital expenditures which cannot be financed by the firm's own cash flows. Many firms in different types of industries might be very externally dependent, but not because they have large amounts of capital expenditures, but because they have large amounts of other expenses. An example could be pharmaceutical companies, which have large R&D expenses, but possibly low capital expenditures. Even though such firms might be very externally dependent, they might not be flagged as such when judging based on their score on the RZ measure. This could lead to the RZ score being an unsuitable measure of the external dependence of many of the firms in the sample, and could lead to the coefficient estimates for the interactions including both investor sentiment and external dependence being insignificant when considering these alternative measures of external dependence.

All of the explanations for the findings in this subsection discussed above could be valid, it therefore remains unclear whether the KZ index is an unsuitable proxy for the external dependence of firms, or the alternative measures of external dependence considered in this subsection, or both.

Robustness - Alternative Measures of Monitoring Ability

One of the disadvantages of using the dummy variable indicating any analyst coverage is that potentially relevant information on the monitoring ability of shareholders might be lost. To take into account this potential information embedded in the degree of coverage which a firm enjoys, I analyze the effect of sentiment on the employment growth differential between more monitored and externally dependent and less monitored and externally dependent firms while defining monitoring ability as the total amount of I/B/E/S analyst earnings forecasts that a firm has received in a given year. The results obtained using this alternative measure of monitoring ability are presented in Table 18.

The findings are similar to those of the main analysis. When not conditioning on the state of the economy (model 1), the interaction of external dependence and sentiment is not significant, while the interaction of sentiment and monitoring ability is. The former coefficient is significant when a distinction is made between normal and crisis years, as is the coefficient for the interaction of external dependence, sentiment and the recession dummy. Both coefficients are of the same sign as in the main analysis (negative, respectively positive) and of similar magnitude. The coefficient for the interaction of monitoring ability is significant in the second model as well, and of larger size than in the first model. As found

when defining monitoring ability using the dummy indicating any analyst coverage, the triple interaction of sentiment, monitoring ability and the recession dummy is insignificant.

Based on the coefficient estimates in model 2, the employment growth differential between a firm at the 25^{th} percentile in terms of the amount of analyst estimates (18 estimates, excludes those firms with no estimates) and a firm with no analyst coverage at all decreases by -0.12pp if sentiment increases by one standard deviation in the prior year. The change in the employment growth differential resulting from a prior one standard deviation increase in sentiment between a firm at the 75^{th} (99 estimates) and 25^{th} percentile in terms of the number of analyst estimates is -0.54pp.

The results in Table 18 indicate that incorporating the information embedded in the amount of analyst estimates which a firm receives does not lead to a substantial change in the conclusion regarding the effect of sentiment on employment growth being required. Firms which are covered by analysts again seem to have lower employment growth as a result of higher sentiment than firms which are not covered by analysts. What's more, this difference seems to become larger as one compares an uncovered firm with firms increasing in the amount of analysts covering them. The results therefore show that it is not just the distinction between being covered by analysts or not which determines the extent to which sentiment affects a firm's employment growth, but also the degree to which a firm is covered by analysts.

Note that it is not possible to say whether the last result mentioned above is found due to the amount of analyst estimates that a firm receives being a good measure for the monitoring ability of its shareholders or because of the amount of analyst estimates that a firm receives being a proxy for firm size. These are both expected to lead to an effect of a similar sign on the employment growth differential between firms with more and less analyst estimates. For this reason, I add the interaction of sentiment and size to the regression of model 1 (model 3) and the interactions of sentiment and size; size and the recession dummy; and sentiment, size and the recession dummy to the regression of model 2 (model 4). The interaction of sentiment and size is significant in model 3, just as it was in model 8 of Table 14, where I do not condition on the state of the economy. It loses its significance when the economic recessions are considered in model 4. The coefficient for the interaction of sentiment and monitoring ability remains significant in both models 3 and 4, increasing in magnitude compared to in models 1 and 2. Overall, the results in models 3 and 4 indicate that the number of analyst estimates does not proxy for firm size in its interaction with sentiment. It is therefore likely to be a good indicator of the monitoring ability of shareholders.

In Table 19, I rerun the regressions of Table 18 but defining monitoring ability in the same way as Hong, Lim, and Stein (2000), as $log(1 + number\ of\ analyst\ estimates)$. This

alternative definition is considered because using the raw number of analyst estimates might be too influenced by outliers and there is some uncertainty about whether the variable is stationary. This alternative measure suffers less from outliers and there is much less uncertainty about its stationarity. The constant is added so that the logarithm is defined for firm-year observations with zero analyst estimates. Significance and signs of the coefficients does not change when using this alternative measure of monitoring ability. What does change (quite substantially) are the estimates of the changes in the employment growth differentials between firms differing in the monitoring ability of their shareholders caused by changes in sentiment. Based on the coefficient estimates in model 2, the employment growth differential between a firm at the 25^{th} percentile in terms of the amount of analyst estimates and a firm with no analyst coverage at all decreases by -0.78pp if sentiment increases by one standard deviation in the prior year. The change in the employment growth differential resulting from a prior one standard deviation increase in sentiment between a firm at the 75^{th} and 25^{th} percentile in terms of the number of analyst estimates is -0.44pp. Overall, the results in Table 19 strengthen the conviction that the extent to which a firm is covered by analysts is also important in determining to what extent the firm's employment growth is affected by sentiment.

Robustness - Manufacturing Industries of the Cross-Industry Analysis

One of the potential worries regarding the results found in the main analyses could be that they were driven by firms belonging to those manufacturing industries which were investigated in the cross-industry analysis. As Montone and Zwinkels (2015) solely investigate this subset of industries as well, it is important to establish whether sentiment also affects employment growth in firms belonging to other industries. To alleviate this concern, I analyze the subsample of firms not belonging to any of the 28 manufacturing industries included in the cross-industry sample of industries. To do so, one should of course first establish which firms (do not) belong to these 28 industries. The manufacturing industries considered in the cross-industry analysis were defined at the 3-digit level of the ISIC code (Second Review, Third Edition), while the industries of firms in the firm-level sample are defined by SIC codes. As a correspondence table between the two is not available, the ISIC codes of the manufacturing industries had to be linked to SIC codes based on my own judgement. In determining which SIC codes belong to the ISIC codes, I based the decision on the four-digit ISIC industries belonging to each 3-digit industry group. These four-digit industries were then each linked to several SIC codes, based on the description belonging to the four-digit

ISIC industry[4] and the names of the four-digit SIC code industries[5]. Table 20 depicts the corresponding SIC codes to each of the ISIC codes.

Table 21 presents the results of the investigation into whether the findings of the main analysis were driven by the subsample of firms belonging to the industries investigated in the cross-industry analysis. Models 1 and 2 consider the regression specifications of respectively model 7 of Table 14 and model 2 of Table 16, but limit the sample of firms to only those not belonging to any of the 28 manufacturing industries investigated in the cross-industry analysis. Models 3 and 4 consider just those firms belonging to the manufacturing industries. The coefficients of those interactions including sentiment which are significant in the models analyzing the full sample of firms are also significant when analyzing solely those firms not belonging to the 28 manufacturing industries. The coefficient estimates are even slightly larger in magnitude. Only one coefficient is significant in the regressions analyzing the subsample of firms belonging to the 28 manufacturing industries, that of the interaction of sentiment and monitoring ability when the analysis is conditioned on the presence of economic recessions. The coefficient is of smaller magnitude than the coefficient obtained when analyzing the full sample of firms.

Overall, the results provide strong evidence that the findings in the full sample of firms were not driven by the subsample of firms belonging to the 28 manufacturing industries. They even indicate that the effect of sentiment on employment growth is stronger in firms not belonging to these industries.

As I have found a significant effect of sentiment on the employment growth differential between more and less externally dependent manufacturing industries in the cross-industry analysis using the industry-level RZ measure, I investigate whether such a pattern is also found among firms within these industries. To this end, I re-estimate models 3 and 4 of Table 21 using the three alternative measures of external dependence discussed before. These results are presented in Table 22. There are only significant coefficients for interactions including sentiment in one of the models. Specifically, the interaction of sentiment and external dependence and the interaction of sentiment, external dependence and the recession dummy are significant in model 4, where the firm-level time-aggregated measure of RZ is considered. The coefficients are negative, respectively positive, just as they were in the cross-industry analysis. The effect of sentiment on the employment growth differential of firms differing in their external dependence is again of economic significance. The employment growth differential between firms at the 75^{th} and 25^{th} percentile in terms of external dependence

[4] Descriptions of each four-digit ISIC industry can be found on the website of the United Nations Statistics Division

[5] A good overview of the SIC codes at the four digit level can be found at www.siccode.com

decreases by 0.40pp (increases by 0.24pp) as a result of a one standard deviation increase in investor sentiment, if the following year is a normal (recession) year. Striking is that the interaction of sentiment and monitoring ability loses its significance, while it is significant in similar models where the KZ index is considered as the measure of external dependence.

The findings of model 4 are considered to be quite important, even though no significant results are found using the other two alternative measures of external dependence. This is because the firm-level, time-aggregated RZ measure is arguably the best of the three to represent the external dependence of individual firms, as it allows for intra-industry differences in external dependence and smooths for the likely temporal fluctuations. The results indicate three things. Firstly, that the relationship between sentiment and external dependence found for the manufacturing industries might also hold for the firms within those industries. Secondly, finding that the results in model 4 are in line with the findings in the full sample using the KZ index as the measure of external dependence, supports the view that the KZ index is indeed a suitable measure of external dependence. It also supports the idea that the RZ measure of external dependence might not be a suitable measure of external dependence for all firms, but only for firms in manufacturing industries. What remains puzzling is why the KZ index seems to have no explanatory power at all in the subsample of manufacturing firms and why monitoring ability loses its explanatory power when the alternative measures of external dependence are considered.

Additional Analysis - Firm Activity

Two of the three mechanisms through which sentiment might affect employment growth described in this thesis are expected to operate predominantly via the investments of a firm. Specifically, these are the mechanisms through which sentiment might impact the demand for labor. To investigate whether there is indeed some evidence for the existence of any of these two mechanisms, I identify a characteristic which should influence the extent to which these two mechanisms affect a firm's employment growth, but which should be unrelated to the strength of the third mechanism discussed in this thesis (sentiment shifting the labor supply curve). Finding that this characteristic is important in determining the effect of sentiment on employment growth would be support for the idea that there is an investments-based mechanism through which sentiment affects employment growth. This is assuming that there are no other channels through which sentiment affects employment growth of which the magnitude of the effect is influenced by the characteristic considered.

Inspired by one of the analyses done by Montone and Zwinkels (2015), where they find that sentiment affects industries more in those countries where the US already actively

invests in, I conjecture that the two aforementioned mechanisms through which sentiment affects the demand for labor are particularly visible when comparing firms with a different level of activity, while the third mechanism should not affect these. Activity here means the degree to which a firm partakes in new projects, or expands the size of existing ones. More active firms are likely to have more projects in the pipeline which could be partaken in, or expanded further, if funding allows it. This would mean that their employment growth would be positively affected to a larger extent by sentiment than firms which are relatively inactive, i.e. the labor demand increasing effect of sentiment is more strongly present in such firms. Moreover, those firms which are active are unlikely to be those firms solely investing to replace existing assets. Active firms are therefore less likely to experience the labor demand decreasing effect of sentiment resulting from timed replacing of existing assets with more productive ones. An example of an inactive company would be one which only invests sporadically, all in long-term projects of fixed size. Some of these projects would entail replacements of existing assets with more productive ones. Even though such a firm might be highly monitored and very externally dependent, its hiring strategy would either be unresponsive to sentiment, or consist of firing obsolete employees after performing timed productivity-enhancing replacement investments. Overall then, one would expect an increase in the employment growth differential in normal years between more and less active firms as a result of a prior increase in sentiment. This increase in the employment growth differential is likely to be less pronounced, or even fully negated, during times of crisis. This is because sentiment-induced replacement investments and sentiment-induced partaking in new projects, or expansion of existing projects, would be less likely to be performed if a recession follows the period of higher sentiment. Moreover, as Montone and Zwinkels (2015) argue, sentiment might amplify the negative effect of a crisis on employment growth. This could lead to the total effect of sentiment on the employment growth differential to be negative if a recession year follows the year of the increase in sentiment.

It seems unlikely that the effect of sentiment on the supply of labor differs between active and inactive firms in normal or crisis times. Firm activity therefore seems to be a suitable characteristic to consider in investigating whether there is evidence for the presence of any of the two mechanisms through which sentiment might affect labor demand.

A good indicator of the activeness of the firm would be its prior investments. The main measure of investments considered in this subsection was inspired by the measures of investments detailed in McLean and Zhao (2014). I calculate investments as the sum of total non-cash asset growth, R&D spending (XRD from Compustat) and SG&A expenses (XSGA) scaled by lagged total assets, which is then Winsorized at the 1^{st} and 99^{th} percentile. The goal is to create a broad measure of firm activity, also capturing possible activities such as

investing in one's brand or acquiring other firms.

To test whether highly active firms are indeed affected differently by sentiment than less active firms, I introduce two new interactions containing sentiment: lagged sentiment interacted with lagged investments and the triple interaction of lagged sentiment, lagged investments and the recession dummy. The coefficients for these interactions are expected to be positive respectively negative. As is to be expected, I include an investments term to all models which include interactions of sentiment and investments and an interaction term between investments and the recession dummy in those models where I also condition on the state of the economy.

Note that including investments and the interaction including both investments and sentiment does not have to remove all explanatory power of the other interaction terms including sentiment. The relationships can coexist for multiple reasons. Among these are the possible existence of the alternative mechanism through which sentiment might affect employment growth (sentiment causing shifts in the supply curve of labor), of other mechanisms which have not yet been identified and of lagged effects.

In model 1 of Table 23 I add investments and the interaction of sentiment with investments to the regression specification of model 7 of Table 14. None of the interaction terms including sentiment are significant. This changes when conditioning the analysis on the state of the economy, which I do in model 2. Here I introduce investments, the interaction of investments and the recession dummy, the interaction of sentiment and investments and the triple interaction of sentiment, investments and the recession dummy to the regression specification of model 2 of Table 16. Both interaction terms including sentiment and investments are significant in this model, indicating again that results of analyses unconditioned on the state of the economy hide important relationships between sentiment and employment growth. The coefficients of the interactions of sentiment and investments are both of the expected sign. They indicate a sentiment-induced effect on employment growth of economic significance in both normal as well as in crisis times, namely an increase, respectively decrease, in the employment growth differential between firms at the 75^{th} and 25^{th} percentile in terms of investments of 0.65pp and 1.08pp. Interestingly, the coefficient for the interaction of sentiment and monitoring ability is significant in model 2. The coefficient is even of slightly larger magnitude than in the regressions excluding investments.

These findings provide some support for the idea that sentiment affects employment growth through at least one of the two investment-related mechanisms through which sentiment might affect labor demand discussed in this thesis. To see whether the results of the previous analysis are robust to a different specification, I consider a second measure of investments. It is the same as one of the measures discussed by McLean and Zhao (2014)

and is calculated as the sum of Compustat capital expenditures (CAPX), R&D expenses and SG&A expenses, scaled by lagged total assets. I Winsorize the resulting values at the 1^{st} and 99^{th} percentile.

The results obtained using this alternative specification of investments are shown in models 3 and 4 of Table 23. I again find no significant coefficients of interactions including sentiment when not conditioning the analysis on the presence of economic recessions. When this is done, I find that only the result for the interaction of sentiment, investments and the recession dummy is robust to a different definition of investments. Based on the coefficient estimate of the former interaction, I estimate that a one standard deviation increase in sentiment leads to a decrease in the employment growth differential between firms at the 75^{th} and 25^{th} percentile in terms of investments of 1.19pp if the US is in a crisis in the year following the increase in sentiment. This is similar to the estimate found with the first measure of investments.

Overall the results of this analysis do provide some indication for the existence of the mechanisms through which sentiment affects the demand for labor of firms. However, this analysis cannot distinguish between either of the two. It can therefore not be said whether there is evidence for only one of the two mechanisms existing, or both.

Additional Analysis - Issuing Companies

According to the theoretical model explored in the literature review, the root cause of sentiment affecting employment growth is that it leads managers to make use of the sentiment-induced inflation of the stock prices of their firms to raise extra money from the financial markets in the form of equity. The two mechanisms through which sentiment might affect the demand for labor of a firm which are discussed in this thesis, should solely affect those firms which act upon sentiment by raising (a larger amount of) equity, as those are the firms which can use sentiment-influenced equity funding to perform new projects, expand the size of existing ones or to finance the replacement of the existing capital stock. One would therefore expect to see a larger effect of sentiment on the employment growth of equity-issuing firms with a given level of external dependence and monitoring ability of their shareholders, than on similar, non-issuing firms. In this subsection, I investigate whether this is the case.

To identify issuing firms, I obtained a list of 41,630 equity issues by US-based firms spanning the period 1981 to 2011 from the Thomson One service. Both IPOs (15,337) and SEOs (26,293) were considered. 35,607 equity issues had the right identifier to be linked to the dataset. To have one unique record for each firm-year observation, 6,262 issues were

dropped from the sample, as these constitute secondary issues by firms within a calendar year. There were no examples in the sample of firms issuing equity thrice or more during one year. Of these remaining 29,345 firm-year observations, 8,558 could be linked to firm-year observations in the firm-level dataset. 3,158 of these observations related to IPOs, 5,400 related to SEOs.

I had originally planned to analyze the subsamples of firms which performed an IPO or SEO in the preceding year both separately and together. The reason for wanting to analyze the two subsamples of firms separately as well, is that the two types of firms might differ substantially in many important characteristics, which could influence how, and to which degree, their employment growth is affected by sentiment and the control variables. An example would be that firms partaking in an IPO are unlikely to do so to raise funds for replacement investments, while this could be the case for firms partaking in SEOs. This could then lead to differences in how the employment growth of the different groups of firms reacts to sentiment.

A problem which reared its head is that there were not enough IPO firm-year observations to be able to run the regressions solely on the IPO firm-years. I have therefore only been able to analyze the subsample of firms which partook in a SEO in the preceding year and the subsample of firms which partook in either an IPO or SEO during the preceding year. I report only the results for the former analysis as those of the latter are of less significance and those significant coefficients are smaller, indicating that the two populations might indeed be too different from each other to be considered together.

The results of the investigation into the effect of sentiment on the employment growth of firms performing a seasoned equity offering in the preceding year are presented in models 1 and 2 of Table 24. The first thing standing out is the number of significant coefficients of interactions including sentiment in model 2, where I condition the analysis on the presence of economic recessions. Apart from the interaction of sentiment, monitoring ability and the recession dummy, all interaction terms containing sentiment are significant. The signs of the interactions of sentiment with external dependence; sentiment with external dependence and the recession dummy; and of sentiment with monitoring ability are the same as those found in the full sample of firms using the KZ index as the measure of external dependence. Interestingly, the sign for the triple interaction of sentiment, external dependence and monitoring ability is positive, while the sign of the quadruple interaction of sentiment, external dependence, monitoring ability and the recession dummy is negative. Based on these coefficient estimates, a one standard deviation increase in sentiment induces a decrease in the employment growth of 43.87pp for a non-first time issuer whose shareholders have a good ability to monitor managers and which is at the midpoint level of external dependence, if

the year following the increase in sentiment is a normal one. If the US is in a recession in the year following the increase in sentiment, the change in employment growth is -46.06pp, meaning that the negative effect of sentiment is amplified during a recession year. These estimates indicate an immense influence of sentiment on the employment growth of firms partaking in a SEO, even considering their mean employment growth of 21.26%.

In models 3 and 4 of Table 24, I run the same regressions as in models 1 and 2, but using only those firm-year observations which could not be linked to an equity issue event. Note that this subsample is likely to still contain firm-year observations which should have been included in the subsamples of issuing firms, but for which the required identifying information was not available. For this reason, and due to possible other mechanisms through which sentiment might affect employment growth which are unrelated to equity issues, one might still find significant coefficients for interactions including sentiment. In fact, I do so. Those coefficients which were significant in the equivalent regressions using data from the full sample of firms (respectively model 7 in Table 14 and model 2 in Table 16), are significant in models 3 and 4 as well. The magnitude of the coefficients is almost equal. As discussed above, this is likely to be a result of the potentially large amount of unidentified firm-year observations which should have been included in the subsamples of issuing firms. Still, one could compare the magnitude of the effect which sentiment seems to have on the employment growth of issuing and non-issuing firms. The decrease in the employment growth during a normal, respectively recession, year as a result of a one standard deviation increase in sentiment in the prior year is 1.50pp or 0.50pp for a non-issuing firm whose shareholders have a good ability to monitor the manager and which is at the midpoint level of external dependence.

The large difference in the estimates for the two samples can clearly not be explained by a difference in the midpoint level of external dependence in both samples, as these are 0.8318 and 0.7064 for respectively issuing and non-issuing firms. Table 24 therefore provides some evidence that employment growth of the subsample of firms partaking in a seasoned equity offering is more sensitive to (changes in) the level of sentiment than that of the subsample of firms consisting mostly of firms not issuing equity.

Additional Analysis - Human Capital

In the cross-industry analysis, I found evidence that sentiment affects the employment growth of industries with high and low elasticity of labor supply (respectively a low and high level of human capital) in ways predicted by the model of Montone and Zwinkels (2015), but that of industries with a moderate elasticity of labor supply in unexpected ways. These findings generate an interest to also investigate whether the effect of sentiment is different

on firms which differ in their elasticity of labor supply. I again consider the level of human capital to be a good indicator of the elasticity of labor supply.

Based on the findings in the cross-industry analysis and the predictions of the theoretical model, one would expect to find that there is an insignificant effect of sentiment on the employment growth differential between highly externally dependent and monitored firms and little externally dependent and monitored firms in the subsample of firms with a low elasticity of labor supply (high level of human capital). A positive effect on the employment growth differential would be expected for the firms in industries with a high elasticity of labor supply (low level of human capital).

Sadly, I have not been able to find a viable measure of firm-level human capital which could be constructed using the available firm-level data, or with firm-level data which could be linked to the firm-level data set used. I therefore use the three industry-level measures of human capital intensity developed by Ciccone and Papaioannou (2006) for 37 US manufacturing industries to create proxies for firms' levels of human capital. Note that a firm-specific measure of human capital would likely have been better than using an industry-level measure to proxy for the level of human capital of the firm, due to possible intra-industry differences in the level of human capital of firms being ignored by the latter.

In contrast to the cross-industry analysis, here I consider the full list of (sub)industries investigated by Ciccone and Papaioannou (2006), to lose as little potentially relevant information as possible. I employ the same quartile-based method to place the 37 industries in groups of industries with a high, medium and low level of human capital for each of the Ciccone and Papaioannou (2006) measures of human capital intensity. The two combining measures HCINT(COMB) and HCINT(COMBRES) are constructed again as well.

Having constructed the measures of human capital for the industries, I need to link the individual firms to those industries. As with the analysis on the subsamples of firms either belonging, or not belonging, to industries included in the cross-industry analysis, the industries for which data on human capital are available are identified with three digit ISIC codes. The ISIC codes therefore have to be linked to the four-digit SIC codes identifying the industry to which the firms in the firm-level data set belong. This is again done at my discretion. Table 25 lists the industries included in the analyses in this subsection; their human capital intensity; their level of human capital according to each of the three measures of Ciccone and Papaioannou (2006) (HCINT, HCINT(SEC) and HCINT(COL)) and the two combining measures (HCINT(COMB) and HCINT(COMBRES); their ISIC codes; and the relevant SIC codes. The industries with ISIC codes 3511, 3513, 3411, 3841, 3843 and 3211 are subcategories of the industries with ISIC codes 351, 355/356, 341, 383, 383 and 321. I merge these subindustries with their upper level industries to avoid the arduous task of

having to distribute individual SIC codes over the two. This does not influence the results seeing that these subcategories are all within the same bracket of human capital as their parent for each of the five measures.

Note that the sample of firms considered in this subsection is the same as the one analyzed in models 3 and 4 of Table 21. Please refer to those models for the results obtained when the full sample of firms for which data on human capital are available, is analyzed.

Tables 26, 27, 28, 29 and 30 present the results obtained when investigating subsamples of firms differing in their level of human capital, according to, respectively, the measures HCINT, HCINT(SEC), HCINT(COL), HCINT(COMB) and HCINT(COMBRES). The only coefficient which is significant in the subsamples of firms with a high level of human capital, regardless of the measure used to determine it, is the one for the interaction of sentiment and monitoring ability in those regressions where I condition on the presence of an economic recession. The coefficients are all negative and of larger magnitude (between -0.0125 and -0.0147) than the significant coefficient obtained when considering the full sample of firms for which data on the level of human capital is available (-0.0073). The results for the subsamples of firms with a low level of human capital show a bit more diversity in the coefficients which are significant. By construction the HCINT(COMB) and HCING(COMBRES) measures provide the same result, namely, a significantly negative coefficient for the interaction of sentiment and external dependence in the model where I do not condition on the presence of recessions. It is significant, but of lower magnitude, when determining firm human capital using the HCING(COL) measure. In both cases the significant coefficient disappears when the analysis is conditioned on the presence of recessions. Surprising is the finding of a significantly negative coefficient for the interaction of sentiment, external dependence and monitoring ability in the subsample of firms with a low level of human capital according to the HCINT measure. However, seeing that it is not found with any of the other measures, it is most likely not very meaningful. Finally, no significant coefficients of interest are obtained when determining the level of human capital using the HCINT(COL) measure.

The results for the subsamples of firms with a medium level of human capital show some consistency. The interaction of sentiment, external dependence and the recession dummy is significant and positive for three of the measures (HCINT, HCINT(COMB) and HCINT(SEC). The coefficients are all of similar magnitude (0.0110 to 0.0131). None of the interactions including sentiment are significant when the firms are considered to have a medium level of human capital as determined by the HCINT(COL) and HCINT(COMBRES) measures. Again I find a significantly negative coefficient for the interaction of sentiment, external dependence and the recession dummy, this time when human capital is measured with HCINT(SEC).

Due to a lack of significance of comparable coefficients, the results in this subsection do not really allow for drawing a conclusion on whether the effect of sentiment on the employment growth differential of firms differing in their external dependence and the monitoring ability of their shareholders, is different for subsamples of firms differing in their level of human capital. So, it cannot, for example, be said that in normal times the employment growth differential between firms with a high and low level of external dependence and monitoring ability of shareholders is more affected by sentiment among firms with a low level of human capital than among firms with a high level of human capital. What can be done is comparing the results of this firm-level analysis with those found in the cross-industry analysis. This would be to see whether the difference in the effect of sentiment on the employment growth of industries differing in their external dependence, but with similar levels of human capital, is also observed across firms differing in their external dependence within these industries. The results indicate that this is not entirely the case. The positive effect of sentiment on the employment growth differential of industries differing in their level of external dependence, but all having a low level of human capital, is not found at the firm level. On the contrary, there is some evidence that the employment growth differential between low human capital firms with a high and low external dependence is negatively impacted by higher sentiment. What is in line with the pattern found at the industry level is that there seems to be no effect of sentiment on the employment growth differential of firms differing in their level of external dependence, but all with a high level of human capital. Finally, the results obtained for the subsample of firms with a medium level of human capital also correspond somewhat with those found at the industry level: an economic recession following a period of higher sentiment leads to an increase in the employment growth differential between more and less externally dependent firms.

Additional Analysis - Sentiment Beta

One would expect that the mechanisms discussed in this thesis through which sentiment affects labor would have a more pronounced effect on firms whose stock prices are more affected by sentiment of financial markets (termed high sentiment beta stocks from this point onwards). Seeing that more externally dependent and better monitored firms benefit more from sentiment-inflated stock prices, one would expect to see a larger impact of sentiment on the employment growth differential between highly externally dependent and monitored firms and little externally dependent and monitored firms, for firms with a high sentiment beta than for firms with a low sentiment beta. To investigate whether this is the case, I perform the analyses discussed in this subsection of the thesis.

Baker and Wurgler (2006) propose several firm characteristics which might be indicators of the degree to which a firm's stock price is affected by sentiment. These characteristics are the firm's size, its age, the riskiness of its stock, its profitability, its dividend policy, the tangibility of its assets, its growth opportunities and whether or not the firm is in distress. The authors conjecture that these characteristics are good indicators of the subjectivity involved in valuing the firm and the difficulty to arbitrage its stock, which are considered to be important determinants of the susceptibility of the firm's stock price to (changes in) sentiment. Baker and Wurgler find that all of these characteristics, except for asset tangibility, are indeed good indicators of the degree to which a firm's stock price is affected by sentiment. In the analyses in this subsection, I therefore consider these characteristics to identify firms with high and low sentiment betas. Operationalization of these characteristics, discussed next, was done in mostly the same way as by Baker and Wurgler (2006).

A firm's size is defined as its market value of equity. This is calculated by multiplying the firm's fiscal year-end stock price (Compustat code: PRCC_F) with the number of common shares outstanding (CSHO). The firm's age is defined as the number of years since the firm's first appearance in the Compustat database. Risk in year t is defined as the standard deviation of a firm's monthly stock returns over the 12 month period ending in June of year t. The stock return data used were gathered from the CRSP database. Firm profits are calculated by adding income statement deferred taxes (TXDI) to income before extraordinary items and subtracting preferred dividends (DVP). A profitability dummy variable is created with value one if the firm is profitable and zero if it is unprofitable. To operationalize dividend policy, a dividend payer dummy is created, which takes on the value one for firms which have a value for the dividend per share at ex date Compustat variable (DVPSX_F) and zero otherwise. Growth opportunities and distress are operationalized with three different measures, used for both characteristics. Firstly, there is the firm's book-to-market value, defined as the firm's book value of equity (Compustat shareholder's equity (CEQ) and balance sheet deferred taxes, (TXDITC)) divided by its market value of equity as calculated for the size characteristic above. Relatively high values of the book-to-market ratio are related to distress, low values to growth opportunities. The second measure used to operationalize growth opportunities and distress is the firm's usage of external finance. This is calculated by subtracting the change in retained earnings (RE_t - RE_{t-1}) from a firm's change in assets (AT_t - AT_{t-1}) and dividing the remainder by total assets of the firm in the previous year. Here, low values indicate distress, while high values indicate growth opportunities. The last measure used to operationalize growth opportunities and distress is the growth in sales. This is defined as the change in net sales (Sale_t - Sale_{t-1}) divided by prior year net sales. Again, low values indicate distress while high values indicate growth opportunities.

For each year and every measure of a characteristic (excluding profitability and dividend policy), I sort the observations in deciles based on their score for the measure sorted on. I then assign each of the observations to one of three groups for each measure. The first group consists of those firm-year observations scoring in the lowest three deciles of a measure within their year, the second group consists of the middle four deciles and the third group of the highest three. For profitability and dividend policy, I put firm-year observations into two groups: those firms which are respectively profitable and unprofitable and dividend payers and not dividend payers. Table 31 gives an overview of the different groups constructed for each (measure of a) firm characteristic and lists the expectation regarding the sentiment beta of firms within each group based on the findings of Baker and Wurgler (2006).

The actual analysis in this subsection involves estimating the regression of model 2 from Table 16, where I condition the analysis on the state of the economy and the real economy control variables are included, once for each of those groups of firms which are expected to have a high or low sentiment beta. Estimates of the employment growth differential between more and less externally dependent and monitored firms are then compared between the different groups for each characteristic (e.g. the estimate of the employment growth differential for the age group with a high sentiment beta is compared with that of the age group with a low sentiment beta). In total I estimate 19 regressions.

Table 32 presents the coefficient estimates for those interactions including sentiment estimated in the 19 regressions performed on different groups of high and low sentiment beta firms. The first thing attracting attention is the relative lack of significant results, especially for the regressions analyzing firms with a high sentiment beta. I only find significant coefficients for those interactions excluding the recession dummy in 4 out of 11 regressions for the high sentiment beta groups of firms. I find significant results for interactions including the recession dummy in 3 regressions. Interestingly, all these coefficients are found for the high sentiment beta groups as determined by the measures for growth opportunities and distress. For the regressions analyzing samples of firms with a low sentiment beta, these numbers are 4 respectively 2. The significant coefficients for the low sentiment beta groups are spread over almost every characteristic.

The second observation worth noting is that I find a significant coefficient for both the high and low sentiment beta group only for one measure: the growth in sales. Specifically, this concerns the coefficient for sentiment and monitoring ability in the subsamples of firms with a medium and low growth in sales. As found when analyzing the full sample of firms, the sign of the coefficient is negative for both groups of firms. The coefficient for the low sentiment beta group is smaller in magnitude than that of the high sentiment beta group. The sentiment-induced change in the employment growth differential between more and less

monitored firms is therefore larger for high sentiment beta firms than for low sentiment beta firms if the sentiment beta of a firm is determined based on sales growth. This difference is of economic significance: there is a 0.57pp difference between the employment growth differentials of the two groups.

In an effort to distill some further insight from the coefficient estimates in Table 32, I turn to comparing the aggregate of employment growth differentials between more and less externally dependent and monitored firms for the high and low sentiment beta subsamples of firms. These results can be seen in Table 33. First I look at the estimates of the change in the employment growth differential between highly monitored firms at the 75^{th} percentile and less monitored firms at the 25^{th} percentile in terms of external dependence as a result of a one standard deviation increase in sentiment. For the high sentiment beta subsamples, these estimates are -3.19pp, -2.94pp, -1.07pp and -1.31pp (respectively for low B/M, high external finance, low external finance and low sales growth subsamples of firms). For the low sentiment beta subsamples, the estimates are -2.48pp, -0.96pp, -0.64pp and -0.74pp (respectively for large size, old, profitable and medium sales growth subsamples of firms). These estimates are almost all lower than those found for the high sentiment beta subsamples of firms, lending some support for the idea that, at least in normal times, the employment growth differential of firms differing in their external dependence and the monitoring ability of their shareholders is more impacted by sentiment for firms with a high sentiment beta than for firms with a low sentiment beta.

Comparing the estimates of the total sentiment-induced employment growth differential for high and low sentiment beta firms is not so straightforward if the US is in a recession in the year following the increase in sentiment. This partly stems from finding only significant coefficients for interaction terms including sentiment but not including the recession dummy for some subsamples (leading automatically to negative differentials for crisis times), significant coefficients only for those interactions including the recession dummy for some other subsamples (making the employment growth differentials positive) and significant coefficients for both types of interactions for the remaining subsamples of firms for which any significant coefficient is found. One possible solution then is to only compare those employment growth differentials estimated using the coefficient estimates of regressions where both interactions including and excluding the crisis dummy are significant. There are three occurrences of this: for the high size deciles group (low sentiment beta), the low book-to-market deciles group (high sentiment beta) and the high external finance deciles group (high sentiment beta). The estimated employment growth differentials are respectively 0.88pp, -2.74pp and -0.85pp. It is impossible to say what sign for and magnitude of the differential indicates that the subsample is more affected by sentiment. I can therefore not draw a conclusion on

whether there is a stronger effect of a prior increase in sentiment on the employment growth differential between more and less externally dependent and monitored firms in a following recession year on firms with a higher sensitivity of their stock price to sentiment, compared to on firms with a lower sensitivity. What I can say is that the effect of an increase in sentiment on the employment growth differential seems to be negative for high sentiment beta firms and positive for low sentiment beta firms, in a following recession year. However, considering the large amount of conflicting findings in the other regressions, there is only a slight indication for the above, if any.

6. Conclusion

6.1. Summary of the Results

In this thesis I set out to do two things. Firstly, to utilize the data and methods of Montone and Zwinkels (2015), who investigate the effect of US sentiment on labor in manufacturing industries abroad, to establish whether a similar causal relationship between US sentiment and both employment and real wages is present in industries in the US. The second goal of this thesis was to investigate whether any causal effect of sentiment on employment found at the industry level is also observable at the US firm level and to find whether there are sources of firm heterogeneity which influence this relationship.

Analyzing industry-level panel data, I find evidence for the existence of a causal effect of US sentiment on both employment growth as well as real wages growth in the US. Specifically, I find that higher US sentiment leads to lower (higher) employment growth and higher (lower) real wages growth in more externally dependent industries in a subsequent normal (economic recession) year. These findings are not caused by sentiment being a reflection of the aggregate liquidity in the market. While the results for real wages growth are in line with the findings of Montone and Zwinkels (2015) and the predictions of the theoretical model that they introduce, the results for employment growth are the opposite of what is to be expected. I argue that two additional mechanisms through which sentiment might influence labor could be instrumental in generating the observed results. Firstly, sentiment might, in normal times, cause an upwards shift in the labor supply curve as employees observe (perceive) an increase in their net worth as a result of sentiment-inflated asset prices. This leads to employees requiring a higher wage for the same amount of work hours, due to the diminishing marginal utility of wealth. Secondly, sentiment might, again in normal times, lead to timed productivity-enhancing replacement investments by some firms, which could cause a sentiment-induced downwards shift of the labor demand curve of individual firms,

and, by extension, of industries.

In an attempt to discover cross-sectional patterns in the industry-level dataset, I identify subsamples of industries which are expected to differ in the elasticity of their labor supply, based on their level of human capital. These subsamples are then analyzed in separate regressions. The results from these regressions provide interesting further insights into the relationship between sentiment and labor. Firstly, sentiment seems to only have an effect on the employment growth of industries with a high elasticity of labor supply (low level of human capital) and the real wages growth of industries with a low elasticity of labor supply (high level of human capital). Both of these results are not unexpected. The second insight from this additional analysis is that sentiment only affects employment growth of industries with a moderate elasticity of labor supply in ways not consistent with the theoretical model considered. While all results could still be explained by sentiment affecting labor through a combination of the three mechanisms discussed in this thesis, the explanation might become too much of a stretch. Perhaps then that there are other mechanisms through which sentiment affects labor which, as of yet, have not been identified.

Pursuing the second goal of this thesis, I find evidence that higher sentiment leads to lower employment growth in more externally dependent and more highly monitored firms in a subsequent non-recession year. This negative effect on the employment growth differential is decreased, but not fully absent, if an economic recession follows the year of higher sentiment. These results are in line with the findings obtained for the full sample of industries in the cross-industry analysis. In investigations of the robustness of the main results, I find that the findings are robust to other specifications of monitoring ability, that they are not caused by sentiment being a reflection of the aggregate liquidity in the market nor driven by the subsample of manufacturing firms analyzed in the industry-level analysis. I also find some evidence that the results are found with other specifications of external dependence.

In an effort to create a further understanding of the relationship between sentiment and employment, I perform several additional analyses. In the first of these, I investigate whether firm activity is important in determining to what extent sentiment affects a firm's employment growth. The idea is that the two mechanisms through which sentiment might influence the demand for labor are especially present, or, in the case of the replacement investments timing mechanism, absent, in firms which are highly active. The third mechanism discussed in this thesis — sentiment affecting labor supply — is expected to not affect more active firms differently from less active firms. The findings of this additional analysis could therefore provide some evidence that the two mechanisms through which sentiment is conjectured to affect demand are actually present. Defining firm activity as prior investments and interacting this with sentiment, I find that more active firms have higher employment growth as

a result of sentiment than less active firms in normal times. In recession years following periods of higher sentiment, more active firms are found to have substantially lower employment growth than less active firms. The latter result is also obtained with a different measure of investments, however, the former is not. These results do provide some indication for the existence of one, or both of the mechanisms through which sentiment is thought to affect labor demand.

Searching for evidence of the existence of cross-sectional patterns, I investigate whether sentiment has a larger effect on the employment growth of firms issuing equity in the previous year. The expectation is for this to be the case, as I conjecture that an effect from the two mechanisms through which sentiment might affect labor demand is only present in those firms which actually act upon higher sentiment by issuing equity. To find out whether this is the case, I analyze the effect of sentiment on employment growth of firms which partook in a seasoned equity offering in the previous year and establish that these firms indeed seem to be more affected by sentiment in their employment growth than non-issuing firms.

Similar to at the industry-level, I also try to discover whether there are differences in how sentiment affects employment growth of firms with differing elasticities of labor supply. As I have been unable to find a suitable measure of human capital at the firm-level, I proxy firm-level human capital using the measures which were also employed in the industry-level analysis. This means that the level of human capital of the firm is proxied by the level of human capital of the industry to which the firm belongs. If significant intra-industry differences in the level of human capital of firms are present, the analysis would only serve as an investigation into whether the patterns found within groups of industries with a similar level of human capital are also found among the firms that these industries are comprised of. I find that sentiment does not affect employment growth differently in more externally dependent firms with a high level of human capital. Sentiment does seem to decrease the employment growth in firms whose shareholders have a better ability to monitor the shareholders. The positive effect of sentiment on the employment growth of industries with a low level of human capital is not found for the firms within these industries: there is some evidence that sentiment leads to a decrease in employment growth of more externally dependent firms compared with less externally dependent firms. Finally, there is some evidence that the employment growth of firms with a moderate level of human capital (or belonging to industries with a moderate level of human capital) reacts in a similar way to sentiment as the industries with a moderate level of human capital: employment growth of more externally dependent firms is higher during years of a recession following a period of higher sentiment than employment growth of less externally dependent firms. It should be noted that the results of this additional analysis should be interpreted with caution, due to the lack

of (consistently) significant results and because it is not clear whether the level of human capital of the industry serves as a good proxy for the level of human capital of individual firms within these industries.

The final investigation into potential cross-sectional patterns at the firm-level concerns one of whether firms whose stock prices are more influenced by (changes in) the level of sentiment, have employment growth which is more affected by sentiment. By sorting firm-year observations in deciles based on their score for several (measures of) characteristics found to indicate a firm's stock price's susceptibility to sentiment by Baker and Wurgler (2006), I create multiple subsamples of firms which are expected to have so-called high and low sentiment betas. I then analyze and compare the results for these subsamples. While surprised by the small amount of significant coefficients found for the subsamples of firms expected to have high sentiment betas, I do find some interesting results in this final analysis. Evidence points towards the employment growth of more externally dependent and highly monitored firms with high sentiment betas being more negatively affected by sentiment in normal times than that of similar firms with low sentiment betas. The results for the effect of higher sentiment on employment growth in recession years following the increase in sentiment cannot be used to draw such a conclusion; what can be said is that there is some evidence that employment growth of externally dependent firms with a high sentiment beta is lower than that of less externally dependent firms with a high sentiment beta in such years, while the employment growth of more externally dependent firms with a low sentiment beta is higher than that of similar, but less externally dependent firms.

6.2. Limitations and Opportunities for Further Research

As with any research, my thesis has its limitations. These mostly concern the investigation into the effect of sentiment on employment growth at the firm-level, as here I could not make use of the data and methods provided by more experienced researchers. One of these limitations is that I have not found overwhelming evidence that the differential effect of sentiment on the employment growth of firms differing in their external dependence is robust to considering other specifications of external dependence. Taking into account that the results found for the full samples in the industry- and firm-level analyses correspond quite well with each other, the KZ index does not seem like a bad measure for the external dependence of the firm. This is further supported by the results obtained for the subsample of firms belonging to the 28 manufacturing industries analyzed in the cross-industry analysis when defining external dependence as the firm-level, time-aggregated RZ score. These are similar to the results found for the full sample of firms when defining external dependence

as a firm's score on the KZ index. Considering that the firm-level, time-aggregated RZ score would be especially well-suited to measure the external dependence of manufacturing firms, these results increase the credibility of those results obtained when considering the KZ index. However, this evidence for the robustness of the main results to other specifications of external dependence might be seen as circumstantial. As external dependence is one of the variables of interest, it is important that it is operationalized correctly. Academics considering to do a similar firm-level investigation to the one done in this thesis, should therefore consider other measures of external dependence as well.

Another limitation of the firm-level research relates to the measures of monitoring ability used. The main measure and the alternatives are all based on analyst coverage, which might reflect more things than just the monitoring ability of the shareholders. Perhaps that different results would have been obtained if other, better measures of monitoring ability would have been considered. Researchers attempting to analyze the effect of sentiment on employment growth at the firm level, might, in the future, do well to look for potentially better measures of monitoring ability of shareholders. Perhaps inspiration for such measures could be gotten from the literature on corporate governance. One could for example think of measures related to the concentration of ownership of a firm's stock to be potential indicators of the monitoring ability of the firm's shareholders.

A third limitation relates to the linking of industries defined with ISIC codes to industries defined with SIC codes, which was done for the analyses on the subsamples of firms (not) belonging to manufacturing industries and for the investigation into cross-sectional patterns resulting from differences in the level of human capital of firms (or, more likely, their industries). As this had to be done at my discretion, some industries might have been erroneously linked, or not linked at all.

The following limitations concern the analysis into a differential effect of sentiment on employment growth of issuing and non-issuing companies. Firstly, the amount of issuing firms considered is small. The regressions analyzing the subsample of firms partaking in a SEO only had 3,623 observations. Outliers could therefore have had an undue effect on the results, which would have been less likely if the sample had been larger. Secondly, the effect of sentiment on firms partaking in an IPO could not be analyzed, which could have provided more insight into how the employment growth of issuing firms is affected by sentiment and could have provided evidence for the presence of the mechanism through which sentiment is expected to operate according to the theoretical model considered. A third limitation of this investigation is that I have not been able to compare the effect of sentiment on employment growth of issuing firms with that of firms of which it is certain that they did not issue equity. These limitations provide ample opportunities for further research.

The final important limitation of the research in this thesis relates to the investigation into differences in the effect of sentiment on employment growth of firms differing in the elasticity of their labor supply. As this limitation has already been discussed in the summary of the results, I now limit myself to discussing how future researchers could determine firm-level human capital. This would enable them to investigate whether sentiment really only affects employment growth of firms with moderate levels of human capital in ways inconsistent with the theoretical model, which one would expect based on the results found in the industry-level analysis. This is important to know as it would provide more evidence that the alternative mechanisms through which sentiment might affect labor discussed in this thesis are actually non-existent, and that academics should look elsewhere for an explanation for the findings inconsistent with the theoretical model considered.

One method of measuring the level of human capital of firms would be to create a linked employer-employee dataset, where information on the education of individuals can be linked to the companies that they work for. An example of a study determining the level of human capital in such a way is the paper by Haltiwanger, Lane, and Spletzer (1999). However, it might be impossible to link enough employees to the relatively large public firms (90% of the firms in the dataset have more than 100 employees) to make an accurate assessment of the level of human capital of the firm. Moreover, such a study would likely, by necessity, have to ignore employees of foreign subsidiaries of the firms analyzed. This could lead to a distorted view of the level of human capital of such firms. A second method of determining firm-level human capital would involve letting firms fill in a survey, which could include questions on, for example, the share of employees with a given level of education or on the extent to which employees participate in internal and/or external training courses. An example of a paper employing a survey to determine firm-level human capital is (Arvanitis and Loukis, 2009). Of course, this method would come with the usual caveats of doing survey-based research, such as non-responders/selection bias and a potential lack of validity of the results. A third method to measure the level of human capital of firms would be to use the level of education of the management team as a proxy for the level of human capital of the firm, such as done in an unpublished paper by Li and Sun[6]. Note that these three possible methods with which firm-level human capital could be measured do not exhaust the entire list of options.

Finally, I would like to mention two more ways in which my investigation of the effect of US sentiment on labor in the US could be extended by others. The first concerns an investigation into whether the structure of the labor market of an industry influences the relationship between sentiment and labor. One could for example investigate whether unions impact the strength of the effect of sentiment on employment and real wages growth. The

[6] The paper can be found at https://www.aeaweb.org/aea/2015conference/program/retrieve.php?pdfid=1163

negative effect of sentiment on employment growth might for example be less present in those industries which have better organized unions or where larger proportions of employees are union members, due to increased bargaining power and potentially stricter agreements on hiring and firing of employees and on changing wages.

A second opportunity for further research which could increase our understanding of the relationship between sentiment and labor lies in an analysis of the effect of sentiment on real wages growth at the firm level. Just as with the firm-level analysis in this thesis, such an investigation would allow one to determine whether the causal effect of sentiment on real wages found at the industry level is also observable at the US firm level and to find whether there are sources of firm heterogeneity which influence this relationship. However, the largest difficulty in such an investigation would lie in obtaining enough firm-level data on real wages. This might prove to be an insurmountable problem.

6.3. Concluding Remarks

Despite the limitations of the research in my thesis, I conclude that there is evidence for the existence of a causal effect of US sentiment on labor in the US. This provides support for the belief that sentiment of the financial markets can have real effects. However, there is no certainty regarding the mechanisms through which it is that sentiment influences labor. I would therefore stress again that further empirical research, supported by a more extensive theoretical model, is needed to fully understand the likely complex ways through which sentiment affects labor, to make it clear what the exact mechanism(s) behind the results reported in this thesis is (are).

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Appendix

Table 1

Descriptive Statistics for the Sample of Industries Analyzed in the Cross-Industry Analysis

Panel A: Dependent Variables

				Distribution										
	Observations	Mean	Std. Deviation	Min	1^{st}	5^{th}	10^{th}	25^{th}	50^{th}	75^{th}	90^{th}	95^{th}	99^{th}	Max
Employment Growth	996	-0.0078	0.0591	-0.3917	-0.1596	-0.1079	-0.0743	-0.0348	-0.0043	0.0232	0.0504	0.0737	0.1435	0.4768
Real Wages Growth	996	0.0127	0.0421	-0.1807	-0.1073	-0.0659	-0.0447	-0.0084	0.0155	0.0405	0.0599	0.0743	0.1005	0.1547
Panel B: Independent Variable														
External Dependence (RZ Score)	996	0.2412	0.3260	-0.4512	-0.4512	-0.1459	-0.1400	0.0420	0.2115	0.4005	0.7675	0.9610	1.1401	1.1401

This table presents the descriptive statistics for the sample of 28 US manufacturing industries considered in the cross-industry analysis. Statistics are shown for the dependent variables employment growth and real wages growth (Panel A), and for the independent variable of industry-level external dependence (Panel B). The number of observations; the sample mean and standard deviation; and the minimum value, maximum value and percentile points of the distribution are shown. Data on employment and wages growth comes from the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database. Nominal wages growth has been transformed to real wages growth using the US Producer Price Index for All Commodities. External dependence is defined as in Rajan and Zingales (1998), as the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average). The sample period is 1966-2002, excluding the year 1996.

Table 2

Industry-level Descriptive Statistics

		Employment Growth		Real Wages Growth		External Dependence
Industry	Observations	Mean	Std. Deviation	Mean	Std. Deviation	RZ Score
Apparel	36	-0.0389	0.0671	0.0102	0.0472	0.0286
Beverages	36	-0.0114	0.0344	0.0126	0.0438	0.0772
Electrical machinery	36	-0.0072	0.0718	0.0134	0.0406	0.7675
Food products	36	0.0014	0.0170	0.0085	0.0347	0.1368
Footwear	36	-0.0696	0.0737	0.0120	0.0510	-0.0779
Furniture	36	0.0178	0.0740	0.0117	0.0474	0.2357
Glass and products	36	-0.0079	0.0361	0.0115	0.0394	0.5285
Industrial chemicals	36	-0.0088	0.0292	0.0174	0.0361	0.2042
Iron and steel	36	-0.0337	0.0656	0.0109	0.0367	0.0871
Leather	36	-0.0363	0.0788	0.0107	0.0500	-0.1400
Machinery	36	-0.0053	0.0618	0.0113	0.0377	0.4453
Metal products	36	0.0047	0.0611	0.0091	0.0389	0.2371
Non-ferrous metal	36	-0.0046	0.0549	0.0103	0.0347	0.0055
Non-metal products	36	-0.0031	0.0433	0.0123	0.0392	0.0620
Other chemical products	36	0.0009	0.0410	0.0124	0.0422	0.2187
Other manufacturing	36	0.0006	0.0506	0.0135	0.0425	0.4702
Paper products	36	-0.0063	0.0300	0.0145	0.0383	0.1756
Petroleum and coal	30	0.0054	0.0494	0.0127	0.0494	0.3341
Plastic products	36	0.0389	0.0674	0.0111	0.0397	1.1401
Pottery	36	-0.0097	0.0683	0.0119	0.0445	-0.1459
Printing and publishing	30	0.0149	0.0243	0.0056	0.0451	0.2038
Professional equipment	36	0.0200	0.0901	0.0161	0.0422	0.9610
Refineries	36	-0.0103	0.0449	0.0194	0.0368	0.0420
Rubber products	36	-0.0094	0.0481	0.0089	0.0456	0.2265
Textiles	36	-0.0208	0.0505	0.0118	0.0414	0.4005
Tobacco	36	-0.0304	0.0453	0.0300	0.0505	-0.4512
Transport equipment	36	-0.0021	0.0573	0.0116	0.0414	0.3069
Wood products	36	-0.0013	0.0547	0.0128	0.0464	0.2840
Total	996	-0.0078	0.0591	0.0127	0.0421	N.A.

This table presents the descriptive statistics for industry-level employment growth, real wages growth and external dependence. Statistics are shown for each of the 28 manufacturing industries considered in the cross-industry analaysis. The number of observations; the mean and standard deviation (for employment and real wages growth); and the RZ score (external dependence) are reported for each industry. Data on employment and wages growth comes from the Unido Indstat-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database. Nominal wages growth has been transformed to real wages growth using the US Producer Price Index for All Commodities. External dependence is defined as in Rajan and Zingales (1998), as the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average). The sample period is 1966-2002.

Table 3

Descriptive Statistics for the Sample of Firms Analyzed in the Firm-Level Analysis

Panel A: Full Sample

				Distribution												
	Observations	Mean	Std. Deviation	Min	1st	5th	10th	25th	50th	75th	90th	95th	99th	Max	Winsorized?	Mean (Winsorized)	Std. Deviation (Winsorized)
Employment Growth	127762	0.2814	18.1851	-1.0000	-0.5667	-0.2675	-0.1613	-0.0477	0.0297	0.1485	0.3781	0.6343	1.8927	5665.6670	Yes	0.0915	0.3211
External Dependence (KZ Index)	122477	0.6500	1.3123	-7.6254	-4.2227	-1.4330	-0.7545	-0.0105	0.7099	1.4960	2.1667	2.5508	3.1842	5.5644	No	-	-
Monitoring Ability (Coverage Dummy)	170163	0.4119	0.4922	0	0	0	0	0	0	1	1	1	1	1	No	-	-
Size	153847	5.2605	1.9674	2.3027	2.3688	2.6223	2.9150	3.7008	4.9500	6.5165	8.0318	8.9894	10.5386	13.5896	No	-	-
Tobin's Q	133077	1.8076	2.3098	0.0281	0.5423	0.7216	0.8128	0.9819	1.2901	1.9489	3.1717	4.4341	8.6525	334.8991	Yes	1.7435	1.3295
Cash Flow over Lagged Capital	136434	0.0437	88.2494	-10784.7800	-15.7051	-2.3609	-0.4888	0.1080	0.2943	0.6253	1.4095	2.5063	8.3826	24684.0000	Yes	0.0437	88.2494
Cash over Assets	153732	0.1606	0.2043	0.0000	0.0001	0.0033	0.0078	0.0231	0.0747	0.2147	0.4563	0.6402	0.8971	1.0000	No	-	-
Sales Growth	136378	0.5859	36.6638	-1.0000	-0.6168	-0.2675	-0.1461	-0.0083	0.0995	0.2434	0.5202	0.8585	3.0006	8843.3530	Yes	0.1806	0.4391
Investments (1)	71201	0.5982	0.8276	-0.9531	-0.1653	0.0350	0.1137	0.2599	0.4662	0.7535	1.1406	1.5048	2.7901	54.5760	Yes	0.5753	0.4871
Investments (2)	70449	0.5278	0.3778	0.0000	0.0761	0.1397	0.1863	0.2890	0.4434	0.6654	0.9464	1.1744	1.8827	17.4470	Yes	0.5210	0.3318
External Dependence (Industry-level RZ Score)	170151	0.3679	0.6679	-4.0668	-0.7464	-0.2323	-0.1136	0.0895	0.3381	0.5209	0.8752	1.6256	1.6256	6.0035	No	-	-
External Dependence (Firm-level, Time-aggregated RZ Score)	145033	-2.3799	445.2576	-63282.0000	-13.2774	-4.2846	-2.5100	-0.9922	-0.0714	0.8250	3.4801	8.0809	34.2408	11163.1800	Yes	0.7823	7.1980
External Dependence (Firm-level, Time-varying RZ Score)	95100	-0.0218	194.8523	-18160.0000	-50.8502	-12.2161	-6.3665	-1.9733	-0.0473	1.5388	6.9844	15.7557	81.5893	22062.0000	Yes	0.7569	13.7326
Monitoring Ability (Number of Analyst Estimates)	170163	30.0349	61.9741	0	0	0	0	0	0	32	101	165	298	585	No	-	-
Monitoring Ability (Log of One plus the Number of Analyst Estimates)	170163	1.5403	1.9828	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.4965	4.6250	5.1120	5.7004	6.3733	No	-	-
Panel B: Firms for Which Analyst Estimates are Available																	
Monitoring Ability (Number of Analyst Estimates)	70086	72.92215	78.72552	1	1	4	9	18	45	99	182	242	361	585	No	-	-
Panel C: Firms Belonging to the Manufacturing Industries Analyzed in the Cross-Industry Analysis																	
External Dependence (Firm-level, Time-aggregated RZ Score)	73149	1.3948	39.4780	-1355.5000	-11.1999	-3.7375	-2.4541	-1.1195	-0.1873	0.8853	4.1670	10.0600	39.1170	3149.5310	Yes	1.0335	7.6815
Panel D: Issuing (SEO) Subsample of Firms																	
Employment Growth	4456	0.2750	1.6755	-1.0000	-0.5034	-0.2134	-0.1045	0.0000	0.1164	0.3126	0.6288	1.0000	2.3333	89.2500	Yes	0.2126	0.3894
External Dependence (KZ Index)	4197	0.8152	1.1156	-6.1375	-2.8523	-0.7902	-0.4104	0.1660	0.8318	1.5449	2.1320	2.5120	3.1421	5.1040	No	-	-
Panel E: Non-issuing (Neither IPO nor SEO) Subsample of Firms																	
External Dependence (KZ Index)	115643	0.6423	1.3217	-7.6254	-4.2621	-1.4648	-0.7770	-0.0177	0.7064	1.4940	2.1672	2.5519	3.1847	5.5644	No	-	-

This table presents the descriptive statistics for the sample of US firms investigated in the firm-level analysis. Statistics are shown for the dependent variable employment growth and the independent variables for the full sample of firms in panel A. In panels B to E, summary statistics for several variables are shown for some of the subsamples of firms analyzed in investigations of the robustness of the main results and in other additional analyses. The number of observations; the sample mean and standard deviation; and the minimum value, maximum value and percentile points of the distribution are shown. Moreover, those variables which are Winsorized (at the 1st and 99th percentile) before being included in the analyses are flagged, and their Winsorized mean and standard deviation are reported. Employment growth is defined as the percentage growth in the number of employees. External dependence (KZ index) is defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints. Monitoring ability (coverage dummy) is a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the previous year. Size is defined as the log of a firm's total assets. Tobin's Q is defined as the market value of assets over the book value of assets. Cash flow over lagged capital is defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year. Cash over assets is defined as a firm's cash and short term investments scaled by total assets. Sales growth is defined as the percentage growth in net sales. Investments (1) is defined as the sum of total non-cash asset growth, R&D spending and SG&A expenses scaled by lagged total assets. Investments (2) is defined as the sum of capital expenditures, R&D expenses and SG&A expenses, scaled by lagged total assets. External dependence (industry-level RZ score) is defined as the median fraction of capital expenditures not financed with cash flow from operations of the industry to which the firm belongs. The industry-level median fraction of capital expenditures not financed with cash flow from operations is calculated at the first two digit SIC level for US listed firms from the Compustat database (1987-2011 average). External dependence (firm-level, time-aggregated RZ score) is defined as the time-aggregated value for the fraction of capital expenditures not financed with cash flow from operations for the firm, where both the numerator and denominator in the fraction have first been summed over time, considering all observations available for the firm, before being entered into the fraction. External dependence (firm-level, time-varying RZ score) is defined as the fraction of capital expenditures not financed with cash flow from operations for the firm in a given year. Monitoring ability (number of analyst estimates) is defined as the total number of fiscal year + 1 earnings estimates which a firm has received from I/B/E/S analysts in a given year. Monitoring ability (log of one plus the number of analyst estimates) is defined as the log of the total number of fiscal year + 1 earnings estimates which a firm has received from I/B/E/S analysts in a given year, plus a constant of one. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011 for employment growth, for the other variables the sample period spans 1975-2010 (subject to the availability of data).

Table 4

Stationarity Tests for the Baker and Wurgler Sentiment Index

Panel A: DF-GLS test

	DF-GLS test statistic	1% critical value	5% critical value	10% critical value
Regular	-3.415	-3.770	-3.070	-2.771
No Trend	-0.772	-2.626	-2.112	-1.805

Panel B: Phillips-Perron test

	Z(t)	1% critical value	5% critical value	10% critical value
Regular	-3.144	-3.614	-2.944	-2.606
No Constant	-3.170	-2.628	-1.950	-1.608
Trend	-3.063	-4.196	-3.520	-3.192

This table presents the results of several time-series stationarity tests done to determine whether the orthogonalized yearly Baker and Wurgler (2006) Investor Sentiment Index contains a unit root. The tests considered are the DF-GLS test proposed by Elliott, Rothenberg, and Stock (1996) and the Phillips-Perron test, proposed by Phillips and Perron (1988). The optimal lag length for the DF-GLS test has been determined using the Ng and Perron (1995) sequential t test. The period considered for all tests is 1965 to 2010.

Table 5

Stationarity Tests for the Variables Included in the Cross-Industry Analysis

Panel A: Levin-Lin-Chu Test

	Standard	No Constant	Trend	Demean	No Constant and Demean	Trend and Demean
Employment Growth	**0.0000**	0.0000	0.0000	**0.0000**	0.0000	0.0000
Real Wages Growth	**0.0000**	0.0000	0.0000	**0.0000**	0.0000	0.0000
Share of Employment	**0.2299**	0.0176	0.2022	**0.1808**	0.9981	0.1066
Share of Wages	**0.0479**	0.0050	0.0000	**0.1185**	0.9339	0.0000

Panel B: Breitung Test

	Standard	No Constant	Trend	Demean	Robust	No Constant and Demean	Trend and Demean	No Constant and Robust	Trend and Robust	Demean and Robust	Robust, Demean and No Constant	Trend, Demean and Robust
Employment Growth	**0.0000**	0.0000	0.0000	**0.0000**	**0.0000**	0.0000	0.0000	0.0000	0.0020	**0.0000**	0.0000	0.0000
Real Wages Growth	**0.0000**	0.0000	0.0000	**0.0000**	**0.0000**	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0000	0.0000
Share of Employment	**0.9938**	0.0059	0.4863	**0.9938**	**0.9332**	0.9998	0.4863	0.8296	0.4279	**0.9332**	0.9606	0.4279
Share of Wages	**1.0000**	0.0016	0.1380	**1.0000**	**0.8811**	0.9933	0.1380	0.5575	0.4347	**0.8811**	0.5680	0.4347

This table presents the results of several panel data stationarity tests done to determine whether the variables included in the cross-industry analysis contain a unit root. The tests considered are the Levin-Lin-Chu test proposed by Levin, Lin, and Chu (2002) and the Breitung test, proposed by Breitung (2000). The p-values of the adjusted t are reported for the Levin-Lin-Chu test. For the Breitung test, the p-values are reported. Those specifications deemed most relevant for each variable have been bolded. The variables considered are the industry-level employment growth; the industry-level growth in real wages; the industry's share of employment in the manufacturing sector and the industry's share of wages in the manufacturing industry. The dataset includes 28 US manufacturing industries for the period 1966-2002, excluding the year 1996, from the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database.

Table 6

Determining the Types of Fixed Effects to be Used in the Cross-Industry Analysis

Panel A: Full Specification

	Employment Growth				Real Wages Growth			
	No Fixed Effects	Industry Fixed Effects	Year Fixed Effects	Industry and Year Fixed Effects	No Fixed Effects	Industry Fixed Effects	Year Fixed Effects	Industry and Year Fixed Effects
R^2	0.1143	0.0426	0.0574	0.3140	0.0403	0.0087	0.0151	0.6748
AIC	-2919.3	-3005.4	-3253.2	-3318.8	-3515.5	-3537.1	-4985.7	-5017.2
BIC	-2894.8	-2990.7	-3238.5	-3186.4	-3491.0	-3522.4	-4970.9	-4884.8
Panel B: Restricted Specification								
R^2	0.0302	0.0171	0.0095	0.3140	0.0190	0.0020	0.0173	0.6748
AIC	-2832.9	-2963.6	-3187.5	-3318.8	-3497.6	-3516.7	-4984.6	-5017.2
BIC	-2818.2	-2953.8	-3177.7	-3186.4	-3482.9	-3506.9	-4974.8	-4884.8

This table shows the coefficient of determination (R^2) and the information criteria (AIC and BIC) for several panel regressions with employment growth and real wages growth as the dependent variables. The regressors included in each model in Panel A are: the industry's share of the dependent variable in the manufacturing sector in the previous year; lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance; the industry's external dependence, defined as in Rajan and Zingales (1998), as the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average); and an interaction term between lagged US investor sentiment and the industry's external dependence. Each model includes different (combinations of) fixed effects. The regression specifications of Panel B are the same as those in Panel A, except for that the single investor sentiment and external dependence terms have been dropped. The dataset includes 28 US manufacturing industries for the period 1966-2002, excluding the year 1996, from the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database.

Table 7

Determining the Type of Clustering of Errors to be Done in the Cross-Industry Analysis

	Employment Growth			Real Wages Growth		
	White Standard Errors	Industry-Clustered Errors	Year-Clustered Errors	White Standard Errors	Industry-Clustered Errors	Year-Clustered Errors
Share of Manufacturing (-1)	0.2495	0.4669	0.3420	0.0166	0.0085	0.0210
Times White Standard Errors	1.000x	1.871x	1.371x	1.000x	0.513x	1.268x
US Sentiment (-1) x External Dependence	0.0039	0.0042	0.0062	0.0017	0.0017	0.0018
Times White Standard Errors	1.000x	1.070x	1.597x	1.000x	0.997x	1.045x

This table shows the standard errors of the coefficient estimates of several panel regressions with employment growth and real wages growth as the dependent variables. The size of the standard errors for each coefficient is shown relative to the standard errors obtained when considering regular White standard errors. The regressors included are: the industry's share of the dependent variable in the manufacturing sector in the previous year; and an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and the industry's external dependence, defined as in Rajan and Zingales (1998), as the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average). Each regression includes industry and year fixed effects. Standard errors are clustered along a different dimension in each model. The dataset includes 28 US manufacturing industries for the period 1966-2002, excluding the year 1996, from the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database.

Table 8

Investor Sentiment, External Dependence, Economic Recessions and Liquidity

	Employment Growth		Real Wages Growth		Employment Growth		Real Wages Growth	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of Manufacturing (-1)	0.0046	-0.0043	-0.0563***	-0.0557***	-0.0446	-0.0165	-0.0566***	-0.0556***
	(0.02)	(-0.02)	(-3.40)	(-3.34)	(-0.18)	(-0.07)	(-3.43)	(-3.34)
US Sentiment (-1) x External Dependence	-0.0029	-0.0083*	0.0022	0.0039**	-0.0042	-0.0088*	0.0024	0.0038**
	(-0.74)	(-1.71)	(1.31)	(1.97)	(-1.15)	(-1.90)	(1.42)	(1.98)
US Liquidity (-1) x External Dependence					0.3098	0.0963	-0.0393	0.0333
					(1.63)	(0.38)	(-0.49)	(0.29)
External Dependence x Economic Recession		-0.0384***		0.0084*		-0.0366***		0.0067
		(-3.80)		(1.82)		(-2.39)		(0.84)
US Sentiment (-1) x External Dependence		0.0203***		-0.0058*		0.0201***		-0.0055
x Economic Recession		(2.68)		(-1.68)		(2.83)		(-1.54)
US Liquidity (-1) x External Dependence						-0.0102		-0.0501
x Economic Recession						(-0.03)		(-0.32)
Observations	996	996	996	996	996	996	996	996
R^2	0.3940	0.4040	0.7830	0.7840	0.3950	0.4030	0.7830	0.7830

This table presents the results of several panel regressions of industry-level employment growth and industry-level real wages growth on the following set of regressors: the industry's share of the dependent variable in the manufacturing sector in the previous year; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and the industry's external dependence, defined as in Rajan and Zingales (1998), as the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average); an interaction term between the lagged level of aggregate liquidity in the US equity market from Pastor and Stambaugh (2003) and the industry's external dependence; an interaction term between the industry's external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; an interaction term between lagged US investor sentiment, the industry's external dependence and the recession dummy; and an interaction term between lagged US aggregate liquidity, the industry's external dependence and the recession dummy. Each regression includes industry and year fixed effects and uses White standard errors. The dataset includes 28 US manufacturing industries for the period 1966-2002, excluding the year 1996, from the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9

Human Capital of the Industries Included in the Cross-Industry Analysis

Industry	Human Capital Intensity			Level of Human Capital				
	HCINT	HCINT (SEC)	HCINT (COL)	HCINT	HCINT (SEC)	HCINT (COL)	HCINT (COMB)	HCINT (COMBRES)
Apparel	10.04	51.09%	5.07%	Low	Low	Low	Low	Low
Beverages	11.78	73.81%	13.09%	Medium	Medium	Medium	Medium	Medium
Electrical machinery	12.01	76.08%	15.29%	High	Medium	High	Medium	-
Food products	10.93	65.55%	9.74%	Low	Medium	Medium	Medium	-
Footwear	10.14	52.07%	3.69%	Low	Low	Low	Low	Low
Furniture	10.59	58.31%	7.09%	Low	Low	Low	Low	Low
Glass and products	11.37	69.13%	8.68%	Medium	Medium	Medium	Medium	Medium
Industrial chemicals	12.42	81.60%	20.03%	High	High	High	High	High
Iron and steel	11.33	69.61%	8.32%	Medium	Medium	Low	Medium	-
Leather	10.12	50.69%	7.06%	Low	Low	Low	Low	Low
Machinery	11.81	76.23%	10.23%	Medium	High	Medium	Medium	-
Metal products	11.43	69.87%	9.71%	Medium	Medium	Medium	Medium	Medium
Non-ferrous metal	11.42	70.31%	9.66%	Medium	Medium	Medium	Medium	Medium
Non-metal products	11.48	67.80%	14.20%	Medium	Medium	Medium	Medium	Medium
Other chemical products	12.15	77.08%	18.96%	High	High	High	High	High
Other manufacturing	11.11	65.12%	11.92%	Medium	Medium	Medium	Medium	Medium
Paper products	11.46	70.51%	11.05%	Medium	Medium	Medium	Medium	Medium
Petroleum and coal	11.92	69.06%	14.08%	Medium	Medium	Medium	Medium	Medium
Plastic products	11.48	71.50%	10.19%	Medium	Medium	Medium	Medium	Medium
Pottery	11.09	65.01%	9.87%	Medium	Low	Medium	Medium	-
Printing and publishing	12.54	83.89%	19.97%	High	High	High	High	High
Professional equipment	12.22	79.31%	18.50%	High	High	High	High	High
Refineries	12.94	87.26%	25.05%	High	High	High	High	High
Rubber products	11.67	74.39%	10.26%	Medium	Medium	Medium	Medium	Medium
Textiles	10.38	53.83%	6.94%	Low	Low	Low	Low	Low
Tobacco	11.00	66.04%	10.99%	Medium	Medium	Medium	Medium	Medium
Transport equipment	12.86	84.20%	23.42%	High	High	High	High	High
Wood products	10.54	59.29%	7.06%	Low	Low	Low	Low	Low
25^{th} Percentile	10.98	65.09%	8.59%	-	-	-	-	-
75^{th} Percentile	11.94	76.12%	14.47%	-	-	-	-	-

This table shows data on the level of human capital of the 28 manufacturing industries investigated in the cross-industry analysis. The values for three measures of the human capital intensity of industries are presented, all developed by Ciccone and Papaioannou (2006): the average years of schooling of employees (HCINT), the ratio of hours worked by employees with at least 12 years of schooling (necessary for completing secondary school) to total hours worked (HCINT(SEC)) and the ratio of hours worked by employees with at least 16 years of schooling (necessary for completing college) to total hours worked (HCINT(COL)). For each of the three measures of human capital intensity, all industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the measure of human capital intensity considered. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the measure of human capital intensity considered. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the measure of human capital intensity considered. Next to these three measures of the level of human capital of industries, two extra measures are constructed by combining information of the three single measures of human capital. For the first of the combined measures, HCINT(COMB), those industries which are considered to have a high level of human capital according to each of the three single measures of human capital are put in the group of industries with a high level of human capital. Those industries which have a low level of human capital according to each of the three single measures are put in the group of industries with a low level of human capital. The remaining industries are considered to have a medium level of human capital. The second combined measure, HCINT(COMBRES), is similar to the HCINT(COMB) measure, except for that only those industries which are considered to have a medium level of human capital according to each of the three single measures of human capital are put in the group of industries with a medium level of human capital. This means that several industries are not assigned a level of human capital for the HCINT(COMBRES) measure of human capital.

Table 10

Cross-Industry - Human Capital

	Employment Growth						Real Wages Growth					
	High Human Capital		Medium Human Capital		Low Human Capital		High Human Capital		Medium Human Capital		Low Human Capital	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Share of Manufacturing (-1)	-1.3009**	-1.3381**	-0.5441*	-0.5302*	2.3073***	2.2796***	-0.0603**	-0.0609**	-0.0503**	-0.0494**	-0.2325***	-0.2282***
	(-2.52)	(-2.40)	(-1.83)	(-1.82)	(4.46)	(4.69)	(-2.15)	(-2.16)	(-2.16)	(-2.10)	(-3.77)	(-3.58)
US Sentiment (-1) x External Dependence	-0.0051	-0.0044	-0.0083*	-0.0168***	0.0378***	0.0456***	0.0052*	0.0081*	0.0030	0.0047**	-0.0069	-0.0032
	(-0.70)	(-0.36)	(-1.75)	(-3.14)	(3.70)	(3.47)	(1.71)	(1.96)	(1.41)	(1.99)	(-1.30)	(-0.49)
External Dependence x Economic Recession		-0.0335		-0.0382***		-0.1287***		-0.0064		0.0103*		-0.0109
		(-1.21)		(-3.57)		(-4.07)		(-0.70)		(1.88)		(-0.72)
US Sentiment (-1) x External Dependence		0.0036		0.0283***		-0.0002		-0.0068		-0.0062		-0.0080
x Economic Recession		(0.22)		(3.19)		(-0.01)		(-1.10)		(-1.45)		(-0.71)
Observations	210	210	570	570	216	216	210	210	570	570	216	216
R^2	0.1720	0.1710	0.4250	0.4450	0.5620	0.5870	0.7580	0.7560	0.7780	0.7800	0.8680	0.8670

This table presents the results of several panel regressions of industry-level employment growth and industry-level real wages growth on the following set of regressors: the industry's share of the dependent variable in the manufacturing sector in the previous year; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and the industry's external dependence, defined as in Rajan and Zingales (1998), as the industry-level median fraction of capital expenditures not financed with cash flow from operations, for US listed firms from the Compustat database (1980-1990 average); an interaction term between the industry's external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; and an interaction term between lagged US investor sentiment, the industry's external dependence and the recession dummy. Each regression includes industry and year fixed effects and uses White standard errors. The sample is split in three groups, based on the industry's level of human capital according to the HCINT(COMB) measure of human capital. This measure of human capital is constructed using information of the three measures of human capital intensity of industries introduced by Ciccone and Papaioannou (2006). These three measures are the average years of schooling of employees (HCINT), the ratio of hours worked by employees with at least 12 years of schooling (necessary for completing secondary school) to total hours worked (HCINT(SEC)) and the ratio of hours worked by employees with at least 16 years of schooling (necessary for completing college) to total hours worked (HCINT(COL)). For each of the three measures of human capital intensity, all industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the measure of human capital intensity considered. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the measure of human capital intensity considered. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the measure of human capital intensity considered. For the combined measure of human capital (HCINT(COMB)), those industries which are considered to have a high level of human capital according to each of the three measures of human capital are put in the group of industries with a high level of human capital. Those industries which have a low level of human capital according to each of the three measures are put in the group of industries with a low level of human capital. The remaining industries are considered to have a medium level of human capital. The dataset includes 28 US manufacturing industries for the period 1966-2002, excluding the year 1996, from the UNIDO INDSTAT-3 (United Nations Industrial Development Organization, Industrial Statistics) 2006 database. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11

Stationarity Tests for the Variables Included in the Firm-Level Analysis

	Fisher-Type Dickey-Fuller Test			Fisher-Type Phillips-Perron Test			
	Regular	Trend	Drift	Regular	Trend	Demean	Demean and Trend
Employment Growth	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
External Dependence (KZ Index)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Size	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tobin's Q	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cash Flow over Lagged Capital	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cash over Assets	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sales Growth	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Investments (1)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Investments (2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
External Dependence (Firm-level, Time-varying RZ Score)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Monitoring Ability (Number of Analyst Estimates)	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000
Monitoring Ability (Log of One plus the Number of Analyst Estimates)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

This table presents the results of several panel data stationarity tests done to determine whether the variables included in the firm-level analysis contain a unit root. The tests considered are the Fisher-Type Dickey-Fuller test and the Fisher-Type Phillips-Perron test. Both tests have been specified to have one Newey-West lag in calculating the standard errors. The p-values of the inverse χ^2 test statistic are reported. The variables considered are: employment growth, defined as the percentage growth in the number of employees; external dependence (KZ index), defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; size, defined as the log of a firm's total assets; Tobin's Q, defined as the market value of assets over the book value of assets; cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total lagged net property, plant and equipment; cash over assets, defined as a firm's cash and short term investments scaled by total assets; sales growth, defined as the percentage growth in net sales; investments (1), defined as the sum of total non-cash asset growth, R&D spending and SG&A expenses scaled by lagged total assets; investments (2), defined as the sum of capital expenditures, R&D expenses and SG&A expenses, scaled by lagged total assets; external dependence (firm-level, time-varying RZ score), defined as the fraction of capital expenditures not financed with cash flow from operations for the firm in a given year; monitoring ability (number of analyst estimates), defined as the total number of fiscal year + 1 earnings estimates which a firm has received from I/B/E/S analysts in a given year; and monitoring ability (log of one plus the number of analyst estimates), defined as the log of the total number of fiscal year + 1 earnings estimates which a firm has received from I/B/E/S analysts in a given year, plus a constant of one. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011 for employment growth, for the other variables the sample period spans 1975-2010 (subject to the availability of data).

Table 12

Determining the Types of Fixed Effects to be Used in the Firm-Level Analysis

Panel A: Full Specification

	No Fixed Effects	Firm Fixed Effects	Year Fixed Effects	Industry Fixed Effects	Firm and Year Fixed Effects	Industry and Year Fixed Effects	Industry-Year Fixed Effects
R^2	0.0045	0.0017	0.0033	0.0044	0.0115	0.0233	0.0040
AIC	44204.5	17890.9	41923.3	42087.0	15057.5	39869.4	35816.3
BIC	44280.9	17957.8	41980.6	42153.8	15429.9	40184.5	35883.1
Panel B: Restricted Specification							
R^2	-	-	-	-	0.0115	0.0233	-
AIC	-	-	-	-	15057.5	39869.4	-
BIC	-	-	-	-	15429.9	40184.5	-

This table shows the coefficient of determination (R^2) and the information criteria (AIC and BIC) for several firm-level panel regressions with employment growth as the dependent variable. The regressors included in each model in Panel A are: lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance; lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment and lagged external dependence; an interaction term between lagged US investor sentiment and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability. Each model includes different (combinations of) fixed effects. Industries are defined at the four-digit SIC level. The regression specifications of Panel B are the same as those in Panel A, except for that the single lagged US investor sentiment term has been dropped. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011.

Table 13

Determining the Type of Clustering of Errors to be Done in the Firm-Level Analysis

	White Standard Errors	Firm-Clustered Errors	Year-Clustered Errors	Industry-Clustered Errors	Industry-Year-Clustered Errors
External Dependence (-1)	0.0019	0.0020	0.0026	0.0018	0.0018
Times White Standard Errors	1.000x	1.059x	1.415x	0.980x	0.965x
Monitoring Ability (-1)	0.0038	0.0041	0.0038	0.0037	0.0035
Times White Standard Errors	1.000x	1.088x	1.000x	0.972x	0.919x
External Dependence (-1) x Monitoring Ability (-1)	0.0022	0.0023	0.0021	0.0023	0.0021
Times White Standard Errors	1.000x	1.065x	0.981x	1.068x	0.959x
US Sentiment (-1) x External Dependence (-1)	0.0014	0.0014	0.0017	0.0016	0.0014
Times White Standard Errors	1.000x	1.025x	1.200x	1.142x	1.005x
US Sentiment (-1) x Monitoring Ability (-1)	0.0024	0.0025	0.0039	0.0026	0.0024
Times White Standard Errors	1.000x	1.024x	1.616x	1.087x	0.983x
US Sentiment (-1) x External Dependence (-1) x Monitoring Ability (-1)	0.0019	0.0020	0.0016	0.0018	0.0019
Times White Standard Errors	1.000x	1.027x	0.814x	0.957x	0.978x

This table shows the standard errors of the coefficient estimates of several firm-level panel regressions with employment growth as the dependent variable. The size of the standard errors for each coefficient is shown relative to the standard errors obtained when considering regular White standard errors. The regressors included are: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability. Each regression includes firm and year fixed effects. Standard errors are clustered along a different dimension in each model. Industries are defined at the four-digit SIC level. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011.

Table 14

Investor Sentiment, External Dependence and Monitoring Ability

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
External Dependence (-1)	-0.0300***	-0.0266***	-0.0318***	-0.0263***	-0.0136***	-0.0278***	-0.0116***	-0.0116***
	(-15.36)	(-13.44)	(-15.97)	(-13.41)	(-6.94)	(-14.57)	(-5.96)	(-5.95)
Monitoring Ability (-1)	-0.0318***	-0.0084**	-0.0354***	-0.0314***	-0.0297***	-0.0283***	-0.0092**	-0.0089**
	(-8.23)	(-2.14)	(-9.26)	(-8.20)	(-7.76)	(-7.54)	(-2.48)	(-2.39)
External Dependence (-1) x Monitoring Ability (-1)	-0.0011	-0.0012	-0.0011	-0.0013	-0.0021	-0.0022	-0.0026	-0.0026
	(-0.48)	(-0.51)	(-0.47)	(-0.57)	(-0.94)	(-0.96)	(-1.16)	(-1.16)
US Sentiment (-1) x External Dependence (-1)	-0.0013	-0.0014	-0.0019	-0.0012	-0.0011	-0.0004	-0.0009	-0.0009
	(-0.88)	(-1.00)	(-1.30)	(-0.83)	(-0.75)	(-0.27)	(-0.65)	(-0.64)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0051**	-0.0060**	-0.0055**	-0.0049*	-0.0047*	-0.0043*	-0.0051**	-0.0061**
	(-2.00)	(-2.36)	(-2.16)	(-1.94)	(-1.83)	(-1.72)	(-2.12)	(-2.49)
US Sentiment (-1) x External Dependence (-1)	0.0014	0.0003	0.0006	0.0008	0.0014	0.0009	-0.0011	-0.0012
x Monitoring Ability (-1)	(0.68)	(0.17)	(0.29)	(0.42)	(0.68)	(0.45)	(-0.57)	(-0.63)
Size (-1)		-0.0838***					-0.0753***	-0.0755***
		(-31.17)					(-29.43)	(-29.49)
Tobin's Q (-1)			0.0603***				0.0440***	0.0440***
			(37.69)				(27.51)	(27.52)
Cash Flow over Lagged Capital (-1)				0.0127***			0.0110***	0.0110***
				(12.01)			(11.31)	(11.30)
Cash over Assets (-1)					0.3917***		0.2831***	0.2835***
					(24.80)		(18.54)	(18.55)
Sales Growth (-1)						0.0474***	0.0312***	0.0312***
						(11.34)	(7.80)	(7.80)
US Sentiment (-1) x Size (-1)								0.0012*
								(1.96)
Observations	103669	103669	103669	103326	103669	102849	102589	102589
R^2	0.0108	0.0098	0.0511	0.0155	0.0256	0.0249	0.0365	0.0366
AIC	14944.9	12393.4	11522.9	12953.7	13220.9	12018.8	4492.6	4491.4
BIC	15317.3	12775.4	11904.9	13335.5	13602.9	12400.5	4912.3	4920.7

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; lagged sales growth, defined as the percentage growth in net sales; and an interaction term between lagged US investor sentiment and lagged size. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15

Investor Sentiment and Liquidity

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
External Dependence (-1)	-0.0334***	-0.0303***	-0.0341***	-0.0296***	-0.0168***	-0.0321***	-0.0153***	-0.0152***
	(-13.51)	(-12.22)	(-13.70)	(-11.94)	(-6.76)	(-13.25)	(-6.25)	(-6.21)
Monitoring Ability (-1)	-0.0367***	-0.0152***	-0.0404***	-0.0353***	-0.0345***	-0.0339***	-0.0159***	-0.0146***
	(-7.68)	(-3.17)	(-8.56)	(-7.46)	(-7.31)	(-7.30)	(-3.50)	(-3.20)
External Dependence (-1) x Monitoring Ability (-1)	0.0004	0.0006	0.0016	0.0000	-0.0001	0.0003	0.0013	0.0014
	(0.12)	(0.21)	(0.55)	(0.01)	(-0.05)	(0.09)	(0.43)	(0.47)
US Sentiment (-1) x External Dependence (-1)	-0.0011	-0.0013	-0.0018	-0.0010	-0.0009	-0.0001	-0.0007	-0.0006
	(-0.77)	(-0.87)	(-1.21)	(-0.72)	(-0.64)	(-0.10)	(-0.50)	(-0.48)
US Liquidity (-1) x External Dependence (-1)	-0.1230**	-0.1338**	-0.0845	-0.1204**	-0.1164**	-0.1608***	-0.1344***	-0.1303***
	(-2.26)	(-2.48)	(-1.57)	(-2.23)	(-2.16)	(-3.19)	(-2.75)	(-2.67)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0048*	-0.0055**	-0.0052**	-0.0047*	-0.0044*	-0.0039	-0.0046*	-0.0057**
	(-1.88)	(-2.19)	(-2.03)	(-1.85)	(-1.71)	(-1.58)	(-1.93)	(-2.32)
US Liquidity (-1) x Monitoring Ability (-1)	-0.1760*	-0.2473***	-0.1797*	-0.1395	-0.1726*	-0.2013**	-0.2423***	-0.2031**
	(-1.86)	(-2.66)	(-1.93)	(-1.50)	(-1.84)	(-2.23)	(-2.81)	(-2.31)
US Sentiment (-1) x External Dependence (-1) x Monitoring Ability (-1)	0.0013	0.0002	0.0004	0.0008	0.0013	0.0007	-0.0013	-0.0014
	(0.65)	(0.12)	(0.21)	(0.39)	(0.63)	(0.38)	(-0.69)	(-0.73)
US Liquidity (-1) x External Dependence (-1) x Monitoring Ability (-1)	0.0552	0.0667	0.1002	0.0497	0.0742	0.0911	0.1428**	0.1454**
	(0.85)	(1.04)	(1.56)	(0.78)	(1.15)	(1.48)	(2.41)	(2.46)
Size (-1)		-0.0839***					-0.0754***	-0.0769***
		(-31.22)					(-29.47)	(-29.29)
Tobin's Q (-1)			0.0602***				0.0439***	0.0438***
			(37.67)				(27.47)	(27.35)
Cash Flow over Lagged Capital (-1)				0.0127***			0.0109***	0.0109***
				(11.99)			(11.30)	(11.26)
Cash over Assets (-1)					0.3913***		0.2830***	0.2832***
					(24.78)		(18.53)	(18.54)
Sales Growth (-1)						0.0474***	0.0313***	0.0313***
						(11.36)	(7.83)	(7.82)
US Sentiment (-1) x Size (-1)								0.0013**
								(2.16)
US Liquidity (-1) x Size (-1)								-0.0433**
								(-2.48)
Observations	103669	103669	103669	103326	103669	102849	102589	102589
R^2	0.0109	0.0099	0.0512	0.0156	0.0257	0.0252	0.0366	0.0367
AIC	14934.4	12376.4	11521.4	12944.7	13213.9	12001.3	4481.8	4476.0
BIC	15335.5	12787.0	11932.0	13355.1	13624.6	12411.6	4930.1	4943.4

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between the lagged level of aggregate liquidity in the US equity market from Pastor and Stambaugh (2003) and lagged external dependence; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US aggregate liquidity and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; an interaction term between lagged US aggregate liquidity, lagged external dependence and lagged monitoring ability; lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; lagged sales growth, defined as the percentage growth in net sales; an interaction term between lagged US investor sentiment and lagged size; and an interaction term between lagged US aggregate liquidity and lagged size. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 16

Investor Sentiment and Crises

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)
External Dependence (-1)	-0.0307***	-0.0125***	-0.0300***	-0.0123***
	(-14.48)	(-5.90)	(-14.70)	(-6.11)
External Dependence (-1) x Crisis	-0.0002	0.0011	-0.0004	0.0049
	(-0.08)	(0.39)	(-0.10)	(1.18)
Monitoring Ability (-1)	-0.0341***	-0.0131***	-0.0318***	-0.0124***
	(-8.31)	(-3.36)	(-7.99)	(-3.26)
Monitoring Ability (-1) x Crisis	0.0067	0.0157***	-0.0004	0.0218***
	(1.27)	(3.19)	(-0.06)	(3.17)
External Dependence (-1) x Monitoring Ability (-1)	-0.0007	-0.0016	-0.0011	-0.0010
	(-0.28)	(-0.65)	(-0.46)	(-0.43)
External Dependence (-1) x Monitoring Ability (-1)	0.0015	-0.0015	-0.0004	-0.0092*
x Crisis	(0.40)	(-0.42)	(-0.08)	(-1.83)
US Sentiment (-1) x External Dependence (-1)	-0.0045***	-0.0032**	-0.0013	-0.0008
	(-2.81)	(-2.00)	(-0.92)	(-0.59)
US Sentiment (-1) x External Dependence (-1)	0.0091***	0.0061**	0.0186	0.0080
x Crisis	(2.71)	(2.01)	(0.59)	(0.30)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0117***	-0.0094***	-0.0052**	-0.0045*
	(-3.91)	(-3.30)	(-2.03)	(-1.88)
US Sentiment (-1) x Monitoring Ability (-1)	0.0148***	0.0060	0.0168	-0.0031
x Crisis	(2.60)	(1.14)	(0.34)	(-0.07)
US Sentiment (-1) x External Dependence (-1)	0.0013	-0.0003	0.0016	-0.0012
x Monitoring Ability (-1)	(0.53)	(-0.14)	(0.78)	(-0.64)
US Sentiment (-1) x External Dependence (-1)	-0.0025	-0.0026	-0.0453	-0.0216
x Monitoring Ability (-1) x Crisis	(-0.58)	(-0.67)	(-1.27)	(-0.71)
Controls	No	Yes	No	Yes
Observations	103669	102589	103669	102589
R^2	0.0109	0.0366	0.0108	0.0365
AIC	14926.4	4480.1	14954.2	4489.1
BIC	15356.1	4957.1	15383.9	4966.0

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and a crisis dummy; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the crisis dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the crisis dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the crisis dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the crisis dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the crisis dummy. Some of the models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. In models (1) and (2), the crisis dummy takes on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise. In models (3) and (4), the crisis dummy takes on the value of one if the US was in a financial crisis according to the list of financial crises established by Laeven and Valencia (2010) and 0 otherwise. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 17

Alternative Specifications for External Dependence

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	Omitted	Omitted	Omitted	Omitted	0.0003	0.0003
					(1.52)	(1.22)
External Dependence (-1) x Economic Recession		-0.0183***		-0.0021**		0.0001
		(-3.05)		(-2.02)		(0.33)
Monitoring Ability (-1)	-0.0117***	-0.0141***	-0.0099***	-0.0129***	-0.0137***	-0.0172***
	(-3.16)	(-3.66)	(-2.76)	(-3.44)	(-3.12)	(-3.75)
Monitoring Ability (-1) x Economic Recession		0.0091*		0.0139***		0.0162***
		(1.84)		(2.94)		(3.01)
External Dependence (-1) x Monitoring Ability (-1)	0.0055	0.0033	0.0001	-0.0001	-0.0001	0.0001
	(1.18)	(0.68)	(0.14)	(-0.07)	(-0.37)	(0.33)
External Dependence (-1) x Monitoring Ability (-1)		0.0168**		0.0015		-0.0008
x Economic Recession		(2.16)		(1.08)		(-1.58)
US Sentiment (-1) x External Dependence (-1)	-0.0017	-0.0017	-0.0006	-0.0007	-0.0003	-0.0005
	(-0.69)	(-0.59)	(-1.25)	(-1.30)	(-0.81)	(-0.90)
US Sentiment (-1) x External Dependence (-1)		0.0087		0.0012		0.0004
x Economic Recession		(1.64)		(1.06)		(0.49)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0050**	-0.0072**	-0.0041	-0.0070**	-0.0009	-0.0036
	(-2.08)	(-2.48)	(-1.59)	(-2.21)	(-0.20)	(-0.49)
US Sentiment (-1) x Monitoring Ability (-1)		0.0035		0.0027		0.0004
x Economic Recession		(0.68)		(0.51)		(0.04)
US Sentiment (-1) x External Dependence (-1)	-0.0006	-0.0032	0.0015	0.0011	0.0007	0.0009
x Monitoring Ability (-1)	(-0.18)	(-0.75)	(1.95)	(1.08)	(1.52)	(1.23)
US Sentiment (-1) x External Dependence (-1)		-0.0017		-0.0001		-0.0001
x Monitoring Ability (-1) x Economic Recession		(-0.23)		(-0.05)		(-0.14)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	103044	103044	93634	93634	71028	71028
R^2	0.0363	0.0364	0.0378	0.0379	0.0318	0.0318
AIC	4840.8	4821.2	7495.0	7479.2	6116.4	6111.4
BIC	5251.1	5288.8	7901.2	7942.1	6419.0	6469.1

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. In models (1) and (2), external dependence is defined as the median fraction of capital expenditures not financed with cash flow from operations of the industry to which the firm belongs. The industry-level median fraction of capital expenditures not financed with cash flow from operations is calculated at the first two digit SIC level for US listed firms from the Compustat database (1987-2011 average). In models (3) and (4), external dependence is defined as the time-aggregated value for the fraction of capital expenditures not financed with cash flow from operations for the firm, where both the numerator and denominator in the fraction have first been summed over time, considering all observations available for the firm, before being entered into the fraction. In models (5) and (6), external dependence is defined as the fraction of capital expenditures not financed with cash flow from operations for the firm in a given year. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 18

Alternative Specification for Monitoring Ability (1)

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)
External Dependence (-1)	-0.013718***	-0.014405***	-0.013675***	-0.014263***
	(-8.36)	(-8.19)	(-8.33)	(-8.11)
External Dependence (-1) x Economic Recession		0.001387		0.001155
		(0.68)		(0.56)
Monitoring Ability (-1)	-0.000073**	-0.000106***	-0.000070**	-0.000090***
	(-2.44)	(-3.47)	(-2.35)	(-2.92)
Monitoring Ability (-1) x Economic Recession		0.000146***		0.000087***
		(6.25)		(3.27)
External Dependence (-1) x Monitoring Ability (-1)	0.000023	0.000037**	0.000024	0.000038**
	(1.60)	(2.43)	(1.63)	(2.50)
External Dependence (-1) x Monitoring Ability (-1)		-0.000029		-0.000032
x Economic Recession		(-1.43)		(-1.58)
US Sentiment (-1) x External Dependence (-1)	-0.001245	-0.003435**	-0.001325	-0.003465**
	(-1.14)	(-2.54)	(-1.22)	(-2.56)
US Sentiment (-1) x External Dependence (-1)		0.005575**		0.005410**
x Economic Recession		(2.32)		(2.26)
US Sentiment (-1) x Monitoring Ability (-1)	-0.000039***	-0.000067***	-0.000066***	-0.000082***
	(-2.68)	(-3.90)	(-3.89)	(-4.26)
US Sentiment (-1) x Monitoring Ability (-1)		0.000045		0.000038
x Economic Recession		(1.50)		(1.08)
US Sentiment (-1) x External Dependence (-1)	-0.000007	-0.000009	-0.000009	-0.000010
x Monitoring Ability (-1)	(-0.52)	(-0.56)	(-0.64)	(-0.64)
US Sentiment (-1) x External Dependence (-1)		-0.000007		-0.000005
x Monitoring Ability (-1) x Economic Recession		(-0.27)		(-0.20)
US Sentiment (-1) x Size (-1)			0.001955***	0.001058
			(2.91)	(1.33)
Size (-1) x Economic Recession				0.004548***
				(3.82)
US Sentiment (-1) x Size (-1) x Economic Recession				0.000281
				(0.19)
Controls	Yes	Yes	Yes	Yes
Observations	102589	102589	102589	102589
R^2	0.0367	0.0368	0.0368	0.0369
AIC	4502.4	4475.1	4497.1	4459.4
BIC	4922.1	4952.0	4926.3	4964.9

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as the total number of fiscal year + 1 earnings estimates which a firm has received from I/B/E/S analysts in a given year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment and lagged size; an interaction term between lagged size and the recession dummy; and an interaction term between lagged US investor sentiment, lagged size and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 19

Alternative Specification for Monitoring Ability (2)

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)
External Dependence (-1)	-0.0126***	-0.0136***	-0.0125***	-0.0135***
	(-6.62)	(-6.65)	(-6.60)	(-6.59)
External Dependence (-1) x Economic Recession		0.0020		0.0018
		(0.76)		(0.67)
Monitoring Ability (-1)	-0.0036***	-0.0048***	-0.0034***	-0.0043***
	(-3.51)	(-4.54)	(-3.37)	(-4.05)
Monitoring Ability (-1) x Economic Recession		0.0048***		0.0031***
		(4.47)		(2.71)
External Dependence (-1) x Monitoring Ability (-1)	-0.0002	0.0002	-0.0002	0.0002
	(-0.38)	(0.33)	(-0.37)	(0.40)
External Dependence (-1) x Monitoring Ability (-1)		-0.0008		-0.0009
x Economic Recession		(-1.00)		(-1.08)
US Sentiment (-1) x External Dependence (-1)	-0.0010	-0.0033**	-0.0011	-0.0034**
	(-0.81)	(-2.14)	(-0.83)	(-2.15)
US Sentiment (-1) x External Dependence (-1)		0.0057*		0.0056*
x Economic Recession		(1.94)		(1.92)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0014**	-0.0027***	-0.0020***	-0.0030***
	(-2.54)	(-4.01)	(-3.29)	(-4.22)
US Sentiment (-1) x Monitoring Ability (-1)		0.0016		0.0016
x Economic Recession		(1.34)		(1.23)
US Sentiment (-1) x External Dependence (-1)	-0.0003	-0.0002	-0.0003	-0.0003
x Monitoring Ability (-1)	(-0.58)	(-0.43)	(-0.67)	(-0.50)
US Sentiment (-1) x External Dependence (-1)		-0.0002		-0.0003
x Monitoring Ability (-1) x Economic Recession		(-0.27)		(-0.27)
US Sentiment (-1) x Size (-1)			0.0016***	0.0007
			(2.58)	(0.95)
Size (-1) x Economic Recession				0.0049***
				(4.52)
US Sentiment (-1) x Size (-1) x Economic Recession				0.0005
				(0.34)
Controls	Yes	Yes	Yes	Yes
Observations	102589	102589	102589	102589
R^2	0.0366	0.0368	0.0367	0.0369
AIC	4486.0	4462.1	4482.4	4442.1
BIC	4905.7	4939.0	4911.6	4947.6

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as the log of the total number of fiscal year + 1 earnings estimates which a firm has received from I/B/E/S analysts in a given year, plus a constant of one; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment and lagged size; an interaction term between lagged size and the recession dummy; and an interaction term between lagged US investor sentiment, lagged size and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 20

ISIC to SIC Correspondence Table

Industry	ISIC	SIC
Apparel	322	2300 - 2399
Beverages	313	2080 - 2089
Electrical machinery	383	3600 - 3699
Food products	311	2010 - 2079, 2090 - 2099
Footwear	324	3021
Furniture	332	2500 - 2599
Glass and products	362	3210 - 3239
Industrial chemicals	351	2800 - 2819, 2860 - 2869
Iron and steel	371	3300 - 3329
Leather	323	3100 - 3199
Machinery	382	3500 - 3599
Metal products	381	3390 - 3499
Non-ferrous metal	372	3330 - 3369
Non-metal products	369	3240 - 3259, 3270 - 3299
Other chemical products	352	2830 - 2859, 2870 - 2879, 2890 - 2899
Other manufacturing	390	3900 - 3999
Paper products	341	2600 - 2699
Petroleum and coal	354	2950 - 2959, 2990 - 2999
Plastic products	356	2820, 2821, 2823, 2824, 3080 - 3089
Pottery	361	3260 - 3269
Printing and publishing	342	2700 - 2799
Professional equipment	385	3800 - 3899
Refineries	353	2900 - 2919
Rubber products	355	2822, 3000 - 3019, 3050 - 3059, 3060 - 3069
Textiles	321	2200 - 2299
Tobacco	314	2100 - 2199
Transport equipment	384	3700 - 3799
Wood products	331	2400 - 2499

This table shows which four-digit SIC codes, used to identify the industry to which firms included in the firm-level analysis belong, correspond with the ISIC codes (Second Review, Third Edition) of those 28 manufacturing industries included in the cross-industry analysis.

Table 21

Subsamples of Firms (Not) Belonging to the Manufacturing Industries Analyzed in the Cross-Industry Analysis

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)
External Dependence (-1)	-0.0096***	-0.0103***	-0.0135***	-0.0144***
	(-3.09)	(-3.04)	(-5.52)	(-5.51)
External Dependence (-1) x Economic Recession		0.0003		0.0018
		(0.06)		(0.48)
Monitoring Ability (-1)	-0.0121*	-0.0173***	-0.0062	-0.0090*
	(-1.89)	(-2.58)	(-1.40)	(-1.93)
Monitoring Ability (-1) x Economic Recession		0.0231***		0.0093
		(2.78)		(1.55)
External Dependence (-1) x Monitoring Ability (-1)	-0.0056	-0.0046	0.0002	0.0014
	(-1.53)	(-1.15)	(0.07)	(0.47)
External Dependence (-1) x Monitoring Ability (-1)		-0.0007		-0.0024
x Economic Recession		(-0.12)		(-0.54)
US Sentiment (-1) x External Dependence (-1)	-0.0019	-0.0047*	-0.0004	-0.0023
	(-0.92)	(-1.79)	(-0.23)	(-1.16)
US Sentiment (-1) x External Dependence (-1)		0.0072*		0.0049
x Economic Recession		(1.66)		(1.16)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0082*	-0.0118**	-0.0031	-0.0073**
	(-1.82)	(-2.12)	(-1.09)	(-2.23)
US Sentiment (-1) x Monitoring Ability (-1)		0.0007		0.0090
x Economic Recession		(0.08)		(1.37)
US Sentiment (-1) x External Dependence (-1)	0.0004	-0.0010	-0.0019	0.0000
x Monitoring Ability (-1)	(0.12)	(-0.22)	(-0.80)	(0.01)
US Sentiment (-1) x External Dependence (-1)		0.0015		-0.0051
x Monitoring Ability (-1) x Economic Recession		(0.24)		(-1.01)
Controls	Yes	Yes	Yes	Yes
Observations	46586	46586	56003	56003
R^2	0.0401	0.0403	0.0373	0.0374
AIC	9840.7	9834.5	-6865.5	-6862.4
BIC	10225.7	10272.0	-6472.4	-6415.7

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. The sample is split in two groups: those firms not belonging to the 28 manufacturing industries analyzed in the cross-industry analysis (models (1) and (2)) and those firms belonging to the 28 manufacturing industries analyzed in the cross-industry analysis (models (3) and (4)). Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 22

Subsamples of Firms Belonging to the Manufacturing Industries Analyzed in the Cross-Industry Analysis: Alternative Specifications for External Dependence

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	Omitted	Omitted	Omitted	Omitted	0.0007**	0.0007**
					(2.43)	(2.17)
External Dependence (-1) x Economic Recession		0.0020		0.0003		-0.0001
		(0.25)		(0.31)		(-0.17)
Monitoring Ability (-1)	-0.0070	-0.0078*	-0.0035	-0.0062	-0.0068	-0.0093
	(-1.56)	(-1.66)	(-0.79)	(-1.32)	(-1.22)	(-1.59)
Monitoring Ability (-1) x Economic Recession		0.0033		0.0108*		0.0113*
		(0.56)		(1.84)		(1.67)
External Dependence (-1) x Monitoring Ability (-1)	0.0088	0.0050	0.0012	0.0012	-0.0005	-0.0005
	(1.45)	(0.81)	(0.90)	(0.80)	(-1.42)	(-1.03)
External Dependence (-1) x Monitoring Ability (-1)		0.0153*		0.0005		-0.0003
x Economic Recession		(1.66)		(0.37)		(-0.40)
US Sentiment (-1) x External Dependence (-1)	0.0031	0.0010	-0.0005	-0.0020**	-0.0004	-0.0008
	(1.02)	(0.31)	(-0.59)	(-2.43)	(-0.86)	(-1.26)
US Sentiment (-1) x External Dependence (-1)		0.0059		0.0032**		0.0009
x Economic Recession		(0.79)		(2.13)		(1.03)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0025	-0.0053	-0.0024	-0.0060	0.0032	-0.0027
	(-0.91)	(-1.58)	(-0.77)	(-1.58)	(0.55)	(-0.28)
US Sentiment (-1) x Monitoring Ability (-1)		0.0070		0.0069		0.0067
x Economic Recession		(1.13)		(1.08)		(0.59)
US Sentiment (-1) x External Dependence (-1)	-0.0029	-0.0038	0.0010	0.0019	0.0002	0.0006
x Monitoring Ability (-1)	(-0.76)	(-0.87)	(0.89)	(1.20)	(0.32)	(0.54)
US Sentiment (-1) x External Dependence (-1)		-0.0039		-0.0024		-0.0006
x Monitoring Ability (-1) x Economic Recession		(-0.43)		(-1.07)		(-0.49)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	56200	56200	51115	51115	37985	37985
R^2	0.0364	0.0365	0.0371	0.0370	0.0298	0.0299
AIC	-6728.8	-6737.7	-4193.5	-4201.3	-2502.9	-2498.6
BIC	-6344.6	-6299.8	-3813.3	-3768.0	-2220.9	-2165.3

This table presents the results of several panel regressions of firm-level employment growth, considering only those firms belonging to the 28 manufacturing industries analyzed in the cross-industry analysis, on the following set of regressors: lagged external dependence; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. In models (1) and (2), external dependence is defined as the median fraction of capital expenditures not financed with cash flow from operations of the industry to which the firm belongs. The industry-level median fraction of capital expenditures not financed with cash flow from operations is calculated at the first two digit SIC level for US listed firms from the Compustat database (1987-2011 average). In models (3) and (4), external dependence is defined as the time-aggregated value for the fraction of capital expenditures not financed with cash flow from operations for the firm, where both the numerator and denominator in the fraction have first been summed over time, considering all observations available for the firm, before being entered into the fraction. In models (5) and (6), external dependence is defined as the fraction of capital expenditures not financed with cash flow from operations for the firm in a given year. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 23

Firm Activity

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)
External Dependence (-1)	-0.0141***	-0.0158***	-0.0156***	-0.0173***
	(-5.33)	(-5.50)	(-5.83)	(-5.94)
External Dependence (-1) x Economic Recession		0.0043		0.0047
		(1.14)		(1.21)
Monitoring Ability (-1)	-0.0090*	-0.0122**	-0.0097**	-0.0129***
	(-1.95)	(-2.49)	(-2.08)	(-2.61)
Monitoring Ability (-1) x Economic Recession		0.0125**		0.0126**
		(2.05)		(2.04)
External Dependence (-1) x Monitoring Ability (-1)	0.0002	0.0014	-0.0001	0.0010
	(0.05)	(0.43)	(-0.04)	(0.32)
External Dependence (-1) x Monitoring Ability (-1)		-0.0030		-0.0029
x Economic Recession		(-0.63)		(-0.61)
US Sentiment (-1) x External Dependence (-1)	0.0020	-0.0002	0.0017	-0.0005
	(1.00)	(-0.09)	(0.82)	(-0.23)
US Sentiment (-1) x External Dependence (-1)		0.0031		0.0033
x Economic Recession		(0.67)		(0.72)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0044	-0.0075**	-0.0046	-0.0079**
	(-1.39)	(-2.11)	(-1.46)	(-2.19)
US Sentiment (-1) x Monitoring Ability (-1)		0.0028		0.0033
x Economic Recession		(0.40)		(0.46)
US Sentiment (-1) x External Dependence (-1)	-0.0030	-0.0033	-0.0031	-0.0029
x Monitoring Ability (-1)	(-1.15)	(-1.08)	(-1.16)	(-0.96)
US Sentiment (-1) x External Dependence (-1)		0.0007		0.0000
x Monitoring Ability (-1) x Economic Recession		(0.13)		(0.00)
Investments (-1)	0.0205***	0.0204***	-0.0250**	-0.0250**
	(3.84)	(3.51)	(-2.34)	(-2.23)
Investments (-1) x Economic Recession		0.0055		0.0090
		(0.76)		(0.96)
US Sentiment (-1) x Investments (-1)	-0.0048	0.0132**	-0.0069	0.0073
	(-1.11)	(2.25)	(-1.26)	(1.04)
US Sentiment (-1) x Investments (-1)		-0.0351***		-0.0316***
x Economic Recession		(-4.09)		(-2.82)
Controls	Yes	Yes	Yes	Yes
Observations	55600	55600	55051	55051
R^2	0.0455	0.0459	0.0456	0.0458
AIC	-8143.9	-8171.0	-8212.9	-8220.0
BIC	-7733.3	-7689.0	-7802.8	-7738.6

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy; lagged investments; an interaction term between lagged investments and the recession dummy; an interaction term between lagged US investor sentiment and lagged investments; and an interaction term between lagged US investor sentiment, lagged investments and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. In models (1) and (2), investments is defined as the sum of total non-cash asset growth, R&D expenses and SG&A expenses scaled by lagged total assets. In models (3) and (4), investments is defined as the sum of capital expenditures, R&D expenses and SG&A expenses, scaled by lagged total assets. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 24

(Non-)Issuing Firms

Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)
External Dependence (-1)	-0.0096	-0.0273	-0.0115***	-0.0123***
	(-0.19)	(-0.56)	(-5.81)	(-5.77)
External Dependence (-1) x Economic Recession		0.0097		0.0010
		(0.11)		(0.34)
Monitoring Ability (-1)	-0.1285	-0.2148*	-0.0132***	-0.0173***
	(-1.56)	(-1.89)	(-3.54)	(-4.41)
Monitoring Ability (-1) x Economic Recession		0.2236		0.0155***
		(1.54)		(3.15)
External Dependence (-1) x Monitoring Ability (-1)	0.0032	0.0216	-0.0003	0.0008
	(0.07)	(0.44)	(-0.13)	(0.32)
External Dependence (-1) x Monitoring Ability (-1)		-0.0145		-0.0012
x Economic Recession		(-0.16)		(-0.34)
US Sentiment (-1) x External Dependence (-1)	-0.1321*	-0.2917***	-0.0010	-0.0035**
	(-1.74)	(-2.66)	(-0.72)	(-2.17)
US Sentiment (-1) x External Dependence (-1)		0.2698**		0.0067**
x Economic Recession		(2.43)		(2.18)
US Sentiment (-1) x Monitoring Ability (-1)	-0.1906	-0.4450**	-0.0046*	-0.0095***
	(-1.55)	(-2.16)	(-1.92)	(-3.38)
US Sentiment (-1) x Monitoring Ability (-1)		0.3464		0.0080
x Economic Recession		(1.50)		(1.51)
US Sentiment (-1) x External Dependence (-1)	0.1160	0.2963**	-0.0014	-0.0002
x Monitoring Ability (-1)	(1.46)	(2.35)	(-0.71)	(-0.10)
US Sentiment (-1) x External Dependence (-1)		-0.2931**		-0.0037
x Monitoring Ability (-1) x Economic Recession		(-2.26)		(-0.94)
Controls	Yes	Yes	Yes	Yes
Observations	3623	3623	97644	97644
R^2	0.0385	0.0387	0.0316	0.0317
AIC	-1410.3	-1423.3	947.9	933.2
BIC	-1193.4	-1169.3	1365.4	1407.7

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. In models (1) and (2), only those firms which partook in a seasoned equity offering in the previous year are considered. In models (3) and (4), only those firms are considered which could be linked to neither an initial public offering nor a seasoned equity offering in the previous year. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Data on equity issues were obtained using the Thomson One service. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 25

Human Capital of the Industries Included in the Cross-Industry Analysis

Industry	Human Capital Intensity			Level of Human Capital					ISIC - SIC Correspondence	
	HCINT	HCINT (SEC)	HCINT (COL)	HCINT	HCINT (SEC)	HCINT (COL)	HCINT (COMB)	HCINT (COMBRES)	ISIC	SIC
Apparel	10.04	51.09%	5.07%	Low	Low	Low	Low	Low	322	2300 - 2399
Basic chemicals	12.79	84.06%	24.54%	High	High	High	High	High	3511	Merged with Industrial chemicals
Beverages	11.78	73.81%	13.09%	Medium	Medium	Medium	Medium	Medium	313	2080 - 2089
Chemicals	12.15	77.08%	18.96%	Medium	Medium	High	Medium	-	352	2840 - 2859, 2870 - 2879, 2890 - 2899
Drugs	13.45	87.22%	35.14%	High	High	High	High	High	3522	2830 - 2839
Electric machinery	12.01	76.08%	15.29%	Medium	Medium	Medium	Medium	Medium	383	3600 - 3650, 3653 - 3699
Food products	10.93	65.55%	9.74%	Low	Medium	Medium	Medium	-	311	2010 - 2079, 2090 - 2099
Footwear	10.14	52.07%	3.69%	Low	Low	Low	Low	Low	324	3021
Furniture	10.59	58.31%	7.09%	Low	Low	Low	Low	Low	332	2500 - 2599
Glass	11.37	69.13%	8.68%	Medium	Medium	Low	Medium	-	362	3210 - 3239
Industrial chemicals	12.42	81.60%	20.03%	High	High	High	High	High	351	2800 - 2819, 2860 - 2869
Iron & Steel	11.33	69.61%	8.32%	Medium	Medium	Low	Medium	-	371	3300 - 3329
Leather	10.12	50.69%	7.06%	Low	Low	Low	Low	Low	323	3100 - 3199
Machinery	11.81	76.23%	10.23%	Medium	Medium	Medium	Medium	Medium	382	3500 - 3569, 3580 - 3599
Metal products	11.43	69.87%	9.71%	Medium	Medium	Medium	Medium	Medium	381	3390 - 3499
Motor vehicle	11.65	73.46%	10.95%	Medium	Medium	Medium	Medium	Medium	3843	Merged with Electrical machinery
Non-ferrous metals	11.42	70.31%	9.66%	Medium	Medium	Medium	Medium	Medium	372	3330 - 3369
Non-metal products	11.48	67.80%	14.20%	Medium	Medium	Medium	Medium	Medium	369	3240 - 3259, 3270 - 3299
Office, computing	13.40	90.01%	29.29%	High	High	High	High	High	3825	3570 - 3579
Other ind.	11.11	65.12%	11.92%	Medium	Low	Medium	Medium	-	390	3900 - 3999
Paper and Products	11.46	70.51%	11.05%	Medium	Medium	Medium	Medium	Medium	341	2600 - 2699
Petroleum and coal products	11.92	69.06%	14.08%	Medium	Medium	Medium	Medium	Medium	354	2950 - 2959, 2990 - 2999
Petroleum refineries	12.94	87.26%	25.05%	High	High	High	High	High	353	2900 - 2919
Plastic products	11.48	71.50%	10.19%	Medium	Medium	Medium	Medium	Medium	356	2820, 2821, 2823, 2824, 3080 - 3089
Pottery	11.09	65.01%	9.87%	Medium	Low	Medium	Medium	-	361	3260 - 3269
Printing and Publishing	12.54	83.89%	19.97%	High	High	High	High	High	342	2700 - 2799
Professional goods	12.22	79.31%	18.50%	High	High	Medium	Medium	-	385	3800 - 3899
Pulp, paper	11.72	75.23%	10.68%	Medium	Medium	Medium	Medium	Medium	3411	Merged with Paper and Products
Radio	12.55	83.29%	18.79%	High	High	High	High	High	3832	3651, 3652
Rubber products	11.67	74.39%	10.26%	Medium	Medium	Medium	Medium	Medium	355	2822, 3000 - 3019, 3050 - 3069
Ship building and repairing	11.71	74.78%	9.99%	Medium	Medium	Medium	Medium	Medium	3841	Merged with Electrical machinery
Spinning	10.21	49.76%	5.49%	Low	Low	Low	Low	Low	3211	Merged with Textile
Synthetic resins	11.80	75.21%	15.14%	Medium	Medium	Medium	Medium	Medium	3513	Merged with Rubber products and Plastic products
Textile	10.38	53.83%	6.94%	Low	Low	Low	Low	Low	321	2200 - 2299
Tobacco	11.00	66.04%	10.99%	Low	Medium	Medium	Medium	-	314	2100 - 2199
Transportation equipment	12.86	84.20%	23.42%	High	High	High	High	High	384	3700 - 3799
Wood Products	10.54	59.29%	7.06%	Low	Low	Low	Low	Low	331	2400 - 2499
25^{th} Percentile	11.09	65.55%	9.66%	-	-	-	-	-	-	-
75^{th} Percentile	12.15	77.08%	18.50%	-	-	-	-	-	-	-

This table shows data on the human capital intensity and the level of human capital of the 37 manufacturing industries investigated by Ciccone and Papaioannou (2006), and shows which four-digit SIC codes, used to identify the industry to which firms included in the firm-level analysis belong, correspond with the ISIC codes (Second Review, Third Edition) used to identify industries by Ciccone and Papaioannou (2006). Three measures of the human capital intensity of industries are considered, all developed by Ciccone and Papaioannou (2006): the average years of schooling of employees (HCINT), the ratio of hours worked by employees with at least 12 years of schooling (necessary for completing secondary school) to total hours worked (HCINT(SEC)) and the ratio of hours worked by employees with at least 16 years of schooling (necessary for completing college) to total hours worked (HCINT(COL)). For each of the three measures of human capital intensity, all industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the measure of human capital intensity considered. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the measure of human capital intensity considered. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the measure of human capital intensity considered. Next to these three measures of the level of human capital of industries, two extra measures are constructed by combining information of the three single measures of human capital. For the first of the combined measures, HCINT(COMB), those industries which are considered to have a high level of human capital according to each of the three single measures of human capital are put in the group of industries with a high level of human capital. Those industries which have a low level of human capital according to each of the three single measures are put in the group of industries with a low level of human capital. The remaining industries are considered to have a medium level of human capital. The second combined measure, HCINT(COMBRES), is similar to the HCINT(COMB) measure, except for that only those industries which are considered to have a medium level of human capital according to each of the three single measures of human capital are put in the group of industries with a medium level of human capital. This means that several industries are not assigned a level of human capital for the HCINT(COMBRES) measure of human capital.

Table 26

Human Capital - HCINT

	High Human Capital		Medium Human Capital		Low Human Capital	
Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	-0.0154***	-0.0193***	-0.0121***	-0.0119***	-0.0078	-0.0054
	(-3.97)	(-4.66)	(-3.24)	(-2.98)	(-1.34)	(-0.91)
External Dependence (-1) x Economic Recession		0.0163**		-0.0046		-0.0125
		(2.35)		(-0.88)		(-1.86)
Monitoring Ability (-1)	-0.0045	-0.0087	-0.0138**	-0.0161**	0.0166	0.0158
	(-0.61)	(-1.12)	(-2.21)	(-2.40)	(1.53)	(1.41)
Monitoring Ability (-1) x Economic Recession		0.0141		0.0069		-0.0057
		(1.39)		(0.78)		(-0.43)
External Dependence (-1) x Monitoring Ability (-1)	-0.0060	-0.0024	0.0036	0.0038	0.0047	0.0046
	(-1.36)	(-0.52)	(0.87)	(0.85)	(0.67)	(0.62)
External Dependence (-1) x Monitoring Ability (-1)		-0.0152*		0.0036		0.0049
x Economic Recession		(-1.79)		(0.58)		(0.57)
US Sentiment (-1) x External Dependence (-1)	-0.0023	-0.0035	0.0012	-0.0022	-0.0017	-0.0015
	(-0.73)	(-0.88)	(0.42)	(-0.77)	(-0.54)	(-0.38)
US Sentiment (-1) x External Dependence (-1)		-0.0021		0.0119*		0.0055
x Economic Recession		(-0.32)		(1.68)		(0.76)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0062	-0.0147**	-0.0010	-0.0032	-0.0016	-0.0043
	(-1.23)	(-2.44)	(-0.26)	(-0.73)	(-0.26)	(-0.55)
US Sentiment (-1) x Monitoring Ability (-1)		0.0178		0.0045		0.0131
x Economic Recession		(1.60)		(0.48)		(0.94)
US Sentiment (-1) x External Dependence (-1)	0.0017	0.0019	-0.0045	-0.0023	0.0025	0.0075
x Monitoring Ability (-1)	(0.41)	(0.35)	(-1.27)	(-0.61)	(0.50)	(1.19)
US Sentiment (-1) x External Dependence (-1)		0.0031		-0.0083		-0.0176*
x Monitoring Ability (-1) x Economic Recession		(0.38)		(-1.04)		(-1.85)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21385	21385	27043	27043	7575	7575
R^2	0.0413	0.0414	0.0379	0.0380	0.0288	0.0296
AIC	-1615.4	-1619.4	-3665.3	-3661.5	-1847.7	-1843.0
BIC	-1264.7	-1220.9	-3304.2	-3251.3	-1542.7	-1496.4

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. The sample of firms analyzed in the regressions reported in this table consists of those firms belonging to the 37 manufacturing industries analyzed by Ciccone and Papioannou (2006). The sample is split in three groups, based on the level of human capital of the industry to which the firm belongs, according to the HCINT measure of human capital. This measure of human capital is based on the HCINT measure of human capital intensity of industries introduced by Ciccone and Papaioannou (2006), which equals the average years of schooling of employees within the specific industry. To determine the level of human capital of the industries, all 37 industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the HCINT measure of human capital intensity. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the HCINT measure of human capital intensity. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the HCINT measure of human capital intensity. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Data on the human capital intensity of the industries considered were taken from the paper by Ciccone and Papaioannou. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 27

Human Capital - HCINT(SEC)

	High Human Capital		Medium Human Capital		Low Human Capital	
Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	-0.0154***	-0.0193***	-0.0145***	-0.0139***	0.0034	0.0042
	(-3.97)	(-4.66)	(-4.10)	(-3.67)	(0.51)	(0.59)
External Dependence (-1) x Economic Recession		0.0163**		-0.0069		-0.0034
		(2.35)		(-1.37)		(-0.45)
Monitoring Ability (-1)	-0.0045	-0.0087	-0.0132**	-0.0151**	0.0240**	0.0234*
	(-0.61)	(-1.12)	(-2.18)	(-2.35)	(2.04)	(1.85)
Monitoring Ability (-1) x Economic Recession		0.0141		0.0041		-0.0001
		(1.39)		(0.48)		(-0.01)
External Dependence (-1) x Monitoring Ability (-1)	-0.0060	-0.0024	0.0068*	0.0068	-0.0129*	-0.0115
	(-1.36)	(-0.52)	(1.72)	(1.57)	(-1.66)	(-1.35)
External Dependence (-1) x Monitoring Ability (-1) x Economic Recession		-0.0152*		0.0057		-0.0055
		(-1.79)		(0.96)		(-0.53)
US Sentiment (-1) x External Dependence (-1)	-0.0023	-0.0035	0.0027	-0.0007	-0.0073**	-0.0066
	(-0.73)	(-0.88)	(1.02)	(-0.25)	(-2.04)	(-1.37)
US Sentiment (-1) x External Dependence (-1) x Economic Recession		-0.0021		0.0131**		-0.0005
		(-0.32)		(1.96)		(-0.06)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0062	-0.0147**	-0.0010	-0.0030	-0.0036	-0.0057
	(-1.23)	(-2.44)	(-0.26)	(-0.72)	(-0.53)	(-0.62)
US Sentiment (-1) x Monitoring Ability (-1) x Economic Recession		0.0178		0.0060		0.0064
		(1.60)		(0.67)		(0.38)
US Sentiment (-1) x External Dependence (-1) x Monitoring Ability (-1)	0.0017	0.0019	-0.0051	-0.0017	0.0049	0.0055
	(0.41)	(0.35)	(-1.50)	(-0.47)	(0.91)	(0.72)
US Sentiment (-1) x External Dependence (-1) x Monitoring Ability (-1) x Economic Recession		0.0031		-0.0125*		-0.0011
		(0.38)		(-1.66)		(-0.10)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21385	21385	28185	28185	6433	6433
R^2	0.0413	0.0414	0.0346	0.0348	0.0493	0.0495
AIC	-1615.4	-1619.4	-4592.0	-4589.8	-897.0	-886.5
BIC	-1264.7	-1220.9	-4229.2	-4177.5	-599.2	-548.1

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. The sample of firms analyzed in the regressions reported in this table consists of those firms belonging to the 37 manufacturing industries analyzed by Ciccone and Papioannou (2006). The sample is split in three groups, based on the level of human capital of the industry to which the firm belongs, according to the HCINT(SEC) measure of human capital. This measure of human capital is based on the HCINT(SEC) measure of human capital intensity of industries introduced by Ciccone and Papaioannou (2006), which equals the ratio of hours worked by employees with at least 12 years of schooling to total hours worked by employees within the specific industry. To determine the level of human capital of the industries, all 37 industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the HCINT(SEC) measure of human capital intensity. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the HCINT(SEC) measure of human capital intensity. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the HCINT(SEC) measure of human capital intensity. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Data on the human capital intensity of the industries considered were taken from the paper by Ciccone and Papaioannou. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 28

Human Capital - HCINT(COL)

	High Human Capital		Medium Human Capital		Low Human Capital	
Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	-0.0147***	-0.0172***	-0.0152***	-0.0157***	0.0008	0.0016
	(-3.34)	(-3.76)	(-4.68)	(-4.41)	(0.12)	(0.23)
External Dependence (-1) x Economic Recession		0.0112		-0.0014		-0.0053
		(1.38)		(-0.31)		(-0.67)
Monitoring Ability (-1)	-0.0054	-0.0096	-0.0126**	-0.0138**	0.0204*	0.0166
	(-0.64)	(-1.11)	(-2.21)	(-2.27)	(1.92)	(1.43)
Monitoring Ability (-1) x Economic Recession		0.0141		0.0036		0.0084
		(1.21)		(0.46)		(0.54)
External Dependence (-1) x Monitoring Ability (-1)	-0.0070	-0.0032	0.0074**	0.0068*	-0.0162**	-0.0135
	(-1.39)	(-0.61)	(2.06)	(1.70)	(-2.02)	(-1.58)
External Dependence (-1) x Monitoring Ability (-1)		-0.0162*		0.0055		-0.0082
x Economic Recession		(-1.69)		(1.01)		(-0.74)
US Sentiment (-1) x External Dependence (-1)	-0.0013	-0.0008	0.0017	-0.0014	-0.0065	-0.0073
	(-0.34)	(-0.17)	(0.71)	(-0.57)	(-1.59)	(-1.30)
US Sentiment (-1) x External Dependence (-1)		-0.0050		0.0096		0.0052
x Economic Recession		(-0.67)		(1.64)		(0.61)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0061	-0.0125**	-0.0017	-0.0044	-0.0029	-0.0082
	(-1.14)	(-1.99)	(-0.45)	(-1.03)	(-0.43)	(-0.94)
US Sentiment (-1) x Monitoring Ability (-1)		0.0121		0.0070		0.0140
x Economic Recession		(0.97)		(0.82)		(0.86)
US Sentiment (-1) x External Dependence (-1)	-0.0025	-0.0034	-0.0025	-0.0006	0.0045	0.0074
x Monitoring Ability (-1)	(-0.57)	(-0.60)	(-0.77)	(-0.16)	(0.85)	(1.02)
US Sentiment (-1) x External Dependence (-1)		0.0065		-0.0078		-0.0077
x Monitoring Ability (-1) x Economic Recession		(0.73)		(-1.13)		(-0.67)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16627	16627	32848	32848	6528	6528
R^2	0.0413	0.0414	0.0369	0.0370	0.0392	0.0397
AIC	-1122.2	-1118.3	-4269.8	-4265.9	-1712.5	-1705.0
BIC	-782.6	-732.4	-3900.2	-3846.0	-1414.0	-1365.8

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. The sample of firms analyzed in the regressions reported in this table consists of those firms belonging to the 37 manufacturing industries analyzed by Ciccone and Papioannou (2006). The sample is split in three groups, based on the level of human capital of the industry to which the firm belongs, according to the HCINT(COL) measure of human capital. This measure of human capital is based on the HCINT(COL) measure of human capital intensity of industries introduced by Ciccone and Papaioannou (2006), which equals the ratio of hours worked by employees with at least 16 years of schooling to total hours worked by employees within the specific industry. To determine the level of human capital of the industries, all 37 industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the HCINT(COL) measure of human capital intensity. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the HCINT(COL) measure of human capital intensity. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the HCINT(COL) measure of human capital intensity. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Data on the human capital intensity of the industries considered were taken from the paper by Ciccone and Papaioannou. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 29

Human Capital - HCINT(COMB)

	High Human Capital		Medium Human Capital		Low Human Capital	
Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	-0.0149***	-0.0180***	-0.0139***	-0.0143***	-0.0019	-0.0002
	(-3.23)	(-3.76)	(-4.49)	(-4.24)	(-0.24)	(-0.02)
External Dependence (-1) x Economic Recession		0.0149*		-0.0021		-0.0096
		(1.73)		(-0.49)		(-1.05)
Monitoring Ability (-1)	-0.0026	-0.0070	-0.0127**	-0.0148**	0.0238*	0.0222*
	(-0.29)	(-0.74)	(-2.36)	(-2.57)	(1.94)	(1.67)
Monitoring Ability (-1) x Economic Recession		0.0147		0.0058		0.0014
		(1.16)		(0.79)		(0.08)
External Dependence (-1) x Monitoring Ability (-1)	-0.0082	-0.0038	0.0051	0.0050	-0.0066	-0.0052
	(-1.55)	(-0.71)	(1.46)	(1.30)	(-0.73)	(-0.54)
External Dependence (-1) x Monitoring Ability (-1)		-0.0196*		0.0045		-0.0036
x Economic Recession		(-1.88)		(0.86)		(-0.30)
US Sentiment (-1) x External Dependence (-1)	-0.0025	-0.0008	0.0021	-0.0014	-0.0094**	-0.0095
	(-0.63)	(-0.16)	(0.89)	(-0.57)	(-2.18)	(-1.60)
US Sentiment (-1) x External Dependence (-1)		-0.0096		0.0110*		0.0048
x Economic Recession		(-1.28)		(1.93)		(0.53)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0075	-0.0129*	-0.0017	-0.0055	-0.0018	-0.0052
	(-1.22)	(-1.82)	(-0.50)	(-1.41)	(-0.24)	(-0.51)
US Sentiment (-1) x Monitoring Ability (-1)		0.0093		0.0095		0.0107
x Economic Recession		(0.68)		(1.19)		(0.58)
US Sentiment (-1) x External Dependence (-1)	-0.0004	-0.0019	-0.0036	-0.0012	0.0091	0.0115
x Monitoring Ability (-1)	(-0.08)	(-0.29)	(-1.20)	(-0.36)	(1.56)	(1.41)
US Sentiment (-1) x External Dependence (-1)		0.0099		-0.0091		-0.0079
x Monitoring Ability (-1) x Economic Recession		(1.04)		(-1.39)		(-0.62)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14735	14735	36212	36212	5056	5056
R^2	0.0415	0.0416	0.0370	0.0371	0.0525	0.0532
AIC	-526.7	-524.1	-5517.4	-5516.2	-1054.7	-1046.2
BIC	-192.4	-144.3	-5143.5	-5091.3	-767.5	-719.8

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. The sample of firms analyzed in the regressions reported in this table consists of those firms belonging to the 37 manufacturing industries analyzed by Ciccone and Papioannou (2006). The sample is split in three groups, based on the level of human capital of the industry to which the firm belongs, according to the HCINT(COMB) measure of human capital. This measure of human capital is constructed using information of the three measures of human capital intensity of industries introduced by Ciccone and Papaioannou (2006). These three measures are the average years of schooling of employees (HCINT), the ratio of hours worked by employees with at least 12 years of schooling (necessary for completing secondary school) to total hours worked (HCINT(SEC)) and the ratio of hours worked by employees with at least 16 years of schooling (necessary for completing college) to total hours worked (HCINT(COL)). For each of the three measures of human capital intensity, all 37 industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the measure of human capital intensity considered. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the measure of human capital intensity considered. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the measure of human capital intensity considered. For the combined measure of human capital (HCINT(COMB)), those industries which are considered to have a high level of human capital according to each of the three measures of human capital are put in the group of industries with a high level of human capital. Those industries which have a low level of human capital according to each of the three measures are put in the group of industries with a low level of human capital. The remaining industries are considered to have a medium level of human capital. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Data on the human capital intensity of the industries considered were taken from the paper by Ciccone and Papaioannou. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 30

Human Capital - HCINT(COMBRES)

	High Human Capital		Medium Human Capital		Low Human Capital	
Dependent Variable: Employment Growth	(1)	(2)	(3)	(4)	(5)	(6)
External Dependence (-1)	-0.0149***	-0.0180***	-0.0161***	-0.0159***	-0.0019	-0.0002
	(-3.23)	(-3.76)	(-3.90)	(-3.57)	(-0.24)	(-0.02)
External Dependence (-1) x Economic Recession		0.0149*		-0.0051		-0.0096
		(1.73)		(-0.84)		(-1.05)
Monitoring Ability (-1)	-0.0026	-0.0070	-0.0142**	-0.0156**	0.0238*	0.0222*
	(-0.29)	(-0.74)	(-2.06)	(-2.10)	(1.94)	(1.67)
Monitoring Ability (-1) x Economic Recession		0.0147		0.0041		0.0014
		(1.16)		(0.42)		(0.08)
External Dependence (-1) x Monitoring Ability (-1)	-0.0082	-0.0038	0.0087*	0.0083*	-0.0066	-0.0052
	(-1.55)	(-0.71)	(1.92)	(1.67)	(-0.73)	(-0.54)
External Dependence (-1) x Monitoring Ability (-1)		-0.0196*		0.0059		-0.0036
x Economic Recession		(-1.88)		(0.84)		(-0.30)
US Sentiment (-1) x External Dependence (-1)	-0.0025	-0.0008	0.0005	-0.0033	-0.0094**	-0.0095
	(-0.63)	(-0.16)	(0.15)	(-1.02)	(-2.18)	(-1.60)
US Sentiment (-1) x External Dependence (-1)		-0.0096		0.0132		0.0048
x Economic Recession		(-1.28)		(1.62)		(0.53)
US Sentiment (-1) x Monitoring Ability (-1)	-0.0075	-0.0129*	0.0002	-0.0006	-0.0018	-0.0052
	(-1.22)	(-1.82)	(0.05)	(-0.12)	(-0.24)	(-0.51)
US Sentiment (-1) x Monitoring Ability (-1)		0.0093		0.0017		0.0107
x Economic Recession		(0.68)		(0.16)		(0.58)
US Sentiment (-1) x External Dependence (-1)	-0.0004	-0.0019	-0.0030	-0.0005	0.0091	0.0115
x Monitoring Ability (-1)	(-0.08)	(-0.29)	(-0.71)	(-0.11)	(1.56)	(1.41)
US Sentiment (-1) x External Dependence (-1)		0.0099		-0.0096		-0.0079
x Monitoring Ability (-1) x Economic Recession		(1.04)		(-1.05)		(-0.62)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14735	14735	22302	22302	5056	5056
R^2	0.0415	0.0416	0.0386	0.0388	0.0525	0.0532
AIC	-526.7	-524.1	-2593.0	-2588.3	-1054.7	-1046.2
BIC	-192.4	-144.3	-2240.4	-2187.6	-767.5	-719.8

This table presents the results of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. The sample of firms analyzed in the regressions reported in this table consists of those firms belonging to the 37 manufacturing industries analyzed by Ciccone and Papioannou (2006). The sample is split in three groups, based on the level of human capital of the industry to which the firm belongs, according to the HCINT(COMBRES) measure of human capital. This measure of human capital is constructed using information of the three measures of human capital intensity of industries introduced by Ciccone and Papaioannou (2006). These three measures are the average years of schooling of employees (HCINT), the ratio of hours worked by employees with at least 12 years of schooling (necessary for completing secondary school) to total hours worked (HCINT(SEC)) and the ratio of hours worked by employees with at least 16 years of schooling (necessary for completing college) to total hours worked (HCINT(COL)). For each of the three measures of human capital intensity, all 37 industries are ranked and put into three groups. The first group (high level of human capital) consists of those industries scoring in the highest quartile of the measure of human capital intensity considered. The second group (medium level of human capital) is comprised of those industries scoring in the second or third quartile of the measure of human capital intensity considered. The last group (low level of human capital) consists of those industries scoring in the lowest quartile of the measure of human capital intensity considered. For the combined measure of human capital (HCINT(COMBRES)), those industries which are considered to have a high level of human capital according to each of the three measures of human capital are put in the group of industries with a high level of human capital. Those industries which have a low level of human capital according to each of the three measures are put in the group of industries with a low level of human capital. Those industries which have a medium level of human capital according to each of the three measures are put in the group of industries with a medium level of human capital. Those industries which are not assigned a level of human capital for the HCINT(COMBRES) measure are not included in the regressions reported in this table. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Data on the human capital intensity of the industries considered were taken from the paper by Ciccone and Papaioannou. The sample period is 1977-2011. t statistics are in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 31

Baker and Wurgler (2006) Firm Characteristics

Firm Characteristic	Measure	(Decile) Group	Sentiment Beta
Size	ME	High	Low
		Medium	-
		Low	High
Age	Age	High	Low
		Medium	-
		Low	High
Risk	σ	High	High
		Medium	-
		Low	Low
Profitability	E+	Profitable	Low
		Unprofitable	High
Dividend policy	D+	Paying	Low
		Non-paying	High
Distress/Growth opportunities	BE/ME	High	High
		Medium	Low
		Low	High
	EF/A	High	High
		Medium	Low
		Low	High
	GS	High	High
		Medium	Low
		Low	High

This table lists the (measures of) firm characteristics which Baker and Wurgler (2006) have found to be indicative of the degree to which a firm's stock price is affected by sentiment. This is termed the firm's sentiment beta in this thesis. This table also shows the expected sentiment beta, guided by the findings of Baker and Wurgler (2006), for the different groups of firms formed based on their scores on the (measure of the) characteristic considered. For the firm characteristics size, age, risk, distress and growth opportunities, the low decile groups consists of those firms scoring in the lowest three deciles for the characteristic considered within their year, the medium decile groups of those firms scoring in the fourth to seventh deciles within their year and the high decile groups of those firms scoring in the top three deciles within their year. For the profitability characteristic, firms are split in two groups: profitable and unprofitable firms. For the dividend policy characteristic, firms are split in the two groups of paying and non-paying firms. The firm characteristics are operationalized as follows: size is defined as the market value of the firm's equity (ME); age is defined as the number of years since the firm's first appearance in the Compustat database; risk is defined as the standard deviation of a firm's monthly stock returns over the 12 month period ending in June of year t profitability is defined using a dummy equal to one for firms which are profitable and equal to zero for unprofitable firms; dividend policy is defined using a dummy equal to one for firms which pay dividends and zero otherwise; distress and growth opportunities are measured using the same three measures. These three measures are the firm's book-to-market ratio (BE/ME), equal to the firm's book value of equity divided by the market value of its equity; usage of external finance, defined as the firm's change in assets minus its change in retained earnings, with the remainder being divided by total assets of the firm in the previous year; and sales growth, defined as the percentage change in net sales. Firm-level financial data were extracted from the Compustat yearly database. Stock return data were gathered from the CRSP database.

Table 32

Sentiment Beta (1)

Measure of Firm Characteristic	Group	Sentiment Beta	Coefficient Estimates												Observations	R^2
			US Sentiment (-1) x External Dependence (-1)	P-value	US Sentiment (-1) x External Dependence (-1) x Economic Recession	P-value	US Sentiment (-1) x Monitoring Ability (-1)	P-value	US Sentiment (-1) x Monitoring Ability (-1) x Economic Recession	P-value	US Sentiment (-1) x External Dependence (-1) x Monitoring Ability (-1)	P-value	US Sentiment (-1) x External Dependence (-1) x Monitoring Ability (-1) x Economic Recession	P-value		
ME	High deciles	Low	-0.0092***	[0.00]	0.0150***	[0.00]	-0.0122***	[0.00]	0.0130*	[0.10]	0.0054	[0.13]	-0.0077	[0.20]	33256	0.1270
	Low deciles	High	-0.0007	[0.84]	-0.0030	[0.62]	-0.0026	[0.80]	-0.0078	[0.62]	0.0020	[0.81]	0.0021	[0.86]	27675	0.0220
Age	High deciles	Low	0.0018	[0.65]	-0.0033	[0.59]	-0.0039	[0.51]	0.0135*	[0.09]	0.0059	[0.23]	-0.0017	[0.81]	36009	0.0122
	Low deciles	High	0.0027	[0.72]	0.0009	[0.93]	0.0055	[0.69]	-0.0031	[0.87]	-0.0031	[0.76]	-0.0039	[0.77]	19895	0.0180
σ	High deciles	High	-0.0082	[0.14]	0.0130	[0.20]	-0.0094	[0.40]	0.0137	[0.45]	-0.0024	[0.77]	0.0065	[0.63]	22405	0.0379
	Low deciles	Low	-0.0028	[0.31]	0.0034	[0.55]	-0.0016	[0.70]	-0.0005	[0.95]	0.0044	[0.27]	-0.0101	[0.14]	25172	0.0156
E+	Profitable	Low	-0.0012	[0.50]	0.0044	[0.24]	-0.0096***	[0.00]	0.0081	[0.15]	0.0005	[0.86]	-0.0042	[0.37]	72592	0.0455
	Unprofitable	High	-0.0011	[0.88]	0.0003	[0.97]	-0.0066	[0.65]	-0.0008	[0.97]	0.0014	[0.89]	0.0024	[0.85]	24381	0.0320
D+	Paying	Low	-0.0008	[0.65]	0.0001	[0.98]	-0.0064**	[0.03]	0.0075	[0.17]	-0.0016	[0.56]	0.0014	[0.78]	43711	0.0189
	Non-paying	High	-0.0048	[0.28]	0.0101	[0.11]	-0.0126	[0.18]	0.0038	[0.77]	0.0002	[0.98]	0.0011	[0.90]	58878	0.0337
BE/ME	High deciles	High	0.0031	[0.40]	0.0074	[0.28]	0.0015	[0.85]	0.0074	[0.59]	-0.0076	[0.26]	-0.0055	[0.62]	29228	0.0230
	Medium deciles	Low	0.0032	[0.24]	-0.0048	[0.42]	-0.0068	[0.12]	-0.0009	[0.92]	-0.0006	[0.89]	0.0041	[0.58]	40455	0.0324
	Low deciles	High	-0.0096***	[0.00]	0.0122**	[0.01]	-0.0160***	[0.01]	0.0116	[0.27]	0.0041	[0.28]	-0.0107	[0.07]	28825	0.0341
EF/A	High deciles	High	-0.0089**	[0.04]	0.0144*	[0.06]	-0.0165**	[0.03]	0.0223	[0.12]	0.0028	[0.66]	-0.0119	[0.24]	30690	0.0395
	Medium deciles	Low	-0.0018	[0.45]	0.0083	[0.12]	-0.0018	[0.64]	0.0021	[0.78]	-0.0015	[0.67]	-0.0034	[0.59]	41158	0.0283
	Low deciles	High	-0.0041	[0.11]	-0.0024	[0.63]	-0.0107**	[0.05]	0.0027	[0.78]	0.0061	[0.14]	-0.0014	[0.83]	30010	0.0125
GS	High deciles	High	-0.0048	[0.20]	0.0120*	[0.07]	-0.0090	[0.19]	0.0012	[0.93]	0.0020	[0.72]	-0.0100	[0.29]	31649	0.0360
	Medium deciles	Low	-0.0005	[0.81]	0.0040	[0.33]	-0.0074**	[0.04]	0.0070	[0.28]	-0.0005	[0.88]	-0.0046	[0.38]	41461	0.0211
	Low deciles	High	-0.0035	[0.28]	-0.0018	[0.78]	-0.0131**	[0.04]	0.0063	[0.59]	0.0005	[0.91]	-0.0005	[0.95]	29479	0.0153

This table presents the coefficient estimates of those interactions including lagged US sentiment from, the number of observations of and the coefficients of determination of several panel regressions of firm-level employment growth on the following set of regressors: lagged external dependence, defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints; an interaction term between external dependence and an economic recession dummy, taking on the value of one if the US was in an economic recession during any quarter of the year according to the National Bureau of Economic Research (NBER) and 0 otherwise; lagged monitoring ability, defined as a dummy variable equal to one for firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the year; an interaction term between lagged monitoring ability and the recession dummy; an interaction term between lagged external dependence and lagged monitoring ability; an interaction term between lagged external dependence, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance, and lagged external dependence; an interaction term between lagged US investor sentiment, lagged external dependence and the recession dummy; an interaction term between lagged US investor sentiment and lagged monitoring ability; an interaction term between lagged US investor sentiment, lagged monitoring ability and the recession dummy; an interaction term between lagged US investor sentiment, lagged external dependence and lagged monitoring ability; and an interaction term between lagged US investor sentiment, lagged external dependence, lagged monitoring ability and the recession dummy. All models include several control variables, these are: lagged size, defined as the log of a firm's total assets; lagged Tobin's Q, defined as the market value of assets over the book value of assets; lagged cash flow over lagged capital, defined as a firm's earnings before extraordinary items plus depreciation scaled by the firm's total net property, plant and equipment of the previous year; lagged cash over assets, defined as a firm's cash and short term investments scaled by total assets; and lagged sales growth, defined as the percentage growth in net sales. Each regression includes firm and year fixed effects. Standard errors are clustered by firm. Each regression considers data from a particular subsample of firms, which is formed based on the score of a firm on the particular measure of a firm characteristic considered. Please refer to the table titled "Baker and Wurgler (2006) Firm Characteristics" for more information on the characteristics considered to form the subsamples, and how these subsamples were created. Firm-level financial data and data on the number of employees were extracted from the Compustat yearly database. Data on I/B/E/S analyst estimates were gathered from the I/B/E/S database. Stock return data were gathered from the CRSP database. The sample period is 1977-2011. P-values are in square brackets, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 33

Sentiment Beta (2)

Measure of Firm Characteristic	Group	Sentiment Beta	Distribution of External Dependence			Effect of a 1 std. dev. increase in sentiment on the employment growth differential between highly monitored firms at the 75th and little monitored firms at the 25th percentile in terms of external dependence		
			25th Percentile	75th Percentile	Difference (75th - 25th)	Normal Times	Extra Effect During Economic Recession	Total Effect During Economic Recession
ME	High deciles	Low	-0.151	1.223	1.373	-0.0248	0.0336	0.0088
	Low deciles	High	0.201	1.788	1.587	0.0000	0.0000	0.0000
Age	High deciles	Low	-0.089	1.352	1.441	0.0000	0.0135	0.0135
	Low deciles	High	0.002	1.585	1.583	0.0000	0.0000	0.0000
σ	High deciles	High	0.123	1.590	1.468	0.0000	0.0000	0.0000
	Low deciles	Low	-0.346	1.129	1.475	0.0000	0.0000	0.0000
E+	Profitable	Low	-0.110	1.338	1.448	-0.0096	0.0000	-0.0096
	Unprofitable	High	0.258	1.893	1.634	0.0000	0.0000	0.0000
D+	Paying	Low	-0.475	1.042	1.517	-0.0064	0.0000	-0.0064
	Non-paying	High	0.250	1.742	1.492	0.0000	0.0000	0.0000
BE/ME	High deciles	High	0.201	1.576	1.375	0.0000	0.0000	0.0000
	Medium deciles	Low	-0.047	1.368	1.415	0.0000	0.0000	0.0000
	Low deciles	High	-0.189	1.473	1.661	-0.0319	0.0045	-0.0274
EF/A	High deciles	High	0.247	1.695	1.449	-0.0294	0.0209	-0.0085
	Medium deciles	Low	-0.116	1.315	1.432	0.0000	0.0000	0.0000
	Low deciles	High	-0.056	1.453	1.509	-0.0107	0.0000	-0.0107
GS	High deciles	High	0.067	1.534	1.466	0.0000	0.0176	0.0176
	Medium deciles	Low	-0.071	1.384	1.455	-0.0074	0.0000	-0.0074
	Low deciles	High	0.003	1.552	1.549	-0.0131	0.0000	-0.0131

This table presents information on the distribution of the measure of external dependence for the subsamples of firms analyzed in the different regressions reported on in the table titled "Sentiment Beta (1)". This table also shows estimates of the effect of a change in US investor sentiment on the employment growth differential of firms differing in their external dependence, based on the coefficient estimates reported in the aforementioned table. Note that US investor sentiment is defined as Baker and Wurgler's (2006) index orthogonalized to US business cycle indicators and normalized to have zero mean and unit variance. External dependence is defined as a firm's score on the Kaplan and Zingales (1997) index of financial constraints. Highly monitored firms are those firms which have had a fiscal year + 1 earnings estimate from any I/B/E/S analyst during any month in the previous year. Years of which the National Bureau of Economic Research (NBER) reports the US economy to be in an economic recession during any quarter are considered recession years. Please refer to the table titled "Baker and Wurgler (2006) Firm Characteristics" for more information on the characteristics considered to form the subsamples, and how these subsamples were created. Refer to the table "Sentiment Beta (1)" for more information on the regressions of which the coefficient estimates were used in estimating the effect of a change in US investor sentiment on the employment growth differential of firms differing in their external dependence and the monitoring ability of their shareholders.