# Managerial Optimism and the Perception of Financial Constraints

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**Abstract**

We find that optimistic managers are more likely to perceive financing constraints, which is a fundamental but previously untested prediction of behavioral corporate finance theory. However, the influence of optimism on perceived financing constraints is relatively small compared to other previously identified determinants such as leverage. Moreover, the vast majority of optimistic managers actually do not perceive any financing constraints. Our findings have implications for both behavioral corporate finance and financial constraints research. We argue that previous findings relating optimism and corporate policies are probably driven by perceived financing constraints and not optimism. Apart from their potential usefulness, commonly applied financial constraint indices are likely to be biased by not accounting for managerial optimism. Our analysis is based on large survey panel data for high-level managers of 2,897 German firms for the period 1995 to 2010, which is matched with financial and non-financial firm-level information. The data enable us to implement a survey based measure of managerial optimism and to directly access the managers' perception of financing constraints from survey answers.

JEL classification codes: D03, D22, D84, G32

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# 1 INTRODUCTION

Theoretical and empirical behavioral corporate finance research has established a link between managerial optimism and several dimensions of firm behavior. An integral part of the underlying reasoning is that managerial optimism influences a manager's perception of external financing costs, which in turn affects the manager's corporate decisions. However, whereas the assumed connection between optimism and perceived financing costs is confirmed by theoretical analyses, there is no empirical evidence for this link actually to exist. In the absence of appropriate data, existing empirical research has so far restricted itself to investigate the link between optimism and corporate policies directly. Thus, to the best of our knowledge, we are the first to explicitly analyze empirically whether optimistic managers are actually more likely to misperceive their firm's financial situation. Doing so, we shed first light on the mechanisms, which are presumed to be a crucial prerequisite for the existence of a link between managerial optimism and corporate behavior.

Optimism is broadly defined as a generalized positive expectation about future events resulting from the overestimation of the probability of a favorable outcome and the underestimation of the probability of a negative outcome (see Heaton (2002)). Thus, it goes beyond a justified level of positive expectations and includes a non-realistic, biased component. We follow the strand of theory literature which distinguishes between optimism leading to an overestimation of the mean of a future outcome, and overconfidence resulting in miscalibration, i.e., too narrow confidence intervals (see Heaton (2002), Hackbarth (2009)). However, overconfidence is more broadly defined as the tendency of individuals to overestimate their knowledge, their abilities and the precision of their information. Consequently, it has two further manifestations beyond miscalibration, namely the better-than-average effect and the illusion of control, which can both be sources of optimism (see Bhandari and Deaves (2006), Moore and Healy (2008)). Given that optimism and overconfidence are closely related phenomena, we also refer to research on overconfidence hereafter.

Besides optimism, the second central aspect in this study is a firm's financial constraints status and the managers' perception thereof. Financial constraints are broadly defined as a wedge between the costs of internal and external finance (see Fazzari, Hubbard, and Petersen (1988)). According to this definition, every firm is financially constrained given a basic level of market imperfections such as asymmetric information, transaction costs, etc. Thus, companies only differ in their level of financial constraints. We apply a narrower definition of financial constraints. It detects a firm as financially constrained if the wedge between internal and external

financing costs is so wide that business activity is impaired and profitable investment projects are not realized since internal finance is not available and external finance too costly (see Kaplan and Zingales (1997)). In this study, we do not aim to measure exactly a firm's financial constraints status. What we are interested in, is rather a manager's perception of her firm's financing constraints. Given this focus, our definition of financial constraints is appropriate since it implies consequences of financial constraints, which are actually perceivable for the manager. Moreover, our understanding of perceived financial constraints captures exactly the circumstance that the manager perceives outside financing as too costly and thus equals the link between optimism and corporate behavior.

Professional managers should be able to build unbiased expectations and assessments concerning their firm's outlooks and financial status since this belongs to their main field of expertise. However, evidence suggests that managers are cognitively biased and show even more pronounced biases than the lay population (see, for instance, Ben-David, Graham, and Harvey (2014), Graham, Harvey, and Puri (2013)). Selection mechanisms provide one explanation for these findings if optimistic individuals are generally more likely to become entrepreneurs (see Bernardo and Welch (2001), Koellinger, Minniti, and Schade (2007), Pirinsky (2013)) or to climb up the career ladder to the highest management level (see Goel and Thakor (2008), Kaniel, Massey, and Robinson (2010)). Further, optimism increases with a person's power (see Fast et al. (2012)) and commitment (see Weinstein (1980)) which are both attributes of managers whose wealth and social status are highly dependent on their firm's outcome.

Our analyses are based on panel data provided by the LMU-ifo Economics & Business Data Center (EBDC) which links micro data from surveys conducted by the ifo Institute among high-level German managers with financial statement data. The data enable us to investigate a unique and representative sample of 2,897 German firms including small, medium, and large firms over a period of sixteen years from 1995 to 2010. Related survey based studies concentrate on mid-size, large and public companies or on start-ups (see Ben-David, Graham, and Harvey (2014), Landier and Thesmar (2009)). Due to data availability, non-survey based studies on managerial cognitive biases are mostly limited to public firms. However, managerial optimism is presumable more pronounced in smaller private firms where the surveyed manager may even be the actual entrepreneur. Similarly, research on financial constraints mostly concentrates on samples of large public firms (Fazzari, Hubbard, and Petersen (1988), Kaplan and Zingales (1997), Hadlock and Pierce (2010)). Beck, Demirgüç-Kunt, and Maksimovic (2005), Beck et al. (2006), and von Kalckreuth (2006) are rare examples of studies including major fractions of small and medium-sized entities. However, financial constraints are likely to be most relevant

in smaller and younger firms whose access to capital markets is restricted. Moreover, attitudes and perceptions of individual managers are of greater importance in smaller companies with a leaner organizational structure where they are more likely to actually influence firm decisions.

The most unique feature of our dataset is, however, that it enables us both to proxy managerial optimism and to access directly the manager's perception of financing constraints. Based on our measure of optimism, which compares ex-ante expectations with ex-post realizations (similar to that of Landier and Thesmar (2009)), we are the first to show that optimistic managers are indeed more likely to perceive their firm as financially constrained. This link is not only apparent in univariate analyses (Table 2 and Table 3) but also in multivariate logit analyses (Table 4) in which we control for various drivers of the actual level of financing constraints. Hence, our findings provide first evidence for the argument that optimistic managers overestimate their company's investment opportunities, thus evaluate external financing as overpriced, and are therefore more likely to feel restrained in their business and investment activities due to financing constraints. In contrast, previous studies using managerial assessments of financial constraints to calibrate financial constraint indices, for instance, Kaplan and Zingales (1997) and Hadlock and Pierce (2010), assume implicitly that managers' perception of constraints correctly represent their actual level.

One the one hand, our results help explain findings of previous behavioral corporate finance studies which assume that managerial optimism rises the likelihood of perceiving financial constraints which in turn changes firm decisions. On the other hand, our results also show that the vast majority of optimistic managers do actually not feel financially constraint. Given that the link between optimism and corporate decisions is commonly traced back to a strong connection between optimism and perceived financial constraints, the connection between optimism and firm policies should be strongest for the minority of optimistic managers who actually feel constrained. Thus, it is quite surprising that previous empirical studies manage to identify ties between managerial optimism and firm behavior even though they are not able to filter out the vast amount of managers who are optimistic but do not feel financially constrained.

The remainder of this paper is structured as follows. Section 2 reviews the corresponding literature. Section 3 describes our dataset and Section 4 describes how we derive our survey-based measures for optimism and perceived financial constraints. Section 5 contains our empirical results. Section 6 covers several robustness tests. Section 7 concludes.

# 2 Literature Review

## 2.1 Managerial Optimism

Heaton (2002) is one of the first to provide a theoretical framework, which helps explain a link between managerial optimism and corporate policies. He assumes that optimistic managers overestimate the net present value of projects. At the same time, this effect of optimism leads managers to believe that unbiased outside investors and an efficient capital market underestimate their firm's potential. Thus, optimistic managers perceive external finance as overly costly. Malmendier and Tate (2005), Hackbarth (2009), and Kamoto (2014) adopt this line of argument within their theoretical frameworks. Overall, this reasoning implies that optimistic managers are more likely to feel financially constrained since they do not obtain external funding for projects, which are not profitable from an outside perspective. Further, even if outside financing is available, optimistic managers tend to perceive financing conditions as unduly costly so that they feel de facto financially constrained.

Within the frameworks of Heaton (2002) and Malmendier and Tate (2005), the effects of optimism manifest in a firm's investment behavior. Whereas the overestimation of investment opportunities results in overinvestment if internal funds are available, the biased perception of financing conditions leads to underinvestment if external funds would be necessary for financing. This overinvestment-underinvestment tradeoff implies a positive correlation between investment levels and a firm's cash flows (which proxy for internal funds) for optimistic managers. There are several empirical analyses which find support for this hypothesis (see, for instance, Malmendier and Tate (2005), Lin, Hu, and Chen (2005), Glaser, Schäfers, and Weber (2008), Malmendier and Zheng (2012)). Campello, Graham, and Harvey (2010) provide further evidence within a broad survey among mainly US CFOs in which the majority of managers states that they indeed rely on internally generated cash flows to fund presumably attractive investment when they are unable to borrow.

In fact, the explanation of increased investment-cash flow sensitivities through managerial optimism does not exclusively rely on a biased perception of financing constraints. In case of sufficient internal funds, it is enough if an optimistic manager overestimates her firm's investment opportunities in order to end up with a higher investment-cash flow sensitivity. However, the fact that this overestimation of investment opportunities goes – by definition – hand in hand with a misperception of external financing costs must strengthen the connection between optimism and investment-cash flow sensitivities. Accordingly, Malmendier and Tate (2005) and Lin, Hu, and Chen (2005) find that investment-cash flow sensitivities are higher for optimistic

managers particularly for firms which have constrained internal funds. Given that most firms are not able to finance their investments only by internally generated cash flows but rely on external financing, a biased perception of external financing costs is thus still an essential link concerning the impact of optimism on investment behavior.

Closely related to general investment behavior, behavioral corporate finance research also identifies a connection between managerial optimism and a firm's mergers and acquisitions activity. Thus, Malmendier and Tate (2008) find that the odds of making an acquisition are significantly higher for optimistic CEOs (see also Malmendier and Zheng (2012)). Again, this is explained by the manager' overestimation of future positive prospects. However, Malmendier and Tate (2008) also find that the effect is largest if the merger does not require external financing. Hence, in this case, the optimism induced overestimation of external financing costs plays a mitigating role concerning the link between optimism and corporate actions.

Based on Heaton's (2002) argumentation, Hackbarth (2009) and Malmendier, Tate, and Yan (2011) develop models which predict consequences of managerial optimism on corporate capital structure. With respect to external equity, the difference in opinions between outside investors and the manager about future prospects matters for all states of the world. In contrast, in the case of risky debt, the difference in opinions matters only for default states. Thus, equity prices are more sensitive to biases in the manager's perception compared to the costs of debt financing. This leads to stronger pecking order preferences of optimistic managers. Empirical evidence supports this hypothesis. Hence, Malmendier, Tate, and Yan (2011) find that optimistic managers use less external finance and, conditional on accessing external capital, issue less equity than their peers (see also Lin, Hu, and Chen (2008), and Malmendier and Zheng (2012)). Further, this aversion to external equity financing of optimistic managers is shown to have a cumulative effect leading to higher leverage ratios (see Malmendier, Tate, and Yan (2011), and Graham, Harvey, and Puri (2013)).

Further, managerial optimism is argued to influence a firm's payout policy. Thus, Deshmukh, Goel, and Howe (2013) derive theoretically that optimistic managers, who view external financing as overly costly, build financial slack for future investment needs by lowering current dividend payouts. They are able to confirm this negative link between optimism and dividend payouts in their empirical analyses (see also Cordeiro (2009)). Again, the connection between optimism and payout policy also exists if managers simply believe they can earn higher returns by investing in their firms' projects instead of paying anything out. However, the link should be

amplified significantly by a potential preference for internal finance of optimistic managers who attempt to avoid issuing undervalued securities.

Finally, theory discusses an influence of managerial optimism on corporate cash policy. For instance, Deshmukh, Goel, and Howe (2015) argue that, on the one hand, optimistic managers may hold more cash to finance future investments with internal cash rather than with future external financing which they expect to be overly costly. On the other hand, optimistic managers may view current external financing as overly costly and therefore finance current investments with internal cash, resulting in lower cash holdings. Hence, the effect of optimism on cash holdings depends on the manager's perception of the relative costs of current and future external financing. In the trade-off model of Deshmukh, Goel, and Howe (2015), optimistic managers view external financing as excessively costly but expect this cost to decline over time. Therefore, they delay external financing and maintain lower cash holdings. Deshmukh, Goel, and Howe (2015) confirm this conclusion within empirical analyses. In contrast, Huang-Meier, Lambertides, and Steeley (2013) show empirical evidence that optimistic managers hold more cash than their non-optimistic peers. This is consistent with optimistic managers being mainly influenced by their misperception of current costs of external funds. Further, Campello, Graham, and Harvey (2010) provide survey-based evidence which is "consistent with the view that financially constrained firms build cash reserves as a buffer against potential credit supply shocks" (p. 472). Even if the literature has not come to clear conclusions regarding the influence of optimism on cash policy, a biased perception of external financing costs is the prerequisite for the existence of any connection.

Empirical analyses on the connection between managerial optimism and perceived financing constraints require ways of measuring both of these aspects. Empirical research has established several approaches to capture managerial optimism. Psychometrical tests provide most direct measures of cognitive biases. Yet, they are only scarcely applied to larger samples of high level managers (as in Graham, Harvey, and Puri (2013)) due to their high effort and specificity. A second best solution are optimism proxies based on more general surveys which poll managers' expectations concerning macroeconomic or firm-specific variables. However, such research suffers from low response rates so that only few studies in behavioral corporate finance can rely on broad managerial survey data. High frequent and long-term panel datasets as provided by the EBDC are even scarcer. Ben-David, Graham, and Harvey (2014) measure individual optimism and overconfidence based on quarterly S&P 500 forecasts of US CFOs obtained from surveys over more than ten years. Landier and Thesmar (2009) analyze two waves of survey data from the French statistical office on a population of entrepreneurs which are asked to assess

the future success of their business. Further, Inoue, Kato, and Yamasaki (2012) identify optimism among Japanese CEOs by analyzing fifty years of yearly survey data in which the CEOs are asked for future Japanese stock market developments and the world economy outlook.[1]

## 2.2 Actual and Perceived Financial Constraints

The measurement of financial constraints is just as complex as that of managerial optimism. Some studies categorize firms according to firm characteristics, which are assumed to proxy for financial constraints. Thus, Fazzari, Hubbard, and Petersen (1988) classify firms with low payout ratios as financially constrained arguing that those need to retain as much of their internal funds as possible to finance investments. Further potential indicators are small firm size, young firm age, and poor credit ratings (see Baker, Stein, and Wurgler (2003), Almeida, Campello, and Weisbach (2004)). Research has also developed multivariate classification schemes. Cleary (1999), for instance, identifies a number of financial variables that influence a firm's financial constraint status using multiple discriminant analysis. Whited and Wu (2006) sort firms according to an index which they construct via GMM estimation of an investment Euler equation.

Kaplan and Zingales (1997) go one step further. For a small sample of low dividend paying US firms, they analyze CEOs' statements about their firms' availability of and demand for funds. They combine this information with quantitative financial statement data as well as public news and classify firms into categories of financial constraints. They use ordered logit regression to relate their classification to financial variables and end up with an index consisting of a linear combination of five accounting ratios. This so-called KZ-index and variations thereof are applied extensively on broader firm samples to answer various research questions related to financial constraints, for instance, by Lamont, Polk, and Saá-Requejo (2001), Baker, Stein, and Wurgler (2003), and Almeida, Campello, and Weisbach (2004). However, Hadlock and Pierce (2010) cast serious doubt on the validity of the KZ-index. They collect detailed qualitative information from financial filings to categorize a random sample of public US firms according to their financial constraints status. Replicating the KZ-index based on this categorization, they obtain factor loadings which deviate from Kaplan and Zingales (1997). Hadlock and Pierce (2010) also provide mixed evidence on the validity of other common financial constraints

[1] Due to the shortage of survey data, research has developed indirect measures of managerial optimism based on managers' private portfolio decisions (Malmendier and Tate (2005, 2008), Malmendier, Tate, and Yan (2011)) or press and media analyses (Malmendier, Tate, and Yan (2011), Hribar and Yang (2013)). However, these proxies are based on critical assumptions and have methodological problems.

measures. Their results suggest that only firm size and age are useful indicators of a firm's financial constraints. Thus, they propose a measure of financial constraints, which is only based on these two attributes. Further, Hoberg and Maksimovic (2014) perform text-based analyses of 10-K text to obtain annual measures of financial constraints.

Even though research manages to provide several alternative proxies of the actual level of financial constraints, it fails to give a clear recommendation which categorization to choose. Moreover, different procedures lead to quite different categorizations (see, for instance, Almeida, Campello, and Weisbach (2004), Hadlock and Pierce (2010)). A possible explanation is that studies like Kaplan and Zingales (1997) and Hadlock and Pierce (2010) actually rely on managerial assessments of financing constraints to calibrate index coefficients without correcting for managerial attitudes like optimism. Our analyses show, however, that managerial optimism biases this perception.

There are only few survey-based analyses in which managers are asked directly for their assessment of their firm's financing constraints. For instance, Campello, Graham, and Harvey (2010) poll managers within a one-time survey in which they ask CEOs whether their firm is financially constrained or not. Further, Beck, Demirgüç-Kunt, and Maksimovic (2005) and Beck et al. (2006) analyze information from the World Business Environment Survey which provides information on the firms' perception of financial constraints. Similarly, von Kalckreuth (2006) relies on survey data from the United Kingdom from the CBI Industrial Trends Survey which specifically asks for financing constraints. However, these survey-based analyses miss to address the issue that the managerial perception of financing constraints is likely to be biased. Ferrando and Mulier (2013) provide first evidence that the perception of financing constraints may not correspond to actual constraints. Based on a European firm sample polled within the SAFE survey on access to finance, they link the gap between actual and perceived constraints to firm characteristics. However, the role of managerial attributes like optimism is not considered.

## 3 DATA

The EBDC links micro data from surveys among German managers conducted by the ifo Institute with external financial statement data.[2] Our study is exclusively based on questions polled

[2] The EBDC is a joint project from the Ludwig-Maximilians-University of Munich and the ifo Institute. For details on the EBDC datasets see Abberger et al. (2007), Hönig (2009) and Hönig (2010). The EBDC

within the ifo Business Survey (BS) which focuses on enterprise-specific appraisals and expectations concerning business and market conditions. In general, the BS is conducted monthly with special questions that are only asked periodically recurring, for instance, quarterly or half-yearly. It covers manufacturing, retailing/wholesaling, construction and service providing firms where the latter are only included from October 2004 on. The BS is the most prominent ifo survey since it is the basis of the monthly published ifo Business Climate Index (BCI) which attracts great attention in a national and international context.

The EBDC matches these survey data with yearly financial statement data from two sources: Firstly, the *Amadeus Company Database* that contains business and financial information on mainly non-quoted European companies. Secondly, the *Hoppenstedt Accounting Database* which is specialized on German firms. If information is available from both sources, *Hoppenstedt* is given preference due to its higher level of detail and accuracy.

The BS questionnaires do not necessarily refer to a specific company but can be addressed to certain departments within a company, for instance on a product level. Thus, more than one questionnaire can be sent to a company within the same survey round. Since we are interested in the managers' expectations and perceptions and the consequences on firm decisions, we conduct our analyses on the lowest possible questionnaire, i.e., manager level. In the following, we refer to this level as ID level. However, our analyses can still be considered to be mainly on firm and at the same time manager (and ID, respectively) level, since the vast majority of companies obtain only one questionnaire per survey round.[3] Due to confidentiality and data security issues, EBDC data are only provided with a one-year time lag and in a strictly anonymized form and thus do not contain any personal information regarding the manager who answers the survey.

A major benefit of ifo BS data is their broad coverage of the German economy. The ifo Institute aims to survey a representative sample of German firms and therefore also includes small and medium-sized enterprises. Its success is confirmed by the ifo BCI being a reliable indicator for the German economy (see Sinn and Abberger (2006)). Thus, the results of our analyses can be

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webpage provides a precise documentation of the panel datasets including a list of available variables and polled questions.

[3] In our final sample, more than 87% of ID-years have only one questionnaire (ID) per company and survey round (see Table A1 in the appendix). If financial information is available on a lower than company level, it is matched to the corresponding questionnaire within the company. If financial information is only available on a higher than questionnaire level, the same information is matched to more than one questionnaire within one company.

generalized for the German economy. Moreover, we are the first to analyze managerial optimism and financial constraints for smaller and medium-sized private firms. In contrast, existing empirical literature focuses on large, publicly traded companies (see Glaser, Schäfers, and Weber (2008), Malmendier and Tate (2008), Kaplan and Zingales (1997), Hadlock and Pierce (2010)).

A flaw of the data lies in their anonymity. Thus, we cannot verify whether the person answering the questionnaire is part of the highest management level. However, Abberger, Birnbrich, and Seiler (2009) show within a one-time special meta-survey on the BS that the person who answers the ifo survey is mostly part of the highest management level within the respective firm. This underpins the relevance of our analyses since attitudes of high-level managers are more likely to have observable consequences on firm policies, especially in small firms. Further, the ifo BCI serves as an important indicator for the surveyed managers themselves (see Bachmann, Elstner, and Sims (2013)). Therefore, they will take the underlying surveys seriously and answering the questionnaire is unlikely to be delegated to an assistant. Concerns regarding social desirability of answers are also reduced when managers are interested in overall unbiased results and thus have an incentive to answer to the best of their knowledge.

The anonymity of the data prevents us from observing a change of the manager who answers the survey. We are not able to solve this problem directly. However, the management structure in small and owner-managed firms is slimmer and manager fluctuation is lower. Moreover, the ifo questionnaires are always addressed to a specific person so that there is no further unnecessary fluctuation. In turn, the anonymity of the survey helps us to mitigate concerning regarding strategic answering of managers, which might be relevant in the context of future outlooks and financial constraints.

We use matched EBDC data starting in 1995 until 2010. We drop information concerning state-run firms. According to their main two-digit WZ03 industry classification, we exclude firms from the following sectors: financial intermediation, insurance, and pension funding (WZ03: 65-67), public administration, defense, and compulsory public security (WZ03: 75), education (WZ03: 80), and other community, social, and personal service activities (WZ03: 90-93). Further, we only keep firm years with non-missing total assets and for which we have at least one month with survey information.[4] The resulting sample comprises 38,901 ID-year observations

[4] In a very first step, we delete firm years with zero or negative total assets and for which financial information does not refer to twelve months. If there is still more than one balance sheet item per firm year, we keep information from the later balance sheet date. If the month of accounting is missing, we assume it to be December.

of matched survey and financial information from 12,703 unique IDs and 8,125 unique firms, respectively. The sample for which our measures of optimism and perceived financial constraints are both available given the time structure we use in the following comprises 9,985 ID-year observations from 3,831 different IDs and 2,897 unique firms. Table A2 in the appendix gives details on the data cleaning procedure.

# 4 Measuring Optimism and the Perception of Financial Constraints

## 4.1 Managerial Optimism Measure

Our yearly measure of managerial optimism is based on a comparison of ex-ante expectations with ex-post-realizations. The realized business development is derived from financial information. To obtain a manager's expectation of the future business development, we focus on a question (referred to as question 1 in the following) which is permanent part of the BS and is asked every month. It regards the manager's appraisal of the expected business situation for the next six months on a scale from 1 to 3 and says:

> "Our business development for the next six months is (under elimination of purely seasonal fluctuations
>
> (1) better
> (2) constant
> (3) worse."

We recode the answers (1), (2) and (3) to a (1), (0) and (-1) scale. The question is formulated vague to provide the managers with the flexibility to refer to the factors they consider to be most important and which they are most familiar with. Thus, biases in appraisals are less likely to result from simple guessing or innumeracy problems.

Financial information is only available on a yearly basis. To be able to compare the actual yearly development with the monthly polled expectations, we thus have to aggregate the latter on a yearly basis, too. We do so by taking the maximum mode of the manager's expected business development over the first six month of a fiscal year. Note that these are not necessarily six observations. We consider the first six months since question 1 refers to the expected development in six months. The mode is used to capture the manager's general tendency of expectations. Doing so, we obtain a manager's ex-ante expected business expectation for a fiscal year which can take the values (-1) for "worse", (0) for "constant", and (1) for "better".

We calculate the realized business development for a fiscal year as the EBIT growth rate over this fiscal year. This growth rate is defined as the difference between fiscal year end EBIT and EBIT at the beginning of the fiscal year divided by EBIT at the beginning of the fiscal year.[5] We use EBIT to capture a firm's overall business situation. If the EBIT growth rate lies between 5% and -5%, we assume a constant business development and code it as (0). If it is higher or smaller, we code it as (1) and (-1), respectively.

By taking the difference between the values concerning the realized business development and the mode of the manager's expectations based on question 1 for a fiscal year, we obtain a yearly optimism indicator that varies between (-2) and (2) as displayed in Table 1. As an example, a value of (2) indicates extreme optimism and results if a manager expects the business development to get "better" but EBIT decreases by more than 5%. Based on this optimism indicator, we implement an optimism dummy variable, which takes the value one, if the indicator variable is greater than zero, and zero otherwise.

A deviation of ex-post realizations from ex-ante expectations does not necessarily result from optimism. The manager gives an estimation by choosing from a distribution of future outcomes. The fact that she is not right ex-post does not necessarily mean that she is cognitively biased. There is a rational part of the expectation error. However, the residual part of a positive expectation error presumably results from a systematic overestimation of positive outcomes, i.e. optimism. Thus, we tend to overestimate optimism through our measure. However, this strengthens our findings given that they hold even if we categorize some unbiased managers as optimistic. Moreover, managers are not asked for point estimates but for vague appraisals, which makes estimation errors more meaningful.

Despite its shortcomings, comparing expectations with realizations is a common procedure in finance literature to measure managerial cognitive biases. For instance, Landier and Thesmar (2009) detect optimism among French entrepreneurs in a way which is closely related to ours by comparing discrete managerial expectations with realized sales growth. They define a constant sales development to lie between -3% and 3% and note correctly that this threshold is arbitrary. However, their results do not change for varying thresholds. A 10% corridor, as implemented in our study, is even more error tolerant. Ben-David, Graham, and Harvey (2014) rely on ex-post estimation errors, too, and identify CFO overconfidence by investigating whether ex-post stock market realizations fall within ex-ante estimated confidence intervals.

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[5] We exclude observations with negative EBIT to obtain unbiased growth rates.

We implement a yearly and therefore time variant optimism measure to cover both dispositional and non-dispositional optimism. Whereas the latter may vary from one setting to the next, dispositional optimism is a stable personal characteristic (Lin, Hu, and Chen (2005), Puri and Robinson (2007)). The concepts do not exclude each other since the disposition to be optimistic may be planted within a personality but it may still depend on specific determinants to which degree it crushes the surface.

## 4.2 Perceived Financial Constraints Measure

Our measure of perceived financial constraints relies exclusively on survey data. We do not intend to capture the actual degree of financial constraints but are interested in a manager's perception thereof. We are able to observe and access this perception directly by analyzing the managers' answers to the following ifo BS question (referred to as question 2 in the following):

> "Our construction/domestic business/sales/production activities are currently constrained by difficulties in financing
> (0) no
> (1) yes."

The exact wording of the question and its availability depends on the main sector and its inclusion into the survey differs for Eastern and Western Germany and varies over time. Additionally, the polling rhythm is partly monthly and partly quarterly depending on the main sector, time period, and Eastern and Western Germany.

These features complicate a unified yearly aggregation of the managers' perceptions. To ensure a consistent aggregation, we choose an as easy mechanism as possible. Thus, we categorize a year as financially constrained - according to the manager's perception - as soon as the manager answers question 2 with "yes" at least once during the corresponding fiscal year. With this strict categorization, we follow previous literature on financial constraints which considers a firm year as financially constrained as soon as there is one event or statement that indicates financing difficulties (Kaplan and Zingales (1997), Hadlock and Pierce (2010)).

Just as with regard to our optimism measure, we allow the perception of financial constraints to change yearly. This is consistent, for instance, with Lamont, Polk, and Saá-Requejo (2001) and Almeida, Campello, and Weisbach (2004), who rank firms according to their level of financial constraints on a yearly basis, too. We are confident that question 2 actually refers to a firm's financial constraints status. This view is confirmed by the procedure of Campello, Graham, and Harvey (2010) who intend to explicitly measure financial constraints through a survey among managers. The question which they formulate to do so is quite similar to question

2 and asks whether a company's operations are not affected, somewhat affected, or very affected by difficulties in accessing credit markets.

# 5 Managerial Optimism and Perceived Financial Constraints

## 5.1 Univariate Analyses

Panel A of Table 2 shows descriptive statistics of all variables used in this paper as defined in Table A3 in the appendix.[6] Our measures of optimism and perceived financial constraints rely on polled survey and financial information which is both not necessarily available for all firm years. The availability of our optimism proxy is most limited since its calculation is based on both survey and financial information.

Throughout our analyses, we use the manager's optimism in t-1 to explain her perception of financial constraints in t in order to address endogeneity concerns and to account for learning behavior. We intend to analyze whether optimism leads to a biased perception of financing constraints. However, if we use optimism in a year to explain the perception of financial constraints of the same year, we cannot guarantee that financial constraints were firstly perceived after the manager showed optimistic attitudes. This is due to the construction of our measures. For instance, a manager is identified as optimistic if she expects a better business development (according to question 1) in month 4, 5, and 6 of a fiscal year even though EBIT decreases by more than 5% during this year. For this year, she is also categorized as feeling financially constrained if she states in month 1, that business activity is constrained due to financing restrictions (according to question 2). In this case, the manifestation of optimistic attitudes occurred after the perception of financial constraints, which is the reversed order as described. To avoid this possibility and exactly separate the underlying time intervals, we use optimism of the previous year to explain the perception of financial constraints.

Doing so, we also account for the possibility that the manager actually still is optimistic in year t, but gives unbiased estimates since she realized her estimation errors in the previous year and therefore adjusted her survey forecasts in year t. Empirical evidence supports the possibility that patterns in expectations like optimism persist over time (Bhandari and Deaves (2006), Landier and Thesmar (2009), Ben-David, Graham, and Harvey (2014)).

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[6] Further, Table A5 in the appendix displays pairwise correlation coefficients.

Thus, our main analyses require both the perception of financial constraints in year t (Perceived $FC_t$) and our optimism measure in the previous year ($Optimism_{t-1}$) to be available. Accordingly, Panel A of Table 2 displays descriptive statistics for a sample which comprises only of those ID-years for which both $Optimism_{t-1}$ and Perceived $FC_t$ are available.[7] The numbers indicate that our sample provides large heterogeneity regarding firm size, age, sales growth, and capital structure. Only 0.3% of all ID-years display a positive dividend payout.

The mean of our main optimism measure is positive (0.355) and indicates that more than one third of ID-years are classified to have an optimistic manager. This corresponds to findings of previous research showing that optimism is a common phenomenon among managers (see, for instance, Ben-David, Graham, and Harvey (2014), Graham, Harvey, and Puri (2013), Lin, Hu, and Chen (2005)). Related studies mostly refer to managerial optimism concerning a common macroeconomic variable, whereas we measure optimism with respect to the manager's firm's prospects. Our results are still comparable since optimism concerning individual factors has been shown to be highly correlated with optimism with respect to overall economic development (Puri and Robinson (2007), Ben-David, Graham, and Harvey (2012)).

The mean of our measure of perceived financial constraints shows that 12.7% of ID-years are affected by financial constraints according to the manager's perception. Given that levels of financial constraints vary over time and countries, it is difficult to compare this number with results from other studies which investigate financial constraints. For instance, with respect to low dividend paying US firms from 1970 to 1984, Kaplan and Zingales (1997) categorize 14.7 % of firm years as being financially constraint. Further, in a survey conducted by Campello, Graham, and Harvey (2010) during the fourth quarter of 2008, 57% of US CFOs state that they are at least somewhat affected by credit constraints. The ratios among their colleagues in Europe and Asia are with 51% and 48%, respectively, quite similar. In a World Bank survey conducted in 1999 and 2000 in 80 developing and developed countries, 36% of all firms rate financing as major obstacle (see Beck et al. (2006)). In contrast, managers of manufacturing and processing firms in the United Kingdom perceive financing constraints in only 4.55% of all firm as reported in a study by von Kalckreuth (2006) based on 11 years of survey data from 1989 to 1999. Ferrando and Mulier (2013) analyze data from SAFE surveys on access to finance for a sample of euro area firms from 2009 to 2011 and report that managers perceive financial constraints in

[7] Table A4 in the appendix shows summary statistic for the whole sample. A comparison with Panel A of Table 2 indicates that information on optimism and perceived financial constraints is rather available for larger and older firms with a higher payout ratio and a greater financial slack. Descriptive statistics of the remaining firm characteristics do not considerable differ.

16.7% of firm year with respect to the whole sample (see also Artola and Genre (2011)). For German firms, the corresponding percentage ratio is with 13,6% slightly smaller. Thus, our measure of (perceived) financial constraints seems to be rather but not unduly strict compared to other categorization schemes and survey results.

Figure 1 shows the yearly average of perceived financial constraints and optimism for the whole sample from 1995 to 2010. Both the aggregated level of optimism and perceived financial constraints fluctuate over time. Average optimism peaks in 1998, 2002, and 2007. The level of perceived financial constraints displays a rising trend from 2001 on and peaks in 2009 with over 20% of all managers feeling financially constrained in their business activity.

## 5.2 Bivariate Analyses

Table 3 which displays absolute and relative frequencies of the joint distribution of Optimism $_{t-1}$ and Perceived FC $_t$ provides first descriptive evidence on the connection between optimism and the perception of financial constraints. Panel A shows frequencies of managers perceiving financing constraints in t conditioned on their optimism in t-1. It shows that 14.83% of optimistic managers feel financially constrained, whereas only 11.58% of not-optimistic managers perceive financial constraints. Results from Wilcoxon-Mann-Whitney tests indicate that the distributions of Perceived FC $_t$ differ for the two subsamples for a significance level of 1%. This positive connection between optimism and perceived constraints per definition also holds in the other direction. Panel B of Table 3 shows frequencies of optimistic managers in t-1 conditioned on their perception of financial constraints in t-1: among those managers who feel financially constrained in t, 41.31% are categorized as optimistic in t-1. This ratio is higher than for those who do not feel constrained (34.61%). Again, the distributions of Optimism $_{t-1}$ differ significantly to a significance level of 1% for the two subsamples according to Wilcoxon-Mann-Whitney tests.

Panel B of Table 2 reports summary statistics for our main variables and divides our sample according to the managers perception of financing constraints in the respective fiscal year, i.e,. according to Perceived FC $_t$. Thus, the first three columns display summary statistics for the subsample of ID-years in which a manager does not perceive financing constraints. The following three columns refer to the sample of firm-years in which a manager perceives constraints. Further, for each variable we run two-sided t-tests and Wilcoxon-Mann-Whitney tests for dummy variables, respectively, whether the mean and the distribution, respectively, of the variable is different for the two subsamples. Results of these tests are displayed in the last column. The mean of Optimism $_{t-1}$ among those ID-years in which the managers also perceive financial

constraints (0.413) is higher than the respective mean for those ID-years with no perceived financing constraints (0.346). These numbers correspond to joint distribution displayed in Panel A of Table 3.

The patterns regarding the other firm variables shown in Panel B of Table 2 imply that firms whose managers perceive financing constraints tend to be smaller and younger, have lower cash flow and EBIT, lower sales growth as well as lower dividend payout, cash holdings, coverage ratio, income margin, and financial slack. Further, they come from industries with lower average sales growth. In contrast, they display a higher (long-term) debt ratio. One would expect most of these patterns also to result if one compared firms, which are actually financially constrained with unconstrained firms. Thus, managerial perceptions seem to be not only driven by optimism but also by factors connected to the real level of a firm's financing constraints. In the following, we will separate the influence of optimism on the perception of financing constraints via multivariate analyses in which we control for these other factors.

Our analyses so far provide evidence that optimistic managers are more likely to perceive financing constraints. This underpins results from empirical analyses, which identify connections between managerial optimism and corporate decisions and explain this link mainly through an optimism induced biased perception of financing conditions. However, our results also show that the link between a manager being optimistic and thus perceiving financial constraints is by far not as strong as commonly assumed in the literature. Actually, Panel A of Table 3 shows that for only 14.83% of ID-years, a manager is identified as optimistic and as perceiving financial constraints. In turn, in the vast majority (85.17%) of ID-years, managers are optimistic without perceiving constraints. Thus, the strong results regarding the influence of optimism on several corporate decisions seems at least astonishing since – based on the underlying argumentation – they need to be driven by the minority of managers who are optimistic and actually also perceive financing constraints. In turn, weak or ambiguous findings could be easily explained by the diluting effect of those managers who are optimistic but not biased in their perception of financing constraints.

## 5.3 Regression Analyses

In this section, we investigate the influence of optimism on the likelihood that a manager perceives her firm as financially constrained and aim to control for factors, which affect the actual level of financing constraints. For this purpose, we use a logit regression framework in which the dependent variable is our dummy variable of perceived financial constraints Perceived

$FC_t$. Thus, the estimated regression coefficients indicate in which way the respective independent variable influences the likelihood that a manager perceives her firm as financially constrained in a given firm year. The central independent variable is our yearly optimism dummy for a manager $Optimism_{t-1}$. To address potential endogeneity concerns we use the manager's optimism in t-1 to explain her perception of financial constraints in t.

As already indicated within the univariate analyses, a manager's perception of whether her firm is financially constrained or not is not exclusively driven by her cognitive attitudes. Presumably, the actual level of financial constraints is the starting point of her assessment. To control in our regressions for factors, which influence the likelihood of a firm to be actually financially constrained, we rely on existing empirical results. However, the literature normally aims to identify factors that can be compilated into a financial constraint index which is then transferable to any sample in order to identify financially constraint firms in an out of sample approach. In contrast, we do not opt for a unique combination of factors, which determine a firm's financial constraints status. Our approach is to adapt and apply the components of several commonly used financial constraint indices to our sample and to analyze whether managerial optimism is a further factor, which explains perceived financial constraints. In our case, this is a reasonable assumption since our dependent variable explicitly aims to reflect the manager's perception of financial constraints. Thus, the perception should be driven by the real level of financial constraints and by managerial cognitive attitudes. In contrast, previous literature calibrates index coefficients under the assumption that the dependent variable, i.e., the underlying financial constraint categorization, captures the actual level of financial constraints only.

At some points, we do not strictly follow the original index construction in terms of variable definitions, index composition, and time structure. This is partly due to data availability and sample characteristics. Further, our major aim is not to replicate the original index coefficients. This would not be reasonable either given that our sample and methodology differ from those of previous analyses. We rather intend to capture the economic intuition behind the factors with respect to their influence on a firm's financial constraint status even though most of the criteria are actually "theoretically ambiguous" (Kaplan and Zingales (1997), p. 210). Since we do not aim to predict firms' financial constraint levels based on our regression results, we are able to include year fixed effects in all of our regressions. Further, in all logit regressions, we adjust standard errors for clustering on the manager level.

The first financial constraints classification which we base the choice of our independent variables on is the KZ-index by Kaplan and Zingales (1997). Their index suggests that the likelihood of being classified as financially constrained rises significantly in firms with a higher debt ratio and higher Q. In contrast, the likelihood declines with increasing cash flows, cash holdings, and dividends payments. Since our sample comprises mainly not-listed firms, we are not able to calculate Q. Therefore, we use a firm's sales growth as proxy for investment opportunities (see, for instance, Whited and Wu (2006)). Further, we replace missing values for dividend payouts with zero to be able to include it into our regressions for the sake of completeness without losing a substantial amount of observations. However, our basic results do not change if we exclude dividends entirely from our regressions or if we completely omit sales growth (such as Baker, Stein, and Wurgler (2003) who use a modified four-variable version of the KZ-index without Q).

Column (1) of Table 4 shows the results of logit regressions in which our dummy for perceived financial constraints is regressed on the five KZ-index variables.[8] The estimated coefficients for cash flow, debt ratio, and dividend payout are significant and correspond in their signs to those estimated by Kaplan and Zingales (1997). However, sales growth has a significantly negative and cash no significant influence. In contrast, Kaplan and Zingales (1997) estimate a positive (negative) and significant influence for Q (cash). Still, these deviating results are less alarming given that Hadlock and Pierce (2010) identify a significantly positive influence of cash and no influence of Q. In column (2), managerial optimism is added as additional explanatory variable. Its coefficient is significantly positive, i.e., an optimistic manager is more likely to perceive her firm as financially constrained. The coefficients of most of the remaining variables are not affected by the inclusion of optimism. Only the coefficient of sales growth turns insignificant which is in line with results from Hadlock and Pierce (2010).

Next, we choose our independent variables according to the index specification of Whited and Wu (2006). Their final index contains cash flow, a positive-dividend indicator, the long-term debt ratio, and the log of total assets as indicators of financial health. Further, they include industry sales growth and firm sales growth to capture the intuition that there are firms with good investment opportunities, i.e., in high-growth industries, but with low individual sales growth. Our estimation results are displayed in column (3) of Table 4. All coefficients have the

[8] For our baseline regressions which do not include optimism, we also include only those ID-years for which $\text{Optimism}_{t-1}$ is available in order to be able to compare the results with those when we include optimism.

same signs as proposed by Whited and Wu (2006). Apart from the dividend payout dummy, they are also significant. These results also correspond to findings of Hadlock and Pierce (2010). In column (4), we add managerial optimism to the specification. Again, the coefficient of optimism is significantly positive. The coefficient of sales growth turns insignificant. However, the remaining results do basically not change. This also holds, if we exclude dividends entirely from our regressions or if we completely omit firm and industry sales growth.
In column (5) of Table 4, we replicate the financial constraint index specification by Cleary (1999) who uses the following variables to proxy for firm liquidity, leverage, profitability, and growth: long-term debt ratio, current ratio, coverage, net income margin, financial slack, and sales growth. Based on these analyses, Hennessy and Whited (2007) derive a financial constraint index which includes these variables. The results of our replicating estimation are shown in column (5) of Table 4. The only variable the coefficient of which is significant and corresponds in its sign to Cleary (1999) and Hennessy and Whited (2007) is financial slack. Column (6) displays the regression results if we add managerial optimism into the framework. Again, we estimate a positive and significant coefficient for our optimism measure.

Lastly, Column (7) of Table 4 displays results from regressions which only include proxies for size and age and the quadratic functions thereof as proposed by the financial constraint index by Hadlock and Pierce (2010). Hadlock and Pierce (2010) uncover that the role of both size and age in predicting financial constraints is nonlinear. Below certain cutoffs, they find a quadratic relation between size and constraints and a linear relation between age and constraints. In contrast, our results suggest a quadratic relation between financial constraints and firm age. However, the coefficients of our size components are insignificant. Even though this may be surprising, we are more interested in the influence of optimism as additional explanatory variable in this specification. As displayed in column (8), the coefficient of managerial optimism is again significantly positive.

In total, our finding that optimism increases the likelihood of a manager to perceive her firm as financially constrained does not depend on how we proxy for the actual level of financing constraints. Controlling for several common measures of financial constraints, the coefficients of optimism are significantly positive.

## 6 Discussion and Robustness

First, we address endogeneity concerns especially in terms of reversed causality. Reversed causality arises if managerial optimism does not lead to a biased perception of financial constraints

but if perceived financing constraints induce the manager to show optimistic views. A plausible setup for this to occur might be if the manager pretends optimism in terms of her firm's future prospects in order to obtain financing in a situation in which it is difficult for him to obtain external finance. However, this kind of strategic answering is not reasonable within an anonymous survey like the ifo BS. Alternatively, facing actual financing constraints could lead to real euphoria and thus to optimistic forecasts. However, this explanation seems quite unlikely and lacks any psychological reasoning. Even though reversed causality is theoretically implausible in our setup, we address it methodically by using the optimism of the previous year to explain the perception of financing constraints of the current year.

The validity of our analyses considerably depends on the validity of our optimism measure. The validity of our optimism proxy, in turn, relies on the assumption that we compare the ex-ante expectation of the business development with the actual business development. We capture the actual business development via EBIT growth. In order to investigate whether this is a fair measure of business development, we compare EBIT growth with the managers' ex-post assessments of the business development for this time period. Within the monthly BS, managers are asked to answer the following question:

"We appraise our current state of business as

(1) good
(2) satisfiable (seasonal respectively)
(3) bad."

Within a meta-survey on the BS, Abberger, Birnbrich, and Seiler (2009) find that most of the managers have in mind the business situation of the same month one year before when assessing the current business situation. Thus, the answer to this question basically reflects the ex-post business development during the last year. We recode the answers (1), (2) and (3) to a (1), (0) and (-1) scale and calculate for every month the average appraisal for the whole sample. Further, we aggregate our EBIT growth indicator which is (0) if the EBIT growth rate lies between 5% and -5%, and (1) and (-1) if it lies above and below these thresholds, respectively, on a yearly basis for the whole sample. Figure A1 in the appendix displays the two resulting time lines and shows that their development is quite parallel. Hence, EBIT growth seems to be a good proxy of general business development at least on an aggregated level. At the same time, this indicates that the manager's ex-post assessments of business development are quite unbiased on average. Thus, managers are in principle able to give unbiased assessments so that biased expectations need to be explained by cognitive attitudes like optimism.

A further critical aspect of our optimism measure is that we apply a fixed threshold of ±5% to define a constant business development. Thus, we implicitly assume that a constant business development is roughly equivalent to 0% EBIT growth. However, a manager's perception of a constant business development may differ from firm to firm depending on the firm's past business development. For instance, if a firm experienced an EBIT growth of 10% in the past, a manager's idea of a constant business development may be close to 10%. Past EBIT variability may influence the manager's assessment further. Thus, we implement an alternative optimism measure which applies time-variant and ID-specific thresholds to assess the actual business development. The center of our alternative EBIT growth corridor within which the new EBIT growth indicator is (0), i.e., it indicates a constant business development, for a given ID and year is the average EBIT growth of this ID over the past two years.[9] From this value, we add and subtract, respectively, one standard deviation of EBIT growth of this ID for a given year over the past two years, to obtain the thresholds of our final "constant EBIT growth" corridor. Hence, we do not apply a fixed value of ±5% as above. If EBIT growth for an ID-year lies above or below our new "constant EBIT growth corridor" for this ID-year, the resulting EBIT growth indicator takes the value (1) or (-1), respectively. Based on this new EBIT growth indicator, we construct an alternative optimism indicator (using the respective scheme displayed in Table 1) which is the basis of our alternative optimism dummy Optimism II.

Table A6 in the appendix shows the joint distribution of our primary and the alternative optimism measure, Optimism and Optimism II, respectively. Even though their construction is based on different approaches to assess the actual business development, they lead to very similar categorization of managers. The subgroups overlap by over 70%. Hence, the implementation of a fixed corridor of 10% does not lead to serious bias. Apart from being easier in its construction, our primary optimism is available for a significantly larger number of firm years since it does not rely on observations from previous firm years. This is why we favor it for our main analyses. However, the results of our bivariate and our regression analyses do not change if we use Optimism II instead of our main optimism measure Optimism as shown in Table A7 and columns (1) and (5) of Table A8 in the appendix.

For further robustness checks, we run our logit regressions with additionally including firm-fixed effects. The results displayed in Table A8 in the appendix show that the influence of optimism is also significantly positive in most cases both for our main optimism measure (columns (3) and (7)) and the alternative measure (columns (4) and (8)).

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[9] Again, we exclude observations with negative EBIT to obtain unbiased growth rates.

# 7 CONCLUSION

We find strong empirical evidence that optimistic managers are more likely to perceive their firm as financially constrained. This supports the rationale of behavioral corporate finance research, which explains the influence of optimism on several corporate policies based on a biased perception of financing constraints. Our results also show that the vast majority of those managers who are optimistic do not perceive any financing constraints. This helps explain ambiguous results on the influence of optimism on firm decisions which are diluted by those managers who are optimistic but do not perceive financing obstacles.

Our findings have also implications for measures of financial constraints that are derived from managerial assessments or expectations concerning macroeconomic or firm-specific variables. Ignoring optimism in the calibration of a financial constraints index may lead to potentially biased inferences.

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# TABLES

**Table 1: Optimism Indicator**

This table shows the calculation of our optimism indicator. It is derived from the maximum mode of answers concerning the expected business development (according to question 1) over the first six month of a fiscal year and the growth rate of EBIT during this fiscal year. With respect to the expected business development, answer (-1) means "worse", (0) means "constant", and (1) means "better". EBIT is defined as displayed in Table A3 in the appendix.

| | | | EBIT growth over fiscal year | | |
|---|---|---|---|---|---|
| | | | < 5% | [-5%, 5%] | > 5% |
| | | | -1 | 0 | 1 |
| Mode of expectations over first six month of fiscal year | "worse" | -1 | 0 | -1 | -2 |
| | "constant" | 0 | 1 | 0 | -1 |
| | "better" | 1 | 2 | 1 | 0 |

## Table 2: Descriptive Statistics

This table shows summary statistics for the variables used in this study. The sample comprises only those ID-years for which both Optimism $_{t-1}$ and Perceived FC $_t$ are available. Panel A refers to the full sample. Panel B distinguishes between those ID-years in which a manager perceives no financing constraints (Perceived FC $_t$ = 0) and those ID-years in which a manager perceives financing constraints (Perceived FC $_t$ = 1). The last column contains results from two-sided t-tests and Wilcoxon-Mann-Whitney tests for dummy variables, respectively, whether the mean and the distribution, respectively, of the variable is different for the two subsamples. For a detailed definition of all variables please refer to Table A3 in the appendix. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

Panel A: Full Sample

| Variable | Mean | Min. | Max. | p(10) | Median | p(90) | N |
|---|---|---|---|---|---|---|---|
| Optimism $_{t-1}$ | 0.355 | 0 | 1 | 0 | 0 | 1 | 9,985 |
| Optimism II $_{t-1}$ | 0.387 | 0 | 1 | 0 | 0 | 1 | 6,463 |
| Perceived FC $_t$ | 0.127 | 0 | 1 | 0 | 0 | 1 | 9,985 |
| Total assets (1,000 Euros) $_t$ | 123,856 | 39 | 2,163,295 | 786 | 9,913 | 257,853 | 9,985 |
| Ln(total assets) $_t$ | 16.338 | 10.611 | 21.583 | 13.605 | 16.142 | 19.449 | 9,985 |
| Cash flow $_t$ | 0.094 | -0.583 | 0.927 | -0.105 | 0.078 | 0.299 | 7,013 |
| EBIT (1,000 Euros) $_t$ | 39,760 | -2,188 | 938,800 | 262 | 4,600 | 81,818 | 9,421 |
| EBIT growth $_t$ | -0.148 | -45.062 | 7.537 | -0.415 | 0.013 | 0.461 | 9,421 |
| Sales growth $_t$ | 0.027 | -0.521 | 1.081 | -0.174 | -0.002 | 0.227 | 7,708 |
| Debt ratio $_t$ | 0.605 | 0.000 | 1.000 | 0.230 | 0.642 | 0.911 | 9,416 |
| Longterm debt $_t$ | 0.205 | 0 | 1.000 | 0 | 0.094 | 0.621 | 9,985 |
| Dividend payout $_t$ | 0.003 | 0 | 0.069 | 0 | 0 | 0 | 9,985 |
| Dividend dummy $_t$ | 0.098 | 0 | 1 | 0 | 0 | 0 | 9,985 |
| Cash $_t$ | 0.130 | 0 | 0.737 | 0.001 | 0.064 | 0.375 | 9,899 |
| Age $_t$ | 46.762 | 0 | 192 | 7 | 27 | 121 | 9,985 |
| Current ratio $_t$ | 6.306 | 0.177 | 351.841 | 0.746 | 1.475 | 5.202 | 8,525 |
| Coverage $_t$ | 192.436 | -26.563 | 13,677.077 | 1.225 | 14.250 | 143.769 | 6,892 |
| Income margin $_t$ | 0.032 | -0.272 | 0.629 | -0.017 | 0.017 | 0.091 | 5,343 |
| Slack $_t$ | -0.028 | -1.127 | 0.669 | -0.424 | -0.018 | 0.376 | 9,985 |
| Industry sales growth $_t$ | 0.023 | -0.521 | 1.081 | -0.045 | 0.025 | 0.090 | 9,385 |

Panel B: Perceived FC vs. No Perceived FC

| | Perceived FC $_t$ = 0 | | | Perceived FC $_t$ = 1 | | | Difference |
|---|---|---|---|---|---|---|---|
| Variable | Mean | Median | N | Mean | Median | N | |
| Optimism $_{t-1}$ | 0.346 | 0 | 8,714 | 0.413 | 0 | 1,271 | *** |
| Optimism II $_{t-1}$ | 0.379 | 0 | 5,611 | 0.434 | 0 | 852 | *** |
| Total assets (1,000 Euros) $_t$ | 135,230 | 11,549 | 8,714 | 45,876 | 4,040 | 1,271 | *** |
| Ln(total assets) $_t$ | 16.486 | 16.291 | 8,714 | 15.322 | 15.243 | 1,271 | *** |
| Cash flow $_t$ | 0.097 | 0.080 | 6,309 | 0.066 | 0.051 | 704 | *** |
| EBIT (1,000 Euros) $_t$ | 43,804 | 5,073 | 8,250 | 11,265 | 2,602 | 1,171 | *** |
| EBIT growth $_t$ | -0.159 | 0.016 | 8,250 | -0.072 | 0.000 | 1,171 | |
| Sales growth $_t$ | 0.031 | 0.002 | 6,786 | -0.005 | -0.015 | 922 | *** |
| Debt ratio $_t$ | 0.594 | 0.624 | 8,329 | 0.692 | 0.751 | 1,087 | *** |
| Longterm debt $_t$ | 0.193 | 0.084 | 8,714 | 0.289 | 0.178 | 1,271 | *** |
| Dividend payout $_t$ | 0.003 | 0 | 8,714 | 0.001 | 0 | 1,271 | *** |
| Dividend dummy $_t$ | 0.108 | 0 | 8,714 | 0.031 | 0 | 1,271 | *** |
| Cash $_t$ | 0.133 | 0.067 | 8,642 | 0.108 | 0.041 | 1,257 | *** |
| Age $_t$ | 48.705 | 29 | 8,714 | 33.441 | 18 | 1,271 | *** |
| Current ratio $_t$ | 6.097 | 1.510 | 7,491 | 7.820 | 1.247 | 1,034 | |
| Coverage $_t$ | 207.397 | 14.904 | 6,194 | 59.667 | 7.726 | 698 | *** |
| Income margin $_t$ | 0.034 | 0.017 | 4,873 | 0.012 | 0.008 | 470 | *** |
| Slack $_t$ | -0.015 | -0.012 | 8,714 | -0.113 | -0.080 | 1,271 | *** |
| Industry sales growth $_t$ | 0.025 | 0.025 | 8,285 | 0.011 | 0.021 | 1,100 | *** |

## Table 3: Optimism and Perceived Financial Constraints – Joint Distribution

This table shows absolute and relative frequencies regarding the joint distribution of Optimism $_{t-1}$ and Perceived FC $_t$. Panel A shows frequencies of managers perceiving financing constraints in t conditioned on their optimism in t-1. Panel B shows frequencies of optimistic managers in t-1 conditioned on their perception of financial constraints in t-1. For a detailed definition of all variables please refer to Table A3 in the appendix.

| Panel A: Perceived FC $_t$ conditioned on Optimism $_{t-1}$ | | | | |
|---|---|---|---|---|
| | Optimism $_{t-1}$ | | | |
| Perceived FC $_t$ | 0 | | 1 | |
| 0 | 88.42% | 5,698 | 85.17% | 3,016 |
| 1 | 11.58% | 746 | 14.83% | 525 |
| Total | 100% | 6,444 | 100% | 3,541 |
| **Panel B: Optimism $_{t-1}$ conditioned on Perceived FC $_t$** | | | | |
| | Perceived FC $_t$ | | | |
| Optimism $_{t-1}$ | 0 | | 1 | |
| 0 | 65.39% | 5,698 | 58.69% | 746 |
| 1 | 34.61% | 3,016 | 41.31% | 525 |
| Total | 100% | 8,714 | 100% | 1,271 |

## Table 4: Optimism and Perceived Financial Constraints – Logit Regressions

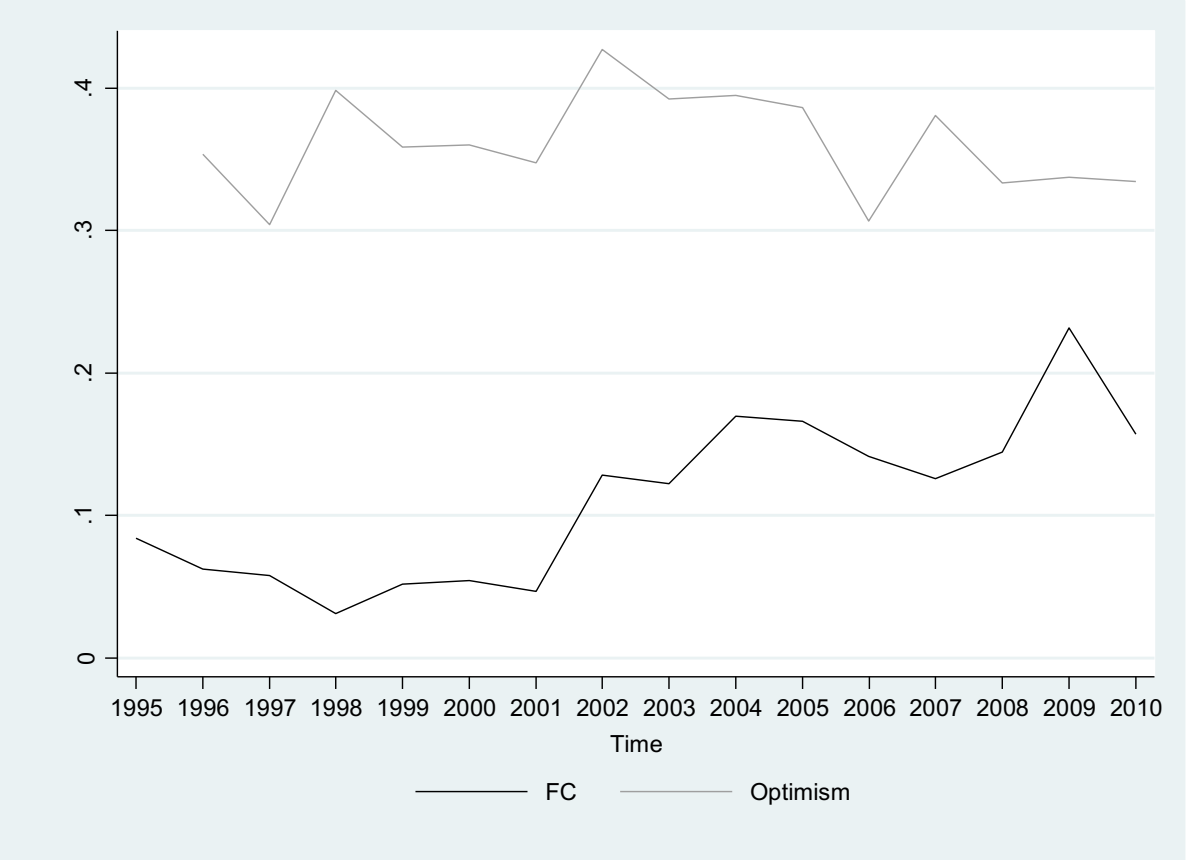
This table shows results from logit regressions where the independent variable is a dummy variable which is 1, if a manager perceives her firm as financially constrained in a given year, and 0 otherwise. All regressions include year-fixed effects. The samples comprise only those ID-years for which both Optimism $_{t-1}$ and Perceived FC $_t$ are available. The estimation of standard errors allows for clustering on the ID level. Numbers in parentheses indicate p-values. For a detailed definition of all variables please refer to Table A3 in the appendix. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

| Dependent variable | Perception of FC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Explanatory variables | Kaplan/Zingales | | Whited/Wu | | Cleary | | Hadlock/Pierce | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Cash flow $_t$ | -0.7404** | -0.7344** | -1.1991*** | -1.1743*** | | | | |
| | (0.0123) | (0.0118) | (0.0000) | (0.0000) | | | | |
| Sales growth $_{t-1}$ | -0.5509* | -0.3222 | -0.6241** | -0.4274 | -0.0575 | 0.0961 | | |
| | (0.0755) | (0.3128) | (0.0468) | (0.1885) | (0.8453) | (0.7546) | | |
| Debt ratio $_{t-1}$ | 1.8465*** | 1.8214*** | | | | | | |
| | (0.0000) | (0.0000) | | | | | | |
| Dividend payout $_t$ | -13.5976* | -12.8274* | | | | | | |
| | (0.0652) | (0.0815) | | | | | | |
| Cash $_{t-1}$ | -0.6680 | -0.6341 | | | | | | |
| | (0.1724) | (0.1972) | | | | | | |
| Dividend dummy $_t$ | | | -0.3379 | -0.3206 | | | | |
| | | | (0.1289) | (0.1496) | | | | |
| Longterm debt $_{t-1}$ | | | 1.0380*** | 0.9787*** | 1.6953*** | 1.7016*** | | |
| | | | (0.0001) | (0.0003) | (0.0000) | (0.0000) | | |
| Ln(total assets) $_{t-1}$ | | | -0.1417*** | -0.1371*** | | | -0.2091 | -0.2191 |
| | | | (0.0001) | (0.0002) | | | (0.3406) | (0.3165) |
| Industry sales growth $_{t-1}$ | | | 1.7858* | 1.7910* | | | | |
| | | | (0.0899) | (0.0886) | | | | |
| Current ratio $_{t-1}$ | | | | | -0.0039 | -0.0040 | | |
| | | | | | (0.2038) | (0.1951) | | |
| Coverage $_{t-1}$ | | | | | -0.0001 | -0.0001 | | |
| | | | | | (0.3213) | (0.3318) | | |
| Income margin $_{t-1}$ | | | | | -3.4039*** | -3.1784*** | | |
| | | | | | (0.0003) | (0.0005) | | |
| Slack $_{t-1}$ | | | | | -1.5973*** | -1.5802*** | | |
| | | | | | (0.0000) | (0.0000) | | |
| (Ln(total assets))$^2$ $_{t-1}$ | | | | | | | 0.0018 | 0.0021 |
| | | | | | | | (0.7993) | (0.7693) |
| Age $_t$ | | | | | | | -0.0149*** | -0.0148*** |
| | | | | | | | (0.0000) | (0.0000) |
| Age$^2$ $_t$ | | | | | | | 0.0001*** | 0.0001*** |
| | | | | | | | (0.0017) | (0.0017) |
| **Optimism $_{t-1}$** | | **0.3504*****| | **0.3000**** | | **0.2516**** | | **0.2912***** |
| | | **(0.0031)** | | **(0.0127)** | | **(0.0350)** | | **(0.0000)** |
| Constant | -3.1660*** | -3.2743*** | 0.3653 | 0.1932 | -2.3759*** | -2.4573*** | 1.3108 | 1.2918 |
| | (0.0000) | (0.0000) | (0.5778) | (0.7685) | (0.0000) | (0.0000) | (0.4412) | (0.4456) |
| Observations | 5,072 | 5,072 | 5,097 | 5,097 | 4,904 | 4,904 | 9,784 | 9,784 |
| Number of IDs | 1,754 | 1,754 | 1,748 | 1,748 | 1,785 | 1,785 | 3,824 | 3,824 |
| Year-fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo-$R^2$ | 0.0649 | 0.0684 | 0.0630 | 0.0656 | 0.0772 | 0.0790 | 0.0585 | 0.0612 |

# FIGURES

**Figure 1: Aggregated Optimism and Perceived Financial Constraints over Time**

This figure shows the yearly average of perceived financial constraints and managerial optimism for the whole sample.



# APPENDIX

**Table A1: Dataset Structure**

This table shows absolute and relative frequencies of ID-years in which a particular number of different questionnaires is answered within the same company in a given year. The sample comprises only those ID-years for which both Optimism $_{t-1}$ and Perceived FC $_t$ are available.

| Number of different questionnaires per company and year | ID-years | % of all ID-years |
|---|---|---|
| 1 | 6,733 | 87.61 |
| 2 | 399 | 5.19 |
| 3 | 105 | 1.37 |
| 4 | 229 | 2.98 |
| 5 | 91 | 1.18 |
| 6 | 128 | 1.67 |
| Total | 7,685 | 100 |

**Table A2: Data Cleaning**

This table shows the data cleaning steps conducted to obtain the final sample. The displayed numbers represent ID-years.

| | |
|---|---|
| EBDC data 1995-2010 | 167,868 |
| State-run firms | -17 |
| Financial intermediation, insurance and pension funding (WZ03 classification 65-67) | -276 |
| Public administration, defense, and compulsory public security (WZ03 classification 75) | -107 |
| Education (WZ03 classification 80) | -149 |
| Other community, social, and personal service activities (WZ03 classification 90-93) | -2,691 |
| | 164,628 |
| No survey information for a given year | -111,920 |
| | 52,708 |
| Missing total assets | -13,807 |
| | 38,901 |
| Optimism $_t$ and Perceived FC $_t$ available | 14,671 |
| Optimism $_{t-1}$ and Perceived FC $_t$ available | 9,985 |

## Table A3: Definition of Variables

This table summarizes and defines the variables used in this paper.

| Variable | Description/definition |
|---|---|
| Optimism | Dummy variable which is one if in a given fiscal year a manager is identified as optimistic based on the manager's expected business development with ±5% EBIT development thresholds to assess actual business development, and zero otherwise. |
| Optimism II | Dummy variable which is one, if in a given fiscal year a manager is identified as optimistic based on the manager's expected business development with ID- and year-specific EBIT development thresholds to assess actual business development, and zero otherwise. |
| Perceived FC | Dummy variable which is one if in a given fiscal year a manager is identified to perceive financial constraints based on her perceived constraints due to financing, and zero otherwise. |
| Cash flow | Net income plus depreciation plus other non cash items plus change of accounts payable minus change of accounts receivable, all divided by total assets at the end of the previous fiscal year. This variable is winsorized at 1%/99%. |
| Other non cash items | Change of other non current liabilities minus change of other current assets minus change of inventory plus change of other current liabilities. |
| Change of other non current liabilities | Other non current liabilities minus other non current liabilities at the end of the previous fiscal year. |
| Change of other current assets | Other current assets minus other current assets at the end of the previous fiscal year. |
| Other current assets | Current assets minus raw materials and supplies minus inventories minus trade accounts receivable minus accrued income minus cash and cash equivalents. |
| Change of inventory | Inventory minus inventory at the end of the previous fiscal year. |
| Change of other current liabilities | Other current liabilities minus other current liabilities at the end of the previous fiscal year. |
| Other current liabilities | Short term debt minus trade accounts payable minus deferred income. |
| Change of accounts payable | Trade accounts payable minus trade accounts payable at the end of the previous fiscal year. |
| Change of accounts receivable | Trade accounts receivable minus trade accounts receivable at the end of the previous fiscal year. |
| EBIT | Gross profit loss minus other operating expenses or the first available of operating profit minus financial profit/loss or gross profit loss minus other operating expenses or operating profit minus financial profit/loss. This variable is winsorized at 1%/99%. |
| Debt ratio | Long term debt plus short term debt, all divided by long term debt plus short term debt plus total equity. This variable is trimmed to a [0,1] range. |
| Longterm debt | Long term debt divided by total assets. This variable is trimmed to a [0,1] range. |
| Cash | Cash and cash equivalents divided by total assets. This variable is winsorized at 1%/99%. |
| Current ratio | Current assets divided by short term debt plus trade accounts payable. This variable is winsorized at 1%/99%. |
| Coverage | EBIT divided by interest expenses plus dividend payout*(1/(1-tax rate)). This variable is winsorized at 1%/99%. |
| Income margin | Net income divided by sales. This variable is winsorized at 1%/99%. |
| Slack | Cash and cash equivalents plus 0.5*inventory plus 0.7*trade accounts receivable minus short term debt. This variable is winsorized at 1%/99%. |
| Dividend payout | Dividend payout divided by total assets at the end of the previous fiscal year. This variable is winsorized at 1%/99%. |
| Dividend dummy | Dummy variable which is 1 if dividend payout is greater than zero, and zero otherwise. |
| Sales growth | Operating revenue divided by consumer price index, all divided by operating revenue at the end of the previous fiscal year divided by consumer price index of the previous year, all minus 1 or sales divided by consumer price index, all divided by sales at the end of the previous fiscal year divided by consumer price index of the previous year, all minus 1. This variable is winsorized at 1%/99%. |
| Industry sales growth | Yearly mean of sales growths of firms within the same industry main sections according to WZ03 classification. |
| Ln(total assets) | Natural logarithm of total assets (in Euros) divided by consumer price index/100. This variable is winsorized at 1%/99%. |
| Age | Current year minus latest available year of incorporation where missings are replaced by year of first available data point for this firm. This variable is winsorized at 1%/99%. |

## Table A4: Descriptive Statistics – Full Sample

This table shows summary statistics for the variables used. It refers to the full sample. For a detailed definition of all variables please refer to Table A3 in the appendix.

| Variable | Mean | Min. | Max. | p(10) | Median | p(90) | N |
|---|---|---|---|---|---|---|---|
| Optimism $_{t-1}$ | 0.413 | 0 | 1 | 0 | 0 | 1 | 1,271 |
| Optimism II $_{t-1}$ | 0.434 | 0 | 1 | 0 | 0 | 1 | 852 |
| Perceived FC $_{t}$ | 0.152 | 0 | 1 | 0 | 0 | 1 | 26,771 |
| Total assets (1,000 Euros) $_{t}$ | 78,276 | 39 | 2,163,295 | 406 | 4,604 | 113,109 | 38,901 |
| Ln(total assets) $_{t}$ | 15.607 | 10.611 | 21.583 | 12.960 | 15.382 | 18.626 | 38,901 |
| Cash flow $_{t}$ | 0.098 | -0.583 | 0.927 | -0.109 | 0.075 | 0.332 | 17,065 |
| EBIT (1,000 Euros) $_{t}$ | 33,236 | -2,188 | 938,800 | 107 | 3,676 | 56,969 | 28,905 |
| EBIT growth $_{t}$ | -0.729 | -45.062 | 7.537 | -0.564 | 0.009 | 0.542 | 23,540 |
| Sales growth $_{t}$ | 0.027 | -0.521 | 1.081 | -0.180 | -0.003 | 0.232 | 19,101 |
| Debt ratio $_{t}$ | 0.618 | 0.000 | 1.000 | 0.229 | 0.665 | 0.926 | 35,794 |
| Longterm debt $_{t}$ | 0.204 | 0 | 1.000 | 0 | 0.070 | 0.667 | 38,901 |
| Dividend payout $_{t}$ | 0.002 | 0 | 0.069 | 0 | 0 | 0 | 29,514 |
| Dividend dummy $_{t}$ | 0.055 | 0 | 1 | 0 | 0 | 0 | 38,901 |
| Cash $_{t}$ | 0.139 | 0 | 0.737 | 0.001 | 0.068 | 0.394 | 38,224 |
| Age $_{t}$ | 39.953 | 0 | 192 | 5 | 22 | 108 | 38,901 |
| Current ratio $_{t}$ | 7.206 | 0.177 | 351.841 | 0.708 | 1.424 | 5.562 | 32,632 |
| Coverage $_{t}$ | 257.072 | -26.563 | 13,677.077 | 0.853 | 14.132 | 159.500 | 21,042 |
| Income margin $_{t}$ | 0.025 | -0.272 | 0.629 | -0.020 | 0.012 | 0.081 | 16,155 |
| Slack $_{t}$ | -0.057 | -1.127 | 0.669 | -0.508 | -0.032 | 0.385 | 38,901 |
| Industry sales growth $_{t}$ | 0.024 | -0.521 | 1.081 | -0.030 | 0.025 | 0.079 | 34,679 |

## Table A5: Correlations

This table displays pairwise correlation coefficients among the variables used in this study. The sample comprises only those ID-years for which both Optimism $_{t-1}$ and Perceived FC $_{t}$ are available. For detailed definitions of the variables, please refer to Table A3 in the appendix.

| | Ln(total assets) | Cash flow | Sales growth | Debt ratio | Longterm debt | Dividend payout | Cash | Age | Current ratio | Coverage | Income margin | Slack |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ln(total assets) | 1 | | | | | | | | | | | |
| Cash flow | -0.0372 | 1 | | | | | | | | | | |
| Sales growth | 0.0541 | 0.1146 | 1 | | | | | | | | | |
| Debt ratio | -0.1355 | -0.0208 | 0.0268 | 1 | | | | | | | | |
| Longterm debt | -0.2607 | -0.1879 | -0.0104 | 0.3836 | 1 | | | | | | | |
| Dividend payout | 0.2996 | 0.0840 | 0.0510 | -0.2186 | -0.1280 | 1 | | | | | | |
| Cash | -0.1967 | 0.1578 | 0.0126 | -0.2257 | -0.1826 | -0.0353 | 1 | | | | | |
| Age | 0.4600 | -0.0081 | -0.0001 | -0.1529 | -0.1764 | 0.2056 | -0.0834 | 1 | | | | |
| Current ratio | -0.0528 | -0.1233 | 0.0526 | -0.0518 | 0.2358 | -0.0258 | 0.0231 | -0.0498 | 1 | | | |
| Coverage | 0.0001 | 0.0024 | 0.0067 | -0.0955 | -0.0893 | -0.0491 | 0.0472 | -0.0225 | -0.0045 | 1 | | |
| Income margin | 0.1199 | 0.2170 | 0.0646 | -0.2249 | -0.0111 | 0.2426 | 0.0736 | 0.1036 | 0.0032 | -0.0102 | 1 | |
| Slack | -0.3693 | 0.0065 | -0.0005 | -0.0762 | 0.0703 | -0.1305 | 0.1386 | -0.1323 | 0.0392 | 0.0341 | -0.0637 | 1 |

## Table A6: Alternative Optimism Measures– Joint Distribution

This table shows absolute frequencies regarding the joint distribution of our measure of managerial optimism (Optimism) and an alternative optimism measure (Optimism II) which applies ID- and year-specific EBIT growth thresholds to assess the actual business development. The sample comprises only those ID-years for which both $Optimism_{t-1}$ and $Perceived\ FC_t$ are available. For detailed definitions of the variables, please refer to Table A3 in the appendix.

| | $Optimism\ II_t$ | | |
|---|---|---|---|
| $Optimism_t$ | 0 | 1 | Total |
| 0 | 4,052 | 750 | 4,802 |
| 1 | 502 | 2,007 | 2,509 |
| Total | 4,554 | 2,757 | 7,311 |

## Table A7: Alternative Optimism and Perceived Financial Constraints – Joint Distribution

This table shows absolute and relative frequencies regarding the joint distribution of $Optimism\ II_{t-1}$ and $Perceived\ FC_t$. Panel A shows frequencies of managers perceiving financing constraints in t conditioned on their optimism in t-1. Panel B shows frequencies of optimistic managers in t-1 conditioned on their perception of financial constraints in t-1. For a detailed definition of all variables please refer to Table A3 in the appendix.

| Panel A: $Perceived\ FC_t$ conditioned on $Optimism\ II_{t-1}$ | | | | |
|---|---|---|---|---|
| | $Optimism\ II_{t-1}$ | | | |
| $Perceived\ FC_t$ | 0 | | 1 | |
| 0 | 87.84% | 3,483 | 85.19% | 2,128 |
| 1 | 12.16% | 482 | 14.81% | 370 |
| Total | 100% | 3,965 | 100% | 2,498 |
| Panel B: $Optimism\ II_{t-1}$ conditioned on $Perceived\ FC_t$ | | | | |
| | $Perceived\ FC_t$ | | | |
| $Optimism\ II_{t-1}$ | 0 | | 1 | |
| 0 | 62.07% | 3,483 | 56.57% | 482 |
| 1 | 37.93% | 2,128 | 43.43% | 370 |
| Total | 100% | 5,611 | 100% | 852 |

## Table A8: Optimism and Perceived Financial Constraints – Robustness

This table shows results from logit regressions where the independent variable is a dummy variable which is 1, if a manager perceives her firm as financially constrained in a given year, and 0 otherwise. All regressions include year-fixed effects. Columns (1), (4), (5), and (8) use our alternative optimism measure (Optimism II). The estimation of standard errors in columns (1) and (5) allows for clustering on the ID level. Columns (2) to (4) and (6) to (8) show results from logit regressions which additionally include ID-fixed effects. The samples comprise only those ID-years for which both Optimism $_{t-1}$ (or Optimism II $_{t-1}$, respectively) and Perceived FC $_t$ are available. Numbers in parentheses indicate p-values. For a detailed definition of all variables please refer to Table A3 in the appendix. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

| Dependent variable | Perception of FC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Explanatory variables | Kaplan/Zingales | | | | Whited/Wu | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Cash flow $_t$ | -0.7905** | 1.0193* | 0.9792* | 0.9098 | -1.2368*** | 0.5993 | 0.5257 | 0.1053 |
| | (0.0322) | (0.0531) | (0.0639) | (0.2454) | (0.0006) | (0.2472) | (0.3083) | (0.8933) |
| Sales growth $_{t-1}$ | -0.3207 | -0.4113 | -0.0697 | 0.2859 | -0.2600 | -0.7292* | -0.4038 | 0.4946 |
| | (0.3989) | (0.3006) | (0.8671) | (0.6116) | (0.4859) | (0.0799) | (0.3471) | (0.4067) |
| Debt ratio $_{t-1}$ | 2.2164*** | 3.5066*** | 2.9860** | 2.5462 | | | | |
| | (0.0000) | (0.0026) | (0.0118) | (0.1319) | | | | |
| Dividend payout $_t$ | -9.0170 | -8.0238 | -4.4477 | 19.1928 | | | | |
| | (0.2318) | (0.5246) | (0.7292) | (0.2877) | | | | |
| Cash $_{t-1}$ | -0.3749 | 2.5301* | 2.8323** | 1.8831 | | | | |
| | (0.5051) | (0.0680) | (0.0431) | (0.4006) | | | | |
| Dividend dummy $_t$ | | | | | -0.4063 | -0.2448 | -0.1166 | -0.3242 |
| | | | | | (0.1090) | (0.5571) | (0.7832) | (0.5395) |
| Longterm debt $_{t-1}$ | | | | | 1.3698*** | -0.4557 | -0.4888 | 0.5016 |
| | | | | | (0.0000) | (0.5416) | (0.5253) | (0.6933) |
| Ln(total assets) $_{t-1}$ | | | | | -0.1207*** | -0.1296 | -0.3190 | -1.8249** |
| | | | | | (0.0074) | (0.7810) | (0.5032) | (0.0274) |
| Industry sales growth $_{t-1}$ | | | | | 1.0620 | 4.9136** | 5.2873** | 2.7384 |
| | | | | | (0.3517) | (0.0195) | (0.0135) | (0.2607) |
| **Optimism $_{t-1}$** | | | **0.6001*** ** | | | | **0.6049*** ** | |
| | | | **(0.0034)** | | | | **(0.0025)** | |
| **Optimism II $_{t-1}$** | **0.3743*** ** | | | **0.6464** ** | **0.3774*** ** | | | **0.7046*** ** |
| | **(0.0044)** | | | **(0.0116)** | **(0.0039)** | | | **(0.0047)** |
| Constant | -3.5469*** | | | | -0.1953 | | | |
| | (0.0000) | | | | (0.8075) | | | |
| Observations | 3,091 | 866 | 866 | 551 | 3,115 | 887 | 887 | 569 |
| Number of IDs | 1148 | 191 | 191 | 124 | 1,145 | 195 | 195 | 129 |
| Year-fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| ID-fixed effects | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Pseudo-$R^2$ | 0.0766 | 0.183 | 0.197 | 0.233 | 0.0681 | 0.181 | 0.195 | 0.242 |

Table A8 continued

| Dependent variable | Perception of FC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Explanatory variables | Cleary | | | | Hadlock/Pierce | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Sales growth $_{t-1}$ | 0.0413 | -0.5474 | -0.2053 | 0.2843 | | | | |
| | (0.9164) | (0.2010) | (0.6459) | (0.6293) | | | | |
| Longterm debt $_{t-1}$ | 1.7535*** | -0.8968 | -0.8694 | -0.8944 | | | | |
| | (0.0000) | (0.5708) | (0.5816) | (0.6573) | | | | |
| Current ratio $_{t-1}$ | -0.0047 | -0.4921** | -0.5287** | -0.1708 | | | | |
| | (0.2642) | (0.0433) | (0.0293) | (0.5144) | | | | |
| Coverage $_{t-1}$ | -0.0000 | -0.0001 | -0.0001 | -0.0001 | | | | |
| | (0.6546) | (0.7336) | (0.7623) | (0.7580) | | | | |
| Income margin $_{t-1}$ | -3.4758*** | -1.0874 | -0.0130 | -0.8605 | | | | |
| | (0.0045) | (0.4845) | (0.9936) | (0.6970) | | | | |
| Slack $_{t-1}$ | -1.4650*** | 0.9295 | 1.0775 | 0.7364 | | | | |
| | (0.0000) | (0.4113) | (0.3442) | (0.6362) | | | | |
| Ln(total assets) $_{t-1}$ | | | | | -0.1313 | -0.2199 | 0.0650 | 2.3895 |
| | | | | | (0.6045) | (0.9143) | (0.9748) | (0.4528) |
| (Ln(total assets))$^2$ $_{t-1}$ | | | | | -0.0006 | -0.0091 | -0.0175 | -0.1024 |
| | | | | | (0.9396) | (0.8829) | (0.7800) | (0.3196) |
| Age $_t$ | | | | | -0.0092** | -0.5976 | -0.5859 | -0.4430 |
| | | | | | (0.0368) | (0.2946) | (0.2901) | (0.4346) |
| Age$^2$ $_t$ | | | | | 0.0000* | 0.0006* | 0.0007* | 0.0003 |
| | | | | | (0.0756) | (0.0933) | (0.0543) | (0.5897) |
| **Optimism $_{t-1}$** | | | **0.5523**** | | | | **0.3920***** | |
| | | | **(0.0109)** | | | | **(0.0019)** | |
| **Optimism II $_{t-1}$** | **0.3252**** | | | **0.5711**** | **0.2244***** | | | **0.1793** |
| | **(0.0146)** | | | **(0.0180)** | **(0.0035)** | | | **(0.2375)** |
| Constant | -2.5050*** | | | | 0.4572 | | | |
| | (0.0000) | | | | (0.8181) | | | |
| Observations | 2,971 | 821 | 821 | 534 | 6,320 | 1,630 | 1,630 | 1,066 |
| Number of IDs | 1,126 | 179 | 179 | 118 | 2,617 | 427 | 427 | 292 |
| Year-fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| ID-fixed effects | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Pseudo-$R^2$ | 0.0781 | 0.199 | 0.211 | 0.216 | 0.0455 | 0.121 | 0.129 | 0.150 |

**Figure A1: Business Development – Survey vs. Financial Data**

This figure shows the average assessment of the current business situation (compared to the business situation of the same month one year before) where (1) means "good", (2) "satisfiable (seasonal respectively)", and (3) "bad". Further, it displays the average EBIT growth rate indicator which is (0) if the EBIT growth rate lies between 5% and -5%, and (1) and (-1) if it lies above and below these thresholds, respectively, over time. For detailed definitions of the variables, please refer to Table A3 in the appendix.