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Is the German Mittelstand More Resistant to Crises?
Empirical Evidence from the Great Recession

Abstract

Germany's comparatively good economic performance throughout the Great Recession of the years 2008/2009 is often attributed to the business model of the German Mittelstand firm. Somewhat surprisingly, this claim has never been backed by empirical evidence. In this paper we use micro panel data from the ifo Business Survey to study the comparative performance of Mittelstand enterprises, defined as owner-managed SMEs. We present supporting evidence for the hypothesis that Mittelstand firms performed more stable throughout the Great Recession than non-Mittelstand firms. We also show that owner-managed SMEs performed significantly better than SMEs and owner-managed large enterprises. Thus, it is rather the combination of firm-size and owner-management that leads to more crisis resistance.

JEL-Codes: E310, G120.

Keywords: Mittelstand firms, Great Recession, crisis resistance.

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1 Introduction

The 2008 global financial crisis resulted in the worst global recession since World War II. While most countries around the globe experienced a significant drop in gross domestic product (GDP) throughout the recession, there were remarkable international differences in the severity and the longevity of the recession. Due to its export orientation, Germany was among the economies hit hardest by the financial crisis. However, different from almost all other countries, Germany recovered quickly from the crisis and emerged stronger than before. Various explanations for this phenomenon have been discussed, among them German price competitiveness due to wage suppression (Lapavitsas et al., 2011; Bibow, 2013), technological competitiveness (Storm and Naastepad, 2015) and the existence and usage of flexible labor market instruments (Reisenbichler and Morgan, 2013), such as short-time work. However, it also has been argued that a major reason for the quick recovery of the German economy is the model of the German Mittelstand firm (Blackstone and Fuhrmans, 2011; Girotra and Netessine, 2013). Similarly, in their detailed analysis of the reasons behind Germany's remarkable performance in the aftermath of the 2008 crisis, Audretsch and Lehmann (2016) dignify the role of the Mittelstand firm as one of the "seven secrets of Germany".

Interestingly enough, the hypothesis that Mittelstand firms are more crisis-resistant than other types of firms has never been proved empirically. The major reason why there is comparatively little empirical research on Mittelstand firms in general is that Mittelstand firms, defined as owner-managed small and medium-sized enterprises,[4] are hard to identify in most available datasets (Berlemann et al., 2018).[5] As a consequence, most existing empirical studies focus solely on firm-size which is much easier to observe. However, this comes at the price that other important characteristics such as firm-ownership and management are neglected.

This paper aims at filling this gap in the literature by delivering empirical evidence on the performance of German Mittelstand firms throughout the Great Recession in 2009. We base our empirical study on a panel of firm data from the monthly conducted ifo Business Survey, which incorporates a representative sample of 9,000 firms, located all over Germany. By adding a number of special questions to the standard questionnaire we are able to identify Mittelstand firms adequately. Using a panel ordered logit model with interaction effects we find that (on average) Mittelstand firms report a less deteriorating business situation than non-Mittelstand firms over the crisis period. We also show that owner-managed SMEs performed significantly better than SMEs and owner-managed large enterprises. Thus, firm-size and owner-management in combination lead to more crisis resistance.

The paper is organized as follows. In Section 2 we explain the concept of the Mittelstand firm in more depth. Section 3 delivers a review of the related literature. After introducing the employed dataset in Section 4 we turn to the empirical analysis in

[4] We discuss this definition in more depth in Section 2. See also Pahnke and Welter (2019) for a discussion of alternative definitions of Mittelstand firms.

[5] For an overview on alternative databases on Mittelstand firms see Schlömer-Laufen and Schneck (2020).

Section 5. In Section 6 we present a number of robustness tests. Section 7 summarizes the main results and concludes.

2 The German Mittelstand Firm

As there is much confusion on the exact meaning of the term 'Mittelstand' we explain it in detail before we turn to our subsequent empirical analysis. Up to now, there is no legal or otherwise generally accepted definition of Mittelstand firms (Becker and Ulrich, 2011; Pahnke and Welter, 2019). However, there is a lively and quite controversial scientific discussion on the question how Mittelstand companies can be defined adequately. Some authors (e.g. Hausch, 2004; Pfohl, 2006; Damken, 2007) suggest extensive lists of criteria for the identification of Mittelstand enterprises. Others (e.g. Wolter and Hauser, 2001; Icks, 2006; Becker and Ulrich, 2011) focus on fewer, particularly central features. Icks (2006) names the unity of the economic existence of the company and its management as well as the responsible participation of the management in all decisions relevant to corporate policy as central qualitative criteria. Indeed, the unity of ownership and management of companies plays a significant or even central role in all definitions.

Against this background one might ask why owner-management is seen as constitutive element of Mittelstand firms. Owner-managed companies have, on the one hand, the advantage that the managing owner will direct his actions completely towards the company's success (Alchian and Demsetz, 1972). The owner-manager bears all the consequences of his management decisions and thus has a strong incentive to make the best possible decisions for the company. If, on the other hand, the owner of a company instructs a manager to run his company, a principal-agent relationship evolves between owner and management (Jensen and Meckling, 1976). While the owner is often interested in the long-term maximization of the company's value, the manager usually has a shorter optimization perspective. Since the manager is deeply involved in operational business, he has a considerable information advantage over the owner, which gives him the opportunity to pursue own goals. In order to ensure that the manager acts in the interests of the owner, control measures must be applied. Depending on the degree of the existing information asymmetry between owner and manager, the costs of these measures can be considerable. As a rule, perfect control is neither possible nor economically viable. Ultimately, the great advantage of the unity of ownership and management lies in the avoidance of principal-agent problems between owners and managers of companies.

While, for example, the *Institut fuer Mittelstandsforschung Bonn* (IfM) refers solely to the unity of ownership and management in its definition of the Mittelstand, other definitions also include firm-size (Berlemann et al., 2007; Becker and Ulrich, 2011; Berlemann and Jahn, 2016; Jahn, 2018). This is due to the argument that Mittelstand firms can only show their strengths in terms of high flexibility and short decision-making paths if the company does not exceed a certain size, as size is connected

to various forms of internal company transaction costs (Ewers et al., 2003). First, organizational costs can play an important role here. While there will be hardly any organizational costs with a small production volume and highly standardized products, this is usually different as the company grows. Additional hierarchy levels are often necessary in order to delegate decision-making power and to organize production and sales. The individual organizational units have to coordinate and agree and thereby generate transaction costs (e.g., the working time spent in meetings). An increase in the size of the company is often accompanied by a decline in the manageability of the company (information asymmetries) and the resulting control errors. With the growing size of a company, the processes become more complex, the amount of information to be evaluated larger and the information paths longer. This increases the coordination effort and causes a company to react less quickly (Schachner et al., 2006). There is also often a significant internal bureaucracy that is typically associated with internal inefficiency. Employee motivation can also suffer if the employee's individual contribution to the company's overall output becomes increasingly smaller. Against the background of this argument, it seems to be reasonable to exclude large companies from the group of Mittelstand firms. In our subsequent empirical analysis, we follow this approach and define Mittelstand firms as owner-managed small and medium-sized enterprises (see Section 4.2 for the detailed identification procedure).

3 Related Literature

To the best of our knowledge, up to now there are no quantitative studies analyzing the resilience of Mittelstand firms in economic downswings. However, there is some empirical literature which investigated whether owner-management or firm size and thus the two features constituting a Mittelstand firm play a role in determining firm performance throughout economic downturns. In the following, we first review the related literature on owner-management and then turn to the existing empirical studies on the role of firm-size.

The empirical literature on owner-management and firm performance in recessions is scarce and heterogeneous. Studies especially differ in the way they measure firms' ownership structures. None of the existing studies includes all owner-managed firms. Some studies analyze the performance of so-called "founder firms", i.e. the subgroup of owner-managed firms where the firm's founder is managing the firm's business.[6] Other studies focus on family firms. While many family firms are factually owner-managed, this does not hold true for all family firms. In some family firms parts of the family own at least parts of the company while other family members manage it. Thus, ownership and management are not necessarily combined in the same person.[7] Moreover, there are numerous firms which are owner-managed but not family firms.

[6] Firms which are managed by owners which did not found these firms (the normal case in more mature enterprises) are neglected in these studies.

[7] Specifics of family firms versus owner-managed firms are discussed e.g. in Chrisman et al. (2004), Kets de Vries (1993) and Chu (2009).

Bartz and Winkler (2016) study the relative growth performance of small and young firms in Germany during the 2009 crisis. The authors aim to find out whether entrepreneurial firms perform better or worse than their less entrepreneurial peers throughout the global financial crisis. In order to measure the entrepreneurial attitude of firms, they consider, among other criteria, whether a firm is run by directors who are also the firms' founders. The authors find that founder firms seem to experience a stronger decline in growth during the crisis. However, they grow faster than their peers in times of economic stability. In line with Bartz and Winkler (2016), Zhou et al. (2017) examine whether founder firms perform differently from non-founder firms in times of economic downturns. Zhou et al. (2017) analyze the performance of family firms and non-family firms in the U.S. during the period of 2006-2010 and find family firms to outperform their non-family peers during the crisis. This result, however, is driven by founder firms as a subgroup of family firms. Only firms in which the founder is the CEO, board member or a significant blockholder show significantly higher operating returns on assets than non-family firms. The authors argue this finding to be due to a higher degree of risk aversion of founder firms, which leads to less investments during a crisis. Zhou et al. (2017) argue that conflicts of interests between long-term oriented firm owners and myopic managers in non-family firms are highly costly in economic downturns. Managers would be likely to boost short-term earnings through over-investment when sales fall during a crisis. This would be extremely risky when the firms rely on bank loans. As banks impose strict lending policies in times of crises, short-term loans might dry up and put ongoing projects under pressure (Zhou et al. 2017). Moreover, Zhou et al. (2017) explain the outperformance of founder firms in economic downturns through a better access to the capital market during a crisis. Established relationships between long-term oriented founder firms and financial institutions might help founder firms to get money even in times of economic downturns. They would thus be able to invest in promising projects even in economically hard times (Zhou et al. 2017). Cesaroni et al. (2017) study the performance of medium-sized family and non-family businesses in Italy during the Great Recession 2009. They find that non-family firms tend to perform better than family firms in the year of the recession. Cesaroni et al. (2017) mention two reasons for this finding. First, managerial skills in family firms would be restricted to those possessed by family members. However, especially in economic crises these skills would be crucial. Second, even in a recession family firms would try to ensure workplaces for family members in order to cultivate relationships within the family. Quite the opposite result is reported in Minichilli et al. (2016). Here the authors find Italian industrial family firms to outperform non-family firms during the worldwide financial crisis. They argue that the advantages of family firms would outweigh their risk of altruistic demands during a crisis. The benefits of family firms would be their long-term orientation, the family's tacit knowledge about the company's identity and close relationships with customers, suppliers, employees and banks alike (Minichilli et al. 2016). Cowling et al. (2015) analyze changes in sales and employment of SMEs in the UK during the global financial crisis. The authors do not find any evidence that family ownership affects employment or sales growth,

neither before nor within the recession. Hansen et al. (2020) investigate how family firm performance changes over the business cycle employing meta-analytic estimation methods. For the sample of Continental European countries and Japan, their results indicate family firm performance to be as sensitive to economic shocks as non-family firm performance. In contrast to the aforementioned studies, Lemmon and Lins (2003) do not analyze family versus non-family firms but measure firm's ownership structure using the level of control rights held by managers. Here the authors study whether differences in firms' ownership structures can explain firm performance during the East Asian financial crisis. In order to do so, they analyze stock returns of 800 firms in eight East Asian countries during the crisis period as a function of firms' ownership structures. Lemmon and Lins (2003) find that the level of control rights held by managers has an effect on firms' stock returns. However, they do not distinguish between owner-managed firms and manager-led businesses.

There are quite some studies which investigated the effect of firm-size on the economic performance throughout economic downturns. Although firm-size is much easier to quantify than ownership structure, the results of the available empirical studies are again mixed. Various studies find a significantly positive relationship between firm-size and performance during economic crises. Fort et al. (2013) study net employment growth of U.S. firms of different sizes and ages throughout the 2007-09 recession. Their analysis finds that especially young, small businesses experience large declines in employment during the crisis and thus seem to be more vulnerable to cycle shocks than their large, mature peers. As possible mechanisms behind this result the authors consider a customer base that is more local and stronger credit constraints for small and young businesses. Small and young firms are likely to produce goods and services for a limited geographic area (e.g. a small restaurant) and are thus especially prone to local cyclical shocks (Fort et al. 2013). Cowling et al. (2015) use survey data of SMEs in the UK in 2007/08 to examine changes in employment and sales of small businesses in recessions. Whereas under stable macroeconomic conditions employment growth spreads randomly across all types of firms, in economic downturns especially larger SMEs with sound access to finance tend to grow. Gertler and Gilchrist (1994) also see liquidity constraints as a main problem for small firms in recessions. Analyzing the response of small firms to tightening monetary policies over the business cycle, the authors find small firms to exhibit sharp declines in sales after periods of credit market tightening, especially in economic downturns. Peric and Vitezic (2016) study Croatian enterprises in manufacturing and service industries during the economic crisis of 2008-2013, estimating different dynamic linear panel data models for small, medium-sized and large firms. The results indicate a significantly positive relationship between firm-size and turnover growth in the recession period.

Other studies detect a significantly negative relation between firm-size and firm performance during economic crises. Bartz and Winkler (2016) analyze turnover and employment growth of small and medium-sized firms in Germany in the crisis year 2009 relative to a period of economic stability in 2006. They discover a relative growth advantage for small firms compared to larger businesses in both stable and crisis times.

However, the economic crisis reinforces the relative growth advantage. Bartz and Winkler (2016) explain this result with a higher flexibility of small firms, which is especially valuable in crisis times. Varum and Rocha (2011) study the period of 1988-2007 in which the Portuguese economy experienced two recessions (1991-93 and 2001-03). In contrast to Bartz and Winkler (2016), they find different relationships between firm-size and firm performance in times of stability and in economic downturns. The results show a significant inverted U-shaped effect of firm-size on both employment and turnover growth in times of economic stability. In economic downturns, however, the impact of firm-size on employment growth is significantly negative. Large businesses may be the first to lay-off workers in order to manage the crisis via cost reductions. The relationship of firm-size and turnover growth in recessions seems to be U-shaped. Varum and Rocha (2013) are especially interested in the time period following economic downturns. They analyze the employment growth rate of large enterprises versus small businesses in recessions and a few years later. Larger firms seem to be more heavily affected by recessions but also tend to recover more quickly than their smaller peers. SMEs can thus act as a stabilizer in economic downturns (Varum and Rocha 2013).

In summary, empirical results of both strands of the literature tend to be mixed. On the one hand, owner-management can positively influence firm performance in economic downturns since risk averse and long-term oriented owners tend to make more careful investment decisions and often have better access to the capital market in recessions than manager-led firms (Zhou et al. 2017). On the other hand, owner-managed firms might have limited human resources. Managerial skills, however, are essential in economic downturns (Cesaroni et al. 2017). Moreover, small firms have advantages as well as disadvantages in economic crises. While SMEs can benefit from being highly flexible (Bartz and Winkler 2016), they might suffer from a more local customer base and stronger credit constraints compared to larger businesses (Fort et al. 2013, Smallbone et al. 2012, Cowling et al. 2015, Gertler and Gilchrist 1994).

4 Data

Our empirical analysis is based on the ifo Business Survey. We therefore start out with a general description of the survey. We then explain the special questions we added to the survey and how we used them to identify Mittelstand firms. Finally, we present some descriptive statistics on the sample composition according to the firm types.

4.1 The ifo Business Survey

Since 1949 the ifo Institute surveys a large pool of German firms in a monthly frequency.[8] The ifo Business Survey receives a high medial attention because of its most popular business cycle indicator, the *ifo Business Climate Germany*. The basis for the cal-

[8]The collection by Sauer and Wohlrabe (2020) gives a detailed introduction to the ifo Business Survey.

culation of the business climate is a relative stable sample incorporating 9,000 answers of German firms. This large number of answers ensures the survey to be representative for the German economy in terms of firm-size and sectoral coverage.

The ifo Business Survey provides business cycle indicators for the four main sectors manufacturing, construction, trade, and services. Starting with a small sample of German manufacturing firms in 1949, the industrial coverage of the ifo Business Survey has increased over time (see Sauer and Wohlrabe, 2020). However, not all industries of the German economy are covered, that is, the ifo Business Survey approximately represents 74% of total gross value added (GVA) in 2018 (see Lehmann, 2020). The industries not surveyed by the ifo Institute are: agriculture; mining and quarrying; electricity, gas and water supply; the banking and insurance industry (all together a 7% share in total GVA) as well as the public sector.

The ifo Institute targets its survey on the product-level instead of the firm-level. Whenever a firm supplies only one product, both concepts coincide. If a firm, however, has multiple product lines or variations of one product category, the ifo Institute surveys this firm multiple times and for each product separately. For example, let us assume that a German vehicle manufacturer produces passenger cars, motorcycles, and trucks. In this case, the ifo Institute would survey this firm three times as the firm's assessment of the business situation can vary over the different products. This is a crucial differentiation with which we have to deal when it comes to identifying Mittelstand firms. Appendix A contains the details on the data set preparation.

Generally, the ifo questionnaire is divided into standard and special questions.[9] The standard questions are asked regularly, i.e. either each month, quarterly, bi-annually or annually. Standard questions which are not asked in monthly frequency can vary across industries and the months in which they are asked. As an example, the number of employees is asked only once a year, in February. Special questions are added only occasionally, often as a part of some sort of special investigation of a certain topic. As a general rule, questions asked by the ifo Institute are of *qualitative* nature, thus, the firms report economic tendencies on their various products. Only a small fraction of the questions are of quantitative nature, for example, capacity utilization in manufacturing or the number of employees. For each industry or product, the standard questions are targeted on different time dimensions: (i) tendencies in the previous month, (ii) current situation, (iii) expectations for the next three months, and (iv) expectations for the next six months. These questions are comparable across the various products.

Our subsequent empirical analysis focuses on the current business situation, the question which attracts the largest medial attention. The wording of the assessment of the current business situation (*ifo Business Situation*) for each product of the firms is as follows: 'We assess our current business situation as [...]'. Each respondent can choose from three different, qualitative answers reflecting either a positive, neutral, or negative assessment. The three answers for the business situation are: (+) good, (=) satisfactory, and (–) bad.

[9] The Appendix B delivers a comprehensive overview of the monthly questions asked in each industry.

The survey data can be accessed via the LMU-ifo Economics & Business Data Center (EBDC). We employ the data sets for the four main industries: manufacturing (IBS-IND, 2016), construction (IBS-CON, 2016), trade (IBS-TRA, 2016), and services (IBS-SERV, 2016). Each data set contains various identifiers (year, month, firm, federal state, industry/product code, online/postal participation, participation date) as well as the answers to the standard questions on the business situation and the number of employees.[10]

4.2 Identification of Mittelstand Firms

For our empirical analysis it is necessary to distinguish between Mittelstand and non-Mittelstand firms. As explained earlier, we follow the idea to define Mittelstand firms as owner-managed small and medium-sized enterprises (Berlemann et al. 2007, Becker and Ulrich 2011, Berlemann and Jahn 2016, Jahn 2018). More precisely, we base our analysis on the definition proposed by Berlemann et al. (2007) and classify a firm as belonging to the Mittelstand whenever the following three criteria are met simultaneously:

1. the firm has less than 500 employees,
2. the firm has a maximum of four managers, and
3. at least one of maximal four managers owns company shares.

The first criterion focuses on firm-size and aims at identifying SMEs. According to the definition of the *Institut fuer Mittelstandsforschung Bonn* firms are classified as SME whenever they have less than 500 employees and realize a turnover less then 50 million €. However, as the ifo Business Survey does not cover any information on turnover figures, we exclusively use employment figures to classify firms as SME or as large enterprise. According to the findings reported in Berlemann et al. (2018) this procedure should be unproblematic as the authors find almost the same SME-quotas when exclusively using employment figures or by applying both criteria, employment and turnover. Thus, the inaccuracy we have to accept by exclusively using the employment criterion when identifying SMEs should be negligible. We, however, come back to this issue in the stability checks section.

The second and the third criterion focus on the internal structure of the firm, and here especially on whether it is owner-managed or not. We restrict the maximum number of chief operating officers to four since the advantage of owner-management tends to diminish with an increasing number of decision makers. As the ifo Business Survey itself contains no information on the ownership structure of the surveyed firms, we collected the necessary information on owner-management through two special questions with the wording:

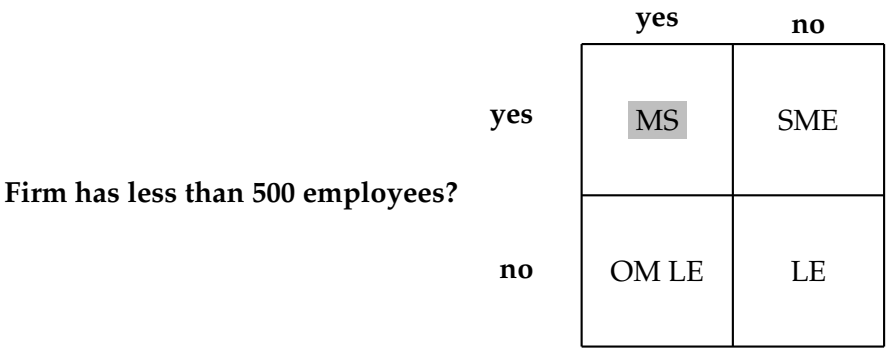
[10] Detailed descriptions of the data sets and the included variables can be found in various documentations available at the EBDC's homepage: `https://www.ifo.de/en/EBDC`.

1. 'Is your enterprise managed by more than four people?'
2. 'Owns at least one of the manager company shares?'

For the manufacturing and the wholesale and retail trade sector, the special questions were included in August 2016. Firms from the construction and services sector were asked in September 2016. In total, 5,845 firms answered the special questions.

Based on the number of employees and the answers to the questions on owner-management, firms can be classified as either Mittelstand firms (MS), non-owner-managed SMEs (SME), owner-managed large firms (OM LE) or as non-owner-managed large enterprises (LE) (see Figure 1).

Figure 1: Firm Types



Notes: LE – large enterprise, MS – Mittelstand, OM – owner-managed, SME – small and medium-sized enterprise.

The results of the classification of firms is shown in Table 1. Based on the earlier described criteria, 64.5 percent of all firms were classified as Mittelstand firms. From the remaining 2,076 enterprises, 67.2 percent can be classified as non-owner-managed SMEs (SME), 8.2 percent are owner-managed large firms (OM LE), and 24.6 percent count as non-owner-managed large firms (LE).

Table 1: Dataset by Firm Types

Firm type	**Number of firms**	**Share (in %)**
Mittelstand firms (MS)	3,769	64.5
Non-Mittelstand firms	2,076	35.5
among them:		
Non-owner-managed SMEs (SME)	1,395	67.2
Owner-managed large enterprises (OM LE)	170	8.2
Non-owner-managed large enterprises (LE)	511	24.6
All Firms	5,845	100.0

5 Estimation Strategy and Results

5.1 Empirical Approach

Our aim is to study whether Mittelstand firms performed significantly different from non-Mittelstand firms throughout the Great Recession. Our baseline estimation approach therefore consists of estimating the following interaction model,

$$\begin{aligned} \text{Performance}_{it} &= a_i + \delta_1 \cdot \text{MS}_{it} + \delta_2 \cdot \text{Crisis}_t + \delta_3 \cdot \text{MS}_{it} \cdot \text{Crisis}_t \\ &\quad + \sum_{j=1}^{J-1} \beta_j \cdot \text{State}_{ij} + \sum_{k=1}^{K-1} \gamma_k \cdot \text{Sector}_{ik} + \varepsilon_{it} \,, \end{aligned}$$

where Performance_{it} is the measure for economic performance of firm i at time t. MS_{it} is a Mittelstand dummy which takes the value of one when firm i belongs to the German Mittelstand (and zero otherwise).[11] The dummy Crisis_t controls for the worldwide financial crisis period and takes the value of one throughout the crisis period (and zero otherwise). According to the German Council of Economic Experts (*Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung*), the crisis period lasted from April 2008 to March 2009. We coded the crisis dummy accordingly. State_{ij} controls for state-specific effects by a set of $J-1$ dummy variables indicating whether firm i is located in state j. Similarly, Sector_{ik} controls for sector-specific effects. ε_{it} represents the usual idiosyncratic error term and a_i the unobserved heterogeneity at the firm level. Our period under investigation covers January 2006 to March 2009.

As firm performance measure we employ firms' reported business situation. The reasoning behind this choice is the following. As stated before, the ifo Business Survey distinguishes between four time dimensions: past, present, three month and six month expectations. We decided against the past and future dimensions and apply the present category and thus the business situation as it reflects the current state of the firms' business performance, given recent developments within a firm. We also did so as the business situation has been proven to be good predictors for a variety of macroeconomic aggregates, for example, sectoral gross value added (see Lehmann, 2020, for a literature survey). The wording of questions on the past development does usually imply a change in a specific variable, thus, it proxies the first derivation of the current firm performance and depends on the previous month's state. The questions regarding future developments also imply a path dependency due to their wording and might only reflect the firms' ability to rationally assess its future performance, given its characteristics and internal information. If, however, general firm conditions change within the expectation period, it should no longer be a predictor for the firms' current performance. Therefore, our empirical strategy focuses on current developments within the firms. As explained earlier, the business situation can only take three values that we re-coded in advance to achieve the following order and thus a natural interpretation

[11] In our case, the Mittelstand dummy is time-varying because of the employment criterion. As we have only information on the owner structure in 2016, we assume that it does not change over time. However, this assumption should not drive our results as the ownership structure typically changes only rarely.

of the coefficients: 'bad', 'satisfactory' and 'good'. As a consequence to the variable's characteristics, we fit an ordered logit model to the data where the unobservable firm characteristics a_i are treated as random effects.

The coefficients of interest to be estimated are the difference in average performance between Mittelstand and non-Mittelstand firms δ_1, the effect of the crisis on the average firm performance δ_2, and the interaction effect of the Mittelstand dummy and the crisis dummy δ_3. The latter coefficient measures to what extent the performance of Mittelstand firms is affected by the economic crisis in comparison to non-Mittelstand firms. Given that the hypothesis 'Mittelstand firms perform better throughout economic crises' is correct, we should find a significantly positive value for δ_3.

5.2 Estimation Results

The estimation results are summarized in Table 2.[12] In the first column we report the estimation results for a model that does not account for state- and sector-specific effects. We find that Mittelstand firms (on average) report a significantly worse business situation than non-Mittelstand firms. Moreover and unsurprisingly, the reported business situation deteriorated throughout the crisis period for the average sample firm. The coefficient of our variable of central interest, the interaction effect, turns out to be positive and highly significant. Thus, the negative effect of the crisis on the business situation of Mittelstand firms turns out to be less severe than for non-Mittelstand firms. In other words, the business situation of non-Mittelstand firms deteriorated much stronger in the Great Recession 2008/2009 than those of the Mittelstand firms. When estimating the model with state- and sector-specific effects the general difference between Mittelstand and non-Mittelstand firms becomes insignificant. Most likely this is due to the fact that the share of Mittelstand firms differs significantly across different sectors. Thus, when controlling for sector-specific effects the average business situation of a Mittelstand firm does not differ from the current performance of a non-Mittelstand firm. However, the effect of the crisis remains almost unchanged. The same holds true for the interaction effect. Thus, our central result carries over to the case where we estimate the model with state- and sector-specific effects.

So far, we compared the crisis-performance of Mittelstand firms to the group of non-Mittelstand firms. However, the group of non-Mittelstand firms consists of various quite diverse subgroups. In order to find out whether Mittelstand firms systematically differ from non-owner-managed SMEs and owner-managed large enterprises we re-estimate the model taking the four different firm types in our sample (see Table 1) explicitly into account: Mittelstand firms (MS_{it}), non-owner-managed SME (SME_{it}), owner-managed large enterprises (OM LE_{it}), and non-owner-managed large enterprises (LE_{it}). Different from our baseline regression we use the group of Mittelstand

[12] Given the nature of the data and the applied empirical model, it is by no means trivial to report any kind of a 'goodness-of-fit measure' such as a pseudo R^2. We, nevertheless, make usage of the models' pseudo log likelihoods and calculate a McFadden-style pseudo R^2 that measures the improvement of the model including explanatory variables over the benchmark.

firms as comparison group and study via three separate interaction terms whether the other three groups performed significantly different throughout the crisis.

Table 2: Effect of Financial Crisis on Mittelstand and non-Mittelstand Firms

Dependent Variable: Business Situation		
Mittelstand Firms (*MS*)	-0.53***	-0.14
	(0.10)	(0.10)
Crisis Period (*Crisis*)	-1.32***	-1.31***
	(0.06)	(0.06)
Interaction Effect ($MS * Crisis$)	0.43***	0.43***
	(0.08)	(0.08)
State-specific effects	NO	YES
Sector-specific effects	NO	YES
Pseudo R-Squared	0.22	0.19
Observations	85,544	85,502

Notes: Ordered logit estimation with robust standard errors in parentheses. ***, **, and * denote statistical significance to the 1%, 5%, and 10% level. The reference is the group of non-Mittelstand firms.

The referring estimation results are shown in Table 3. In the first column of the table we again show the results for the model without state- and sector-specific effects while the second column includes both types of time-invariant effects. Qualitatively both models deliver very similar results. All three types of non-Mittelstand firms on average report a better business situation than Mittelstand firms. Moreover, the general effect of the crisis turns out to be significantly negative. However, most interesting, all three types of non-Mittelstand firms performed systematically worse throughout the crisis as compared to Mittelstand firms. Thus, our empirical evidence points into the direction that it is the combination of firm-size and owner-management which leads to a high degree of crisis resistance, and not firm-size or owner-management alone.

5.3 Identification of Mittelstand Firms by Self-Assessment

Up to now we classified Mittelstand firms based on objective criteria. In the following we study an alternative Mittelstand classification, which is based on a self-assessment of the surveyed firms. This self-assessment (*MS*-self) is gained by an additional special question, we asked within the ifo Business Survey. The wording of this question was: 'Do you classify your enterprise as part of the German Mittelstand?'. Interestingly enough, the results of the self-assessment differ strongly from the classification on objective criteria. While 64.5 percent of all surveyed firms were classified as Mittelstand firms according to the objective criteria, some 83.3 percent of all responding enterprises assess themselves that they belong to the German Mittelstand. Interestingly, only 23.0 percent of all firms that do not fulfill the objective criteria of a Mittelstand firm give a correct self-assessment, thus, 77.0 percent see themselves as a Mittelstand firm whereas they are not according to our objective delimitation. The fact that many German enterprises understand themselves as Mittelstand firms although they formally do not belong to this business model might be explained by the excellent national and international reputation of the German Mittelstand. Only a minority of firms (13.7

Table 3: Effect of Financial Crisis Across Firm Types

Dependent Variable: Business Situation		
SME	0.42***	0.16*
	(0.10)	(0.10)
OM LE	0.56***	0.32**
	(0.14)	(0.14)
LE	0.68***	0.23*
	(0.13)	(0.13)
Crisis	-0.89***	-0.88***
	(0.02)	(0.02)
SME ∗ *Crisis*	-0.12*	-0.12***
	(0.07)	(0.04)
OM LE ∗ *Crisis*	-0.88***	-0.88***
	(0.09)	(0.09)
LE ∗ *Crisis*	-1.00***	-1.00***
	(0.06)	(0.06)
State-specific effects	NO	YES
Sector-specific effects	NO	YES
Pseudo R-Squared	0.22	0.19
Observations	71,174	71,132

Notes: Ordered logit estimation with robust standard errors in parentheses. ***, **, and * denote statistical significance to the 1%, 5%, and 10% level. The reference is the Mittelstand.

percent) wrongly classify themselves as non-Mittelstand firms whereas they belong to the Mittelstand based on objective criteria. This especially holds true for very small firms with an average of less than 20 employees (see Berlemann et al., 2018). Welter et al. (2015) attribute this to wrong perceptions of the firms about the Mittelstand. Small firms think that they are too small to be a Mittelstand firm.

The referring estimation results, which are shown in Table 4 differ strongly from our baseline estimation. Here, the coefficient of the interaction effect turns out to be zero. We attribute this to the fact that the self-assessment of a large share of firms does not coincide with the objective criteria.

Table 4: Self-Assessment as Mittelstand Firm

Dependent Variable: Business Situation		
MS-self	0.44***	0.54***
	(0.16)	(0.14)
Crisis	-1.02***	-1.02***
	(0.11)	(0.11)
MS-self ∗ *Crisis*	0.00	0.00
	(0.12)	(0.12)
State-specific effects	NO	YES
Sector-specific effects	NO	YES
Pseudo R-Squared	0.22	0.19
Observations	74,527	74,484

Notes: Ordered logit estimation with robust standard errors in parentheses. ***, **, and * denote statistical significance to the 1%, 5%, and 10% level. The reference is the group of firms that reported to be not part of the German Mittelstand.

6 Robustness Checks

In order to check the reliability of our main results, we conduct a number of robustness checks. First, instead of applying the German SME-definition (threshold 500 employees), we apply the European definition, which refers to a threshold of 250 employees. When coding an additional dummy variable accordingly (*MS*-250) and using it in the regression, we receive the results reported in column (1) of Table 5. All results from our baseline regressions are confirmed by this procedure, thus, Mittelstand firms performed significantly better than non-Mittelstand firms throughout the crisis.

Second, we tried to further enhance our objective identification of Mittelstand firms in the dataset by employing information on turnover from additional datasets, which can be combined with the ifo Business Survey data. As explained earlier, the ifo Business Survey contains no such information. However, the data center at the ifo Institute provides the possibility to combine the ifo Business Survey data with information from the Amadeus- and the Hoppenstedt-Database. The latter two databases provide balance sheet and income statement data and also contain a variety of firm characteristics such as firms' turnover, founding years, their legal forms and their amount of equity capital. The German law defines several legal forms of companies. We can distinguish between twelve different forms, for example, stock corporations (*Aktiengesellschaften*), limited liability companies (*GmbHs*), or limited partnerships (*Kommanditgesellschaften*). According to their balance sheets, the firms report—in addition to their assets and liabilities—the amount of their equities (in thousand Euros). Combining the ifo Business Survey data with the Amadeus and the Hoppenstedt data thus delivers additional firm information, however, this comes at the price of a significantly shrinking sample size. This is due to the fact that many of the firms in the ifo sample are not liable to prepare a balance sheet. This holds true especially for numerous small firms. As a consequence, the number of available observations per cross-section drops to 2,411 firms in the merged dataset. At the same time the SME-quota drops from 91.7 percent in the ifo data to only 53.6 percent in the merged data.

In column (2) of Table 5 we show the results we receive for the merged dataset when using both the employee and the turnover criterion to classify Mittelstand firms (*MS*-both). We receive qualitatively the same results as in the baseline regression. Again the coefficient of the interaction effect turns out to be significantly positive, indicating that Mittelstand firms performed significantly better throughout the crisis than non-Mittelstand firms. The results also remain stable when we additionally include a number of control variables on the firm level such as the founding year, the total amount of equity or the firms' legal form (see columns (3), (4) and (5) in Table 5).

Table 5: Robustness Checks

Dependent Variable: Business Situation					
	(1)	(2)	(3)	(4)	(5)
MS-250	-0.23***				
	(0.10)				
MS-both		-0.75***	-0.89***	-0.96***	-0.94***
		(0.15)	(0.18)	(0.19)	(0.20)
Crisis	-1.29***	-1.30***	-1.33***	-1.32***	-1.40***
	(0.05)	(0.05)	(0.08)	(0.08)	(0.09)
Interaction Effect	0.43***	0.53***	0.55***	0.51***	0.60***
	(0.07)	(0.14)	(0.16)	(0.16)	(0.18)
Founding Year			0.00***		
			(0.00)		
Equity				-0.00	
				0.00	
Legal Form					0.00
					0.00
State-specific effects	YES	YES	YES	YES	YES
Sector-specific effects	YES	YES	YES	YES	YES
Observations	95,322	57,210	31,110	29,967	26,232

Notes: Ordered logit estimation with robust standard errors in parentheses. ***, **, and * denote statistical significance to the 1%, 5%, and 10% level. The reference is the group of non-Mittelstand firms.

7 Conclusions

A remarkable specialty of the German economy is the comparatively large share of owner-managed small and medium-sized firms. These so-called Mittelstand firms are often qualified as the "backbone" of the German economy. They are not only seen as the key to Germany's quick postwar recovery, but also as a business model allowing the German economy to cope with huge external shocks such as the recession in consequence of the worldwide financial crisis of 2008/2009. However, this claim was yet not backed by suitable empirical evidence. Because Mittelstand firms are often hard to identify in official statistics, the existing empirical evidence on Mittelstand firms in general is still comparatively scarce.

This paper contributes to broadening the empirical evidence on the role of Mittelstand firms by delivering an analysis of the relative performance of Mittelstand firms throughout the Great Recession of 2008/2009. Basically, it delivers supporting evidence for the stability hypothesis. After identifying Mittelstand firms as owner-managed SMEs based on objective, measurable features in the ifo Business Survey we find that Mittelstand firms in fact performed better than non-Mittelstand firms throughout the Great Recession of 2008/2009. This result proves to be robust in various stability tests. Interestingly enough, this finding does not carry over to the case where Mittelstand firms are classified in accordance to their subjective self-assessment, which often differs from the objective classification. Thus, we might conclude that further empirical studies of the role of Mittelstand firms should be based on objective criteria rather than on self-assessments of firms.

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A Data Set Preparation

A.1 Merging the ifo Micro Data

The raw ifo data are not immediately applicable for our purpose, so we were in need of some data set preparations beforehand. Our main goal is to generate a comprehensive data set representing the total German economy by merging the four industries together. In a nutshell, we executed the following steps:

1. **Assigning unique variable names:** We had to rename the industry-specific answers to a question by giving each variable a unique name. This ensures that, for example, the entries of the question on the business situation in the final data set contains the answers from all four industries.
2. **Defining the survey identifier:** We defined a unique identifier for each industry to ensure industry-specific analyses.
3. **Defining the industry identifier:** We assigned to each product category a unique identifier that is perfectly comparable to the 2-digit industrial level code. For example, we assigned the value '29' to a car producer in manufacturing, which is identical to the official Classification Code of Economic Activities of the German Federal Statistical Office.
4. **Collapsing the time dimension:** We defined a consecutive time identifier that reduces the year-month-combination to a simple running number.
5. **Defining the firm identifier:** We had to calculate a unique firm identifier which is a combination of the plant number and the industrial code. This was necessary in order to conduct an analysis on the firm rather than on the product-level. The German Mittelstand is defined on the firm level, thus, we had to deal with multiple records. We elaborate more on this issue in the next section.
6. **Cleaning:** We had to delete duplicates due to wrong coding in the original sources.
7. **Merging:** We merged the four single data sets to one comprehensive source representing the German economy.

A.2 Firm Identification

Each ifo survey is conducted at the product level, but the Mittelstand is a criterion that defines the firm type. Thus, multiple firm records might bias our quotas and therefore our empirical results. For this purpose we need to aggregate the firm- and product-specific survey results so that our cross-section dimension represents the firm instead of the product level. We do so by following the approach proposed by Link (2020).

The firm aggregation is done within each ifo survey (e.g., manufacturing). If a car producer, for example, reports its business situation for three different products (e.g. cars, trucks, and motorcycles), we can densify these answers to calculate the business situation of the firm within manufacturing. However, the ifo data don't allow us to calculate firm-specific answers across the four surveys. If, for example, this car producer also has a product line or focus in services, we are not able to densify the answers from manufacturing and services as the ifo surveys do not contain cross-sectoral identifiers.

Based on experiences and talks to employees of the ifo Institute, this is not a crucial issue as cross-sectoral reporting is negligible.

The aggregation within each survey is done as follows. First, we define a unique time identifier by collapsing the year and month dimension to one single running number. Second, we calculate a firm ID by grouping two ifo-specific identifiers together: the running number and the firm identification number. Whereas the running number is defined by a product group and assigned consecutively to new participants, the firm identification number is a combination of the sector to which the specific product is belonging to and an identifier for the firm. Especially the latter identifier is not public, but based on postal information of the firm. Third, we define the aggregation level by grouping the time identifier and the firm ID dimension. This leaves us with a unique identifier that connects the product-specific answers to the single firm within each survey. Finally, the product-specific answers to the survey questions (for example, the business situation) are averaged within the firm.

According to our procedure, the number of multiple records within each survey is quite small. We observe 0.03% multiple records in manufacturing, 1.32% in trade, and 0.85% in services. The exception is construction with a multiple record count of 61.36%. This leaves us with a record of 14.19% for the total economy, and 0.63% by excluding the construction sector. Therefore, the bias introduced by multiple records might not be that large in manufacturing, trade, and services. However, it is a crucial issue to densify the answers to the firm level in construction.

A.3 Balance Sheet Data

Due to the qualitative nature of the ifo Business Survey, only a few quantitative and firm-specific information are available. For our robustness analysis, we are therefore in need of further firm characteristics that might drive the firms' resilience against economic downturns. One possible source of such information are balance sheet data, which can also be accessed at the EBDC. To be more concrete, the balance sheet data are provided by both the Amadeus- and the Hoppenstedt-Database. Both providers of balance sheet and income statement data publish a variety of firm characteristics and economic variables. As firm characteristics we can, for example, identify a firm's founding year, its legal form, and whether it is listed on the stock exchange. The balance sheet information comprise, for example, the firms' total equity, liabilities, and profits.

We merged both data sets together via a table provided by the EBDC that contains the identifiers needed for the merge.[13] These identifiers are the firm ID, the month, the year, the industrial code, and a variable representing the federal state in which the respondent is located. Balance sheet data are only available on an annual basis, whereas the ifo survey results have a monthly frequency. We achieve the same time frequency by allocating the annual value of a balance sheet position to each month of that specific year. The merge, however, comes with the price that we lose a large number of observations as not all firms in the ifo Business Survey are liable to prepare a balance sheet.

[13]The EBDC also provides a merged data set which is called the 'EBDC Business Expectations Panel' (see the documentation at: `https://www.ifo.de/en/node/40841`). This data set, however, has a different stacking of the firms' answers than our prepared data set. Nevertheless, they are nearly perfectly comparable.

B The ifo Questionnaire

B.1 Manufacturing

Table B1: Questions Asked in Manufacturing

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	**Question:** 'We assess our current business situation as [...]' **Answers:** (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Stock of Finished Products (SFP)	**Question:** 'We assess our current stock of finished products as [...]' **Answers:** (+) too small, (=) sufficient, or (–) too large; (X) no stock-keeping.	standard	monthly
3a	Current Orders (CO)	**Question:** 'We assess our stock of current orders as [...]' **Answers:** (+) relatively large, (=) sufficient, or (–) too small.	standard	monthly
3b	Foreign Orders (FO)	**Question:** 'We assess our stock of current orders for the export as [...]' **Answers:** (+) relatively large, (=) sufficient, or (–) too small; (X) no export activities.	standard	monthly
4	Demand Development (DD)	**Question:** 'Compared to the previous month, our demand situation has [...]' **Answers:** (+) improved, (=) remained unchanged, or (–) worsen.	standard	monthly
5	New Orders (NO)	**Question:** 'Compared to the previous month, our stock of orders has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Production Realization (PR)	**Question:** 'Compared to the previous month, production has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased; (X) no remarkable domestic production.	standard	monthly
7	Price Development (PRD)	**Question:** 'Compared to the previous month, our prices were [...]' **Answers:** (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
8	Employment Development (ED)	**Question:** 'Compared to the previous month, the number of our employees has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
9	Production Expectations (PE)	**Question:** 'In the next 3 months, our production will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease; (X) no remarkable domestic production.	standard	monthly
10	Price Expectations (PRE)	**Question:** 'In the next 3 months, our prices will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decline.	standard	monthly
11	Export Expectations (EXE)	**Question:** 'In the next 3 months, the extent of our export business will [...]' **Answers:** (+) grow, (=) stay the same, or (–) decrease; (X) no export activities.	standard	monthly
12	Employment Expectations (EE)	**Question:** 'In the next 3 months, our number of employees will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease.	standard	monthly

Continued on next page...

Table B1: Questions Asked in Manufacturing (cont.)

#	Indicator	Description	Type	Frequency
13	Business Expectations (BE)	**Question:** 'In the next 6 months, our business situation will be [...]' **Answers:** (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
14	Expectations Forecast (EF)	**Question:** 'Currently, to forecast our business expectations is [...]' **Answers:** (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly
15	Order Range (OR)	**Question:** 'Our current orders come up with a production time of [...]' **Answer:** *XX* months.	special	quarterly (1st month)
16	Capacity Utilization (CU)	**Question:** 'The current utilization of our equipment (customary full use of the capacity = 100%) amounts to [...]' **Answers:** 30%, 40%, 50%, 60%, 70%, 75%, 80%, 85%, 90%, 95%, 100%, *XX*% (if above 100%).	special	quarterly (1st month)
17	Technical Capacity (TC)	**Question:** 'Given our current stock of orders and expected new orders in the next 12 months, our technical capacity is [...]' **Answers:** (+) more than sufficient, (=) sufficient, or (–) not sufficient.	special	quarterly (1st month)
18	Production Obstruction (PO)	**Question:** 'Our production activities are currently obstructed [...]' **Answers:** (+) yes, or (–) no. If yes, because of the following factors: insufficient orders, lack of employees, lack of specialists, financing bottleneck, lack of material, insufficient technical capacity, and other factors.	special	quarterly (1st month)
19a	Competitive Position Domestic (CPD)	**Question:** 'In the last 3 months, our competitive position on the domestic market has [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (1st month)
19b	Competitive Position inside EU (CPIEU)	**Question:** 'In the last 3 months, our competitive position inside the European Union has [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased; (X) no export activities.	special	quarterly (1st month)
19c	Competitive Position outside EU (CPOEU)	**Question:** 'In the last 3 months, our competitive position outside the European Union has [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased; (X) no export activities.	special	quarterly (1st month)
20a	Return on Sales Surplus (ROSS)	**Question:** 'Our last year's return on sales (in % of net turnover) was in case of a surplus [...]' **Answers:** up to 1%, above 1% to 2%, above 2% to 3%, above 3% to 4%, above 4%, in fact ca. *XX*%.	special	quarterly (2nd month)
20b	Return on Sales Deficit (ROSD)	**Question:** 'Our last year's return on sales (in % of net turnover) was in case of a deficit [...]' **Answers:** 0% to -1%, below -1% to -2%, below -2% to -3%, below -3% to -4%, below 4%, in fact ca. *XX*%.	special	quarterly (2nd month)
21a	Total Investment Development (TID)	**Question:** 'Our last year's total investment [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
21b	Building Investment Development (BID)	**Question:** 'Our last year's building investment [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)

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Table B1: Questions Asked in Manufacturing (cont.)

#	Indicator	Description	Type	Frequency
21c	Equipment Investment Development (EID)	**Question:** 'Our last year's equipment investment [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
21d	Software Investment Development (SID)	**Question:** 'Our last year's software investment [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	special	quarterly (2nd month)
22a	Investment Indicator (II)	**Question:** 'Our total investment in the current year will [...]' **Answers:** (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
22b	Building Investment Expectations (BIE)	**Question:** 'Our building investment in the current year will [...]' **Answers:** (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
22c	Equipment Investment Expectations (EIE)	**Question:** 'Our equipment investment in the current year will [...]' **Answers:** (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
22d	Software Investment Expectations (SIE)	**Question:** 'Our software investment in the current year will [...]' **Answers:** (+) increase, (=) remain unchanged, or (–) decrease.	special	quarterly (2nd month)
23	Overtime (OT)	**Question:** 'We currently work overtime [...]' **Answers:** (+) yes, or (–) no. If yes, more than customary: (+) yes, or (–) no.	special	quarterly (3rd month)
24	Short-time Work (STW)	**Question:** 'We currently apply short-time work [...]' **Answers:** (+) yes, or (–) no.	special	quarterly (3rd month)
25	Short-time Work Expectations (STWE)	**Question:** 'In the next 3 months, we expect to apply short-time work [...]' **Answers:** (+) yes, or (–) no.	special	quarterly (3rd month)
26	Lending Activities (LA)	**Question:** 'In the previous 3 months, we have been in lending negotiations with banks [...]' **Answers:** (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Manufacturing; own translations.

B.2 Construction

Table B2: Questions Asked in Construction

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	**Question:** 'We assess our current business situation as [...]' **Answers:** (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Current Orders (CO)	**Question:** 'We assess our stock of current orders as [...]' **Answers:** (+) relatively large, (=) sufficient, or (–) too small.	standard	monthly
3	Order Range (OR)	**Question:** 'Our current orders come up with an average production time of [...]' **Answer:** *XX* months.	standard	monthly
4	Cost Coverage (CC)	**Question:** 'Our construction prices cover [...]' **Answers:** (+) more than our production costs, (=) our production costs, or (–) less than our production costs.	standard	monthly
5	Production Obstruction (PO)	**Question:** 'Our production activities are currently obstructed [...]' **Answers:** (+) yes, or (–) no. If yes, because of the following factors: insufficient orders, order cancellation, lack of employees, lack of specialists, financing bottleneck, lack of material, unfavorable weather conditions, and other factors.	standard	monthly
6	Construction Activity (CA)	**Question:** 'Compared to the previous 3 months, our construction activity has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
7	Order Development (OD)	**Question:** 'Compared to the previous month, our stock of construction orders [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
8	Price Development (PRD)	**Question:** 'Compared to the previous month, our construction prices were [...]' **Answers:** (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
9	Construction Expectations (CE)	**Question:** 'In the next 3 months, our construction activity will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
10	Price Expectations (PRE)	**Question:** 'In the next 3 months, our construction prices will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decline.	standard	monthly
11	Business Expectations (BE)	**Question:** 'In the next 6 months, our business situation will be [...]' **Answers:** (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
12	Expectations Forecast (EF)	**Question:** 'Currently, to forecast our business expectations is [...]' **Answers:** (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly

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Table B2: Questions Asked in Construction (cont.)

#	Indicator	Description	Type	Frequency
13	Capacity Utilization (CU)	**Question:** 'The current utilization of our machine capacity (customary full use of the capacity = 100%) amounts to [...]' **Answers:** 30%, 40%, 50%, 60%, 70%, 75%, 80%, 85%, 90%, 95%, 100%, *XX*% (if above 100%).	standard	monthly
14	Employment Expectations (EE)	**Question:** 'In the next 3 months, our number of employees will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
15	Employment Development (ED)	**Question:** 'Compared to the previous month, the number of our employees has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
16	Lending Activities (LA)	**Question:** 'In the previous 3 months, we have been in lending negotiations with banks [...]' **Answers:** (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Construction; own translations.

B.3 Retail Trade

Table B3: Questions Asked in Retail Trade

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	**Question:** 'We assess our current business situation as [...]' **Answers:** (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Stock of Finished Products (SFP)	**Question:** 'We assess our current stock of finished products as [...]' **Answers:** (+) too small, (=) sufficient, or (–) too large; (X) no stock-keeping.	standard	monthly
3	Turnover Development (TOD)	**Question:** 'Compared to the month of the previous year, our turnover have [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
4	Price Development (PRD)	**Question:** 'Compared to the previous month, our selling prices were [...]' **Answers:** (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
5	Employment Development (ED)	**Question:** 'Compared to the previous month, the number of our employees has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Price Expectations (PRE)	**Question:** 'In the next 3 months, our selling prices will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decline.	standard	monthly
7	Order Expectations (OE)	**Question:** 'In the next 3 months, our orders will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease; (X) no remarkable domestic production.	standard	monthly
8	Employment Expectations (EE)	**Question:** 'In the next 3 months, our number of employees will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
9	Business Expectations (BE)	**Question:** 'In the next 6 months, our business situation will be [...]' **Answers:** (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
10	Expectations Forecast (EF)	**Question:** 'Currently, to forecast our business expectations is [...]' **Answers:** (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly
11	Turnover Obstruction (TOO)	**Question:** 'Our turnover are currently obstructed [...]' **Answers:** (+) yes, or (–) no. If yes, because of the following factors: weak demand, lack of employees, lack of specialists, financing bottleneck, lack of real estate, insufficient office equipment, unfavorable weather conditions, and other factors.	special	quarterly (1st month)
12a	Local Footfall (LOFO)	**Question:** 'In the previous quarter, the average footfall at our local position was [...]' **Answers:** (+) high, (=) seasonal, or (–) low; (X) no local position.	special	quarterly (1st month)

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Table B3: Questions Asked in Retail Trade (cont.)

#	Indicator	Description	Type	Frequency
12b	Online Footfall (ONFO)	**Question:** 'In the previous quarter, the average footfall at our online presence was [...]' **Answers:** (+) high, (=) seasonal, or (–) low; (X) no online presence.	special	quarterly (1st month)
13	Lending Activities (LA)	**Question:** 'In the previous 3 months, we have been in lending negotiations with banks [...]' **Answers:** (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Retail Trade; own translations.

B.4 Wholesale

Table B4: Questions Asked in Wholesale

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	**Question:** 'We assess our current business situation as [...]' **Answers:** (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Stock of Finished Products (SFP)	**Question:** 'We assess our current stock of finished products as [...]' **Answers:** (+) too small, (=) sufficient, or (–) too large; (X) no stock-keeping.	standard	monthly
3	Turnover Development (TOD)	**Question:** 'Compared to the month of the previous year, our turnover have [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
4	Price Development (PRD)	**Question:** 'Compared to the previous month, our selling prices were [...]' **Answers:** (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
5	Employment Development (ED)	**Question:** 'Compared to the previous month, the number of our employees has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Price Expectations (PRE)	**Question:** 'In the next 3 months, our selling prices will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decline.	standard	monthly
7	Order Expectations (OE)	**Question:** 'In the next 3 months, our orders will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease; (X) no remarkable domestic production.	standard	monthly
8	Employment Expectations (EE)	**Question:** 'In the next 3 months, our number of employees will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
9	Business Expectations (BE)	**Question:** 'In the next 6 months, our business situation will be [...]' **Answers:** (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
10	Expectations Forecast (EF)	**Question:** 'Currently, to forecast our business expectations is [...]' **Answers:** (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly
11	Turnover Obstruction (TOO)	**Question:** 'Our turnover are currently obstructed [...]' **Answers:** (+) yes, or (–) no. If yes, because of the following factors: weak demand, lack of employees, lack of specialists, financing bottleneck, lack of real estate, insufficient office equipment, unfavorable weather conditions, and other factors.	special	quarterly (1st month)
12	Lending Activities (LA)	**Question:** 'In the previous 3 months, we have been in lending negotiations with banks [...]' **Answers:** (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Wholesale; own translations.

B.5 Services

Table B5: Questions Asked in Services

#	Indicator	Description	Type	Frequency
1	Business Situation (BS)	**Question:** 'We assess our current business situation as [...]' **Answers:** (+) good, (=) satisfactory, or (–) bad.	standard	monthly
2	Current Orders (CO)	**Question:** 'We assess our stock of current orders as [...]' **Answers:** (+) relatively large, (=) sufficient, or (–) too small.	standard	monthly
3	Employment Development (ED)	**Question:** 'Compared to the previous month, the number of our employees has [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
4	Price Development (PRD)	**Question:** 'Compared to the previous month, our prices were [...]' **Answers:** (+) raised, (=) unchanged, or (–) lowered.	standard	monthly
5	Order Development (OD)	**Question:** 'Compared to the previous month, our stock of orders [...]' **Answers:** (+) increased, (=) remained almost unchanged, or (–) decreased.	standard	monthly
6	Business Development (BD)	**Question:** 'In the past 3 months, our business situation has [...]' **Answers:** (+) improved, (=) remained unchanged, or (–) worsen.	standard	monthly
7a	Turnover Development (TOD)	**Question:** 'Compared to the previous 3 months, our turnover have [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
7b	Turnover Development (TOD)	**Question:** 'Compared to the previous month, our turnover have [...]' **Answers:** (+) increased, (=) remained unchanged, or (–) decreased.	standard	monthly
8	Turnover Expectations (TOE)	**Question:** 'In the next 3 months, our turnover will [...]' **Answers:** (+) increase, (=) remain unchanged, or (–) decrease.	standard	monthly
9	Employment Expectations (EE)	**Question:** 'In the next 3 months, our number of employees will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decrease.	standard	monthly
10	Price Expectations (PRE)	**Question:** 'In the next 3 months, our prices will [...]' **Answers:** (+) increase, (=) stay the same, or (–) decline.	standard	monthly
11	Business Expectations (BE)	**Question:** 'In the next 6 months, our business situation will be [...]' **Answers:** (+) rather favorable, (=) rather stay the same, or (–) rather unfavorable.	standard	monthly
12	Expectations Forecast (EF)	**Question:** 'Currently, to forecast our business expectations is [...]' **Answers:** (+) easy, (+) rather easy, (–) rather difficult, or (–) difficult.	standard	monthly

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Table B5: Questions Asked in Services (cont.)

#	Indicator	Description	Type	Frequency
13	Business Obstruction (BO)	**Question:** 'Our business is currently obstructed [...]' **Answers:** (+) yes, or (–) no. If yes, because of the following factors: weak demand, lack of employees, lack of specialists, financing bottleneck, lack of technical capacity, insufficient office equipment, unfavorable weather conditions, and other factors.	special	quarterly (1st month)
14	Demand Satisfaction (DS)	**Question:** 'Is it currently possible for you to satisfy an increase in demand with the technical capacity at hand?' **Answers:** (+) yes, or (–) no. If yes, we can increase our business activity by *XX*%.	special	quarterly (1st month)
15	Lending Activities (LA)	**Question:** 'In the previous 3 months, we have been in lending negotiations with banks [...]' **Answers:** (+) yes, or (–) no. If yes, the banks behaved: (+) accommodating, (=) normal, or (–) restrictive. If no, because: (1) no credit demand, or (2) other reasons.	special	quarterly (3rd month)

Source: ifo Business Survey Services; own translations.