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On the Representativeness of the ifo Business Survey

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On the Representativeness of the ifo Business Survey

Abstract

The monthly ifo Business Survey is the basis for numerous economic indicators, such as the ifo Business Climate Index Germany. Moreover, the anonymized micro data can be used for a wide range of research projects. In order to obtain robust results, the panel of survey participants must be large enough and as representative as possible for the German economy. This article describes the composition of the panel participants based on various criteria, such as representativeness at the sectoral and industry level, regional distribution, and distribution by firm size. The investigation shows that the business panel is representative for the German economy.

JEL-Codes: C800, C810, C830.

Keywords: ifo Business Survey, representativeness, ifo Business Climate.

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1 Introduction

In the ifo Business Survey, thousands of firms are surveyed every month on their current business situation, their expectations and plans for the upcoming months, and on other economic variables. The responses are used for the calculation of numerous economic indicators, such as the ifo Business Climate Index Germany, as well as for a wide variety of research projects.¹ Leading indicators, like the ifo business climate, play an important role in forecasting macroeconomic variables for Germany such as industrial production or Gross Domestic Product.²

The aim of the survey is to ensure that the results can be used to draw the most reliable and robust conclusions possible about developments in the German economy. This applies to both the analyses at the aggregate level with the business cycle indicators and to scientific evaluations at the level of the anonymized micro data. For this reason, the panel of survey participants must meet various requirements, to provide a picture as good as possible of the business landscape in Germany. Surveys covering all companies would be desirable on the one hand, but are not practical and feasible on the other. Moreover, participation in the ifo surveys is voluntary. Therefore, the ifo Business Survey is based on a sample of active companies in Germany. The sample size must be of a certain size to provide solid and robust results. In this context, it is important to cover both all important economic sectors (professional representation) and a sufficiently large number of companies (company representation). Furthermore, so-called selection effects must be avoided, which would lead to systematic distortions of the results. Therefore, it is important to ensure that the regional composition of the participants as well as the distribution of the companies by size and economic sector roughly reflect the composition of all German companies. Generally, the sample should reflect all essential properties of the population of all German companies.

¹An overview of various research papers using ifo micro data is provided by Demmelhuber et al. (2022)

²An early overview of the predictive power of the ifo indicators can be found in Abberger and Wohlrabe (2006). Lehmann (2020) provides a comprehensive current overview.

2 Panel size and representativeness by sectors and branches

The ifo business climate builds upon a historical grown panel of firms. The survey originally started in manufacturing sector in December 1949, followed by retailing (1950), wholesaling (1951), and construction (1956). The survey in the service sector was established in 2001 and the first results were published in 2005. As in many panels there is attrition.³ The replacement and the acquisition of firms is implemented using a stratified sample using databases like Orbis. The strata are defined along size classes, regions (states) and industries.

The aim of the panel design is to be able to obtain meaningful results and to draw accurate conclusions not only for the overall economy but also for various economic sectors. Table 1 provides an overview of the average monthly number of participants in 2021 for all economic sectors covered by the ifo Business Survey.⁴ It also shows how many employees the participating companies have, compared to all companies in Germany. For example, the survey panel covers around 15% of employees in manufacturing and construction. For manufacturing of motor vehicles and motor vehicle parts more than 50% of the workforce is covered in the sample of surveyed companies. The figures for retail and wholesale trade are at 9% and 10% respectively. In the service sector, the ifo surveys cover 4.5% of the workforce. This somewhat lower number can be explained by the high share of solo self-employed persons and micro-enterprises, which have not been a focus of the ifo surveys so far. Within the service sector, the information and communication sector has the highest coverage of the workforce, at 17%.

The high number of participants in many sectors allows the calculation of results even for more deeply subdivided industries.⁵ Overall, the ifo Business Survey strongly focuses

³For determinants of non-response in the ifo survey see Seiler (2014).

⁴Strictly speaking, it is the number of questionnaires received and not the number of companies that is shown here. In the construction sector, there are many companies that fill out several questionnaires per month because they cover different construction sectors at the same time. This is also true for some large companies in manufacturing, if they cover different branches.

⁵Moreover, the ifo Institute calculates cross-industry indices that are not covered by official statistics. Examples are the digital industry (Pols et al. 2019) or the event industry (Sauer and Wohlrabe 2021).

on industries that are particularly cyclical and thus provide accurate signals for general economic developments. This is especially true for the manufacturing sector. By contrast, other sectors, such as agriculture, public services, finance or healthcare, are hardly or not at all covered by the surveys. They are characterized less by cyclical than by structural developments. However, especially in crisis situations, such as the Covid-19 pandemic, also for less cyclical economic sectors information from surveys can be very valuable. For this reason, the ifo Institute aims to further increase the number of participants in areas that have not been so well covered to date. Furthermore, there are plans to include additional sectors that have not been part of the survey until now.

Table 2 shows the distribution of companies in the ifo survey by industry in relation to the distribution of all companies in Germany, the number of employees, and gross value added (GVA) for 2021.⁶ The distribution is partly very close to the official figures. For example, in manufacturing the number of firms is over-represented in the ifo survey, but also relatively close to the values of the GVA and the number of employees. In the trade sector this is to some extent reversed. The number of companies is relatively well represented by the survey. Looking at the GVA, a slight under-representation appears.

⁶The percentage distribution of companies differs somewhat from that in Table 1 because it is the number of companies counted here, rather than the number of responses.

Table 1: Number of participants and coverage by industries

Code	Sector	Participants in the		Employees total	Coverage rate
		ifo business survey	covered		
C	Manufacturing	2,105	1,049,355	6,833,142	0.15
10 - 12	Food, beverages, tobacco	117	18,196	727,118	0.03
13 - 15	Textiles, wearing apparel, leather	66	6,603	115,980	0.06
16 - 18	Wood, paper, printing	210	27,217	353,102	0.08
19 - 21	Chemicals, coke and petroleum, pharmaceutical products	141	84,232	525,524	0.16
22 - 23	Rubber, plastic, glass, non-metallic mineral products	271	58,587	597,659	0.10
24 - 25	Basic metals and metal products	431	82,051	1,067,512	0.08
26	Computer, electronic and optical products	120	19,920	415,809	0.05
27	Electrical equipment	166	47,499	354,330	0.13
28	Machinery	401	140,591	1,045,778	0.13
29	Motor vehicles	81	466,857	906,571	0.51
30 - 33	Manufacturing of other products	101	97,602	723,759	0.13
D + E	Electricity, water, waste management	55	7,808	516,550	0.02
41 + 42	Construction	2,754	83,526	550,652	0.15
G	Trade	1,651	351,517	4,013,504	0.09
45	Motor vehicles	104	5,344	313,270	0.02
46	Wholesale trade	812	122,306	1,195,800	0.10
47	Retail trade	735	223,867	2,504,434	0.09
	Service sector	2,274	508,034	11,329,199	0.04
H	Transportation and storage	216	79,264	1,917,373	0.04
I	Accommodation and food service activities	219	9,799	1,026,749	0.01
J	Information and Communication	343	210,935	1,241,842	0.17
K	Financial and insurance activities	66	14,088	976,730	0.01
L	Real estate	71	4,786	297,216	0.02
M	Professional, scientific and technical activities	803	101,173	2,406,856	0.04
N	Administrative and support service activities	308	74,642	2,317,457	0.03
R	Arts, entertainment and recreation	103	4,693	294,955	0.02
	Others	145	8,654	850,021	0.01

Note: Monthly averages for the year 2021

Sources: ifo Business Survey, Federal Statistical Office

Table 2: Distribution of the survey participants compared to the population in Germany

	ifo Business Survey	Distribution of German firms by		
	Count	Count	Employees	Value Added
Manufacturing	32.6	8.2	26.2	34.5
Electricity, water, waste management	0.9	3.2	2.2	4.7
Construction	11.9	14.6	8.4	6.9
Trade	26.9	22.3	20.9	17.6
Transportation and storage	3.5	4.1	7.5	6.1
Accommodation and food service activities	3.6	9.2	8.0	2.8
Information and Communication	5.1	4.9	4.8	7.2
Real estate	1.2	6.2	1.8	3.8
Professional, scientific and technical activities	11.0	18.9	8.8	9.1
Administrative and support service activities	3.2	8.4	11.3	7.3

Note: Monthly averages for the year 2021.

Sources: ifo Business Survey, Federal Statistical Office

3 Coverage by firm size

Table 3 shows the shares of respondents in the panel of the ifo Business Surveys by company size compared to all German companies.⁷ The distribution in the ifo Panel is between the actual distribution in the overall population and the weighted distributions according to the number of employees and gross value added, so that even without weighting a very good picture of the German economy emerges. This is a very good compromise, since an enormous number of small companies would be needed for an exact representation of the size class distribution. In compiling the panel, the focus was more on achieving the greatest possible coverage of gross value added and workforce in the overall economy, as well as in the various sectors of the economy. Since gross value added tends to increase with company size, the focus is usually more on large and medium-sized companies. As a result, solo self-employed persons and micro-enterprises account for a smaller share in the panel of the ifo Business Survey than in the overall economy. They are generally not considered a driving force for overall economic developments. However, to provide even more in-depth results for

⁷The official figures are provided by the Federal Statistical Office in the statistics for small and medium-sized enterprises (code 48121). The data here is limited to the manufacturing, energy, water and waste disposal sectors, as well as construction, trade, accommodation and food services, and business-related service providers.

this group in the future, which can be of great interest especially in times of crisis, the ifo Institute is currently systematically expanding the number of participants to include micro-enterprises and solo self-employed (Sauer and Wohlrabe 2022). In conclusion, however, it can be emphasized that at the sector level sufficient numbers of survey participants are already available for all company size classes.

Table 3: Distribution of the ifo Business Survey panel by industry and size

	small	medium	large
Manufacturing	12.7	12.2	7.8
Electricity, water, waste management	0.5	0.3	0.1
Construction	6.4	4.5	1.0
Trade	18.5	6.5	1.9
Transportation and storage	1.8	1.2	0.6
Accommodation and food service activities	2.5	1.0	0.1
Information and Communication	3.3	1.5	0.4
Real estate	0.8	0.3	0.1
Professional, scientific and technical activities	8.3	2.2	0.4
Administrative and support service activities	1.8	1.0	0.4
Total	56.6	30.8	12.6
Distribution of German firms by			
Count	96.8	2.6	0.6
Employees	39.7	16.6	43.7
Value Added	26.4	15.7	58.0

Notes: Definition of size classes: small = 1-49 employees, medium = 50-249 employees, large = 250+ employees, shares in %. Monthly averages for the year 2021.

Sources: ifo Business Survey, Federal Statistical Office

4 Regional representation across states

A further essential characteristic of the panel is the regional distribution of the participating companies. To obtain a picture of the entire German economy, it is also important that all regions are sufficiently represented in the sample. Table 4 shows the average monthly number of participants in 2021 for all 16 German federal states. It illustrates that the regional distribution of companies in the panel is relatively close to the distribution of all companies within Germany. German states with a high share of Germany's gross domestic product, such as Bavaria, North Rhine-Westphalia and Baden-Württemberg, are also most strongly represented in the business surveys.

A sufficiently large number of participants in all sectors even makes it possible to calculate business cycle indicators at the federal state level (see Lehmann et al. 2019 and Lehmann et al. 2022). Thus, monthly results are calculated for the states of Baden-Württemberg, Bavaria, Hesse, Lower Saxony, North Rhine-Westphalia and Saxony.

Table 4: Monthly participants in the ifo Business Surveys by regions and sectors

	Total	Manufacturing	Construction	Trade	Service sector	Share in panel	Share in Germany	GDP share
Bavaria	1841	405	612	349	475	21.0%	18.8%	18.5%
Northrhine-Westphalia	1776	477	466	354	479	20.2%	20.2%	20.5%
Baden-Württemberg	1227	386	333	213	295	14.0%	13.7%	15.0%
Lower Saxony	751	154	281	158	158	8.5%	8.7%	8.8%
Hesse	569	131	122	124	192	6.5%	7.6%	8.5%
Saxony	487	141	189	53	104	5.5%	4.4%	3.8%
Thuringia	362	116	156	42	48	4.1%	2.2%	1.8%
Rhineland Palatinate	306	63	108	67	68	3.5%	4.7%	4.5%
Schleswig Holstein	293	44	116	63	70	3.3%	3.6%	3.0%
Saxony-Anhalt	240	58	99	46	37	2.7%	1.9%	1.9%
Brandenburg	207	49	65	47	46	2.4%	2.8%	2.2%
Hamburg	206	16	28	41	121	2.3%	2.8%	3.5%
Mecklenburg Western Pomerania	179	28	90	20	41	2.0%	1.7%	1.4%
Berlin	173	15	41	19	98	2.0%	5.0%	4.6%
Saarland	94	14	25	38	17	1.1%	1.0%	1.0%
Bremen	73	8	23	17	25	0.8%	0.7%	1.0%

Notes: All Figures refer to year 2021.

Sources: ifo Business Survey, Federal Statistical Office

5 Who fills out the questionnaire?

It is also fundamentally important for the quality of the survey results which person(s) of the participating companies fill out the questionnaire. They should have a good overview of all relevant areas in the company for providing competent answers to questions concerning topics such as production, employee developments, or pricing policy. As a result, it is important to the ifo Institute that the questionnaires are answered by people who are at the top of the companies' hierarchy and therefore have all the information they need to answer the questions anytime.

With the help of a supplementary question in the Business Survey, it was possible to determine that the questionnaires in the monthly ifo Business Survey are predominantly answered by people who hold management positions within the participating companies. Over 80 percent of the people responding to the questionnaires are owners, CEOs, authorized representatives, or members of the executive board (Sauer and Wohlrabe 2019). Consequently, all requirements for achieving adequate results are also fulfilled from this perspective.

6 Outlook

In summary, it applies that there are various criteria for the representativeness of a panel for business surveys. Compiling the panel of the ifo Business Survey, all criteria was carefully taken into consideration. Therefore, the criteria for good representativeness are met at all important levels both for the calculation of business cycle indicators and for economic analyses at the level of anonymized micro data.

Nevertheless, the ifo Institute is striving for a continuous expansion of the panel and its participants. On one hand the panel will be increased in the economic sectors already covered and on the other hand further sectors that are not yet covered shall be added. In addition, the expansion of the panel with solo self-employed persons and micro-enterprises should enable here even more in-depth analyses in the future.

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