

## 3 The ifo Business Climate Index for Germany and its Applications

### 3.1 The ifo Business Climate Index for Germany

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#### 3.1.1 Concept and Calculation

The ifo Business Climate Index for Germany consists of two components: the assessment of business situation and the business expectations for the next six months.<sup>1</sup> It is thus a combination of a status quo (situation) with an ex-ante variable (expectations). Likewise, a question referring to a level (situation) is linked to a change variable (expectations). The ifo Business Climate Index is thus a simple version of an overall indicator (Oppenländer and Poser 1989a), in which several survey indicators are combined. Its principal intention is to describe the economic development as compactly as possible.

The “business climate” is the geometric mean of the balances of the two sub-indicators “business situation” and “business expectation”:

$$\text{Business climate} = \sqrt{(\text{Balance of business situation} + 200)(\text{Balance of business expectation} + 200)} - 200$$

As the balances statistic ranges between  $-100$  and  $+100$ , they are initially increased by 200 in order to obtain real values in the root expression. By subtracting 200 at the end, these terms cancel each other out again. The geometric mean leads to a certain smoothing of the extreme values. This may be relevant if the number of observations in certain branches in the survey is rather small. In the main levels of aggregation, the differences between the arithmetic and the geometric mean are minor. The differences usually concern the amplitude, but not the turning points of the time series. Since the individual indicators are collected in all economic sectors in the monthly ifo Business Survey, the business climate is also available for all covered branches.

The ifo Business Climate Index for Germany currently (2023) is composed of the business climate of the “service sector” (weight: 50.5%), “manufacturing industry” (30.2%), “wholesale trade” (7.1%), “retail trade” (6.2%), and “construction industry” (6.0%). The original series are aggregated and then seasonally adjusted and indexed (base year since April 2018 is 2015).<sup>2</sup>

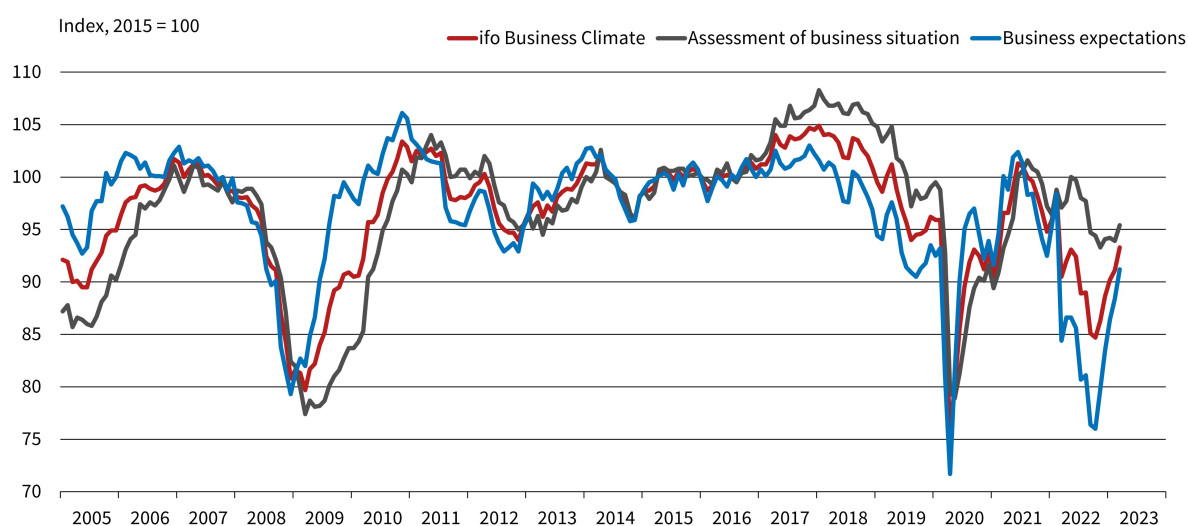
<sup>1</sup> See also the chapters on the individual survey areas and the corresponding questionnaires.

<sup>2</sup> Before April 2018, the ifo Business Climate Index for Germany’s industrial economy (“Gewerbliche Wirtschaft”)

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Figure 3.1 shows the ifo Business Climate Index for Germany and its sub-indices from 2005 onwards.<sup>3</sup> By definition, the ifo Business Climate Index always lies between the situation index and the expectations index. Between 2014 and 2016, the indices moved very close together, but since 2017 they have diverged. In March 2020, the impact of the Corona crisis is clearly visible: The ifo Business Climate Index reached a historic low.<sup>4</sup>

**Figure 3.1: ifo Business Climate Index for Germany and its sub-indices**



Source: ifo Business Survey.

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The ifo Business Climate Index for Germany is published monthly and is one of the most well-known and widely cited indicators for the German economy. It also moves financial markets and provokes immediate price reactions, e.g., for the Euro-Dollar exchange rate or the German DAX (Mittnik et al. 2013a,b). For this reason, the calculation and publication of the ifo Business Climate Index for Germany follows a strict protocol:

- The aggregation of the micro-data and the calculations are carried out on the night of the publication day. The final value is saved on a strictly protected folder.
- Starting at 07:30 a.m., the head of the ifo surveys prepares a draft of the press release.
- From 08:45 to 09:45, the press release is discussed in both German and English by the ifo President, the head of ifo surveys, the head of the ifo business cycle forecasting unit, the press officer, and a translator.
- At 10:00 a.m., the values of the ifo Business Climate Index and its sub-indices are announced via telephone conference. Only news agencies accredited with the European

was published. This indicator did not include the service sector and the base year was 2005. See Sauer and Wohlrabe (2018a) for more information.

<sup>3</sup> Values before 2005 are not available because the results of the service sector are only published from that year onwards.

<sup>4</sup> For analyses concerning the impact of Corona on the survey results see Sauer and Wohlrabe (2020b), Litsche et al. (2020), or Sauer and Wohlrabe (2020c).

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Central Bank may participate. They publish the values directly on their own news tickers. The ifo Business Climate Index for Germany is now public.

- From 10:00 a.m., information packages with the new values are sent to customers and the press. The index is published on the ifo website at 10:30 a.m.

Adherence to this protocol ensures that the ifo Business Climate Index for Germany is only accessible to a small circle of ifo employees before it is published.

#### 3.1.2 The ifo Business Climate Index for Germany and the German Economy

The success and popularity of the ifo Business Climate Index for Germany can be explained by its high level of correlation with the German economic development. The ifo Business Climate Index has also been a component of a multiplicity of scientific investigations. Abberger and Wohlrabe (2006), Seiler and Wohlrabe (2013b), and have more recently Lehmann (2023b) provided extensive studies on its forecasting power.

In the following section, the relationship between the ifo Business Climate Index for Germany and the German (real) Gross Domestic Product (GDP) is illustrated as an example. There is broad agreement among economic analysts that the latter is a suitable, though not perfect, measure of the economic performance of an economy. However, real GDP itself is a so-called non-stationary quantity that follows an undefined, mostly upward trend. By contrast, a “business cycle” is understood to be a stationary process in which GDP fluctuates around the trend over time. Ideally it follows a sinusoidal oscillation. In practice, economic development is often depicted in the form of the rate of change of real GDP, which deviates from the ideal oscillation and is much more uneven.

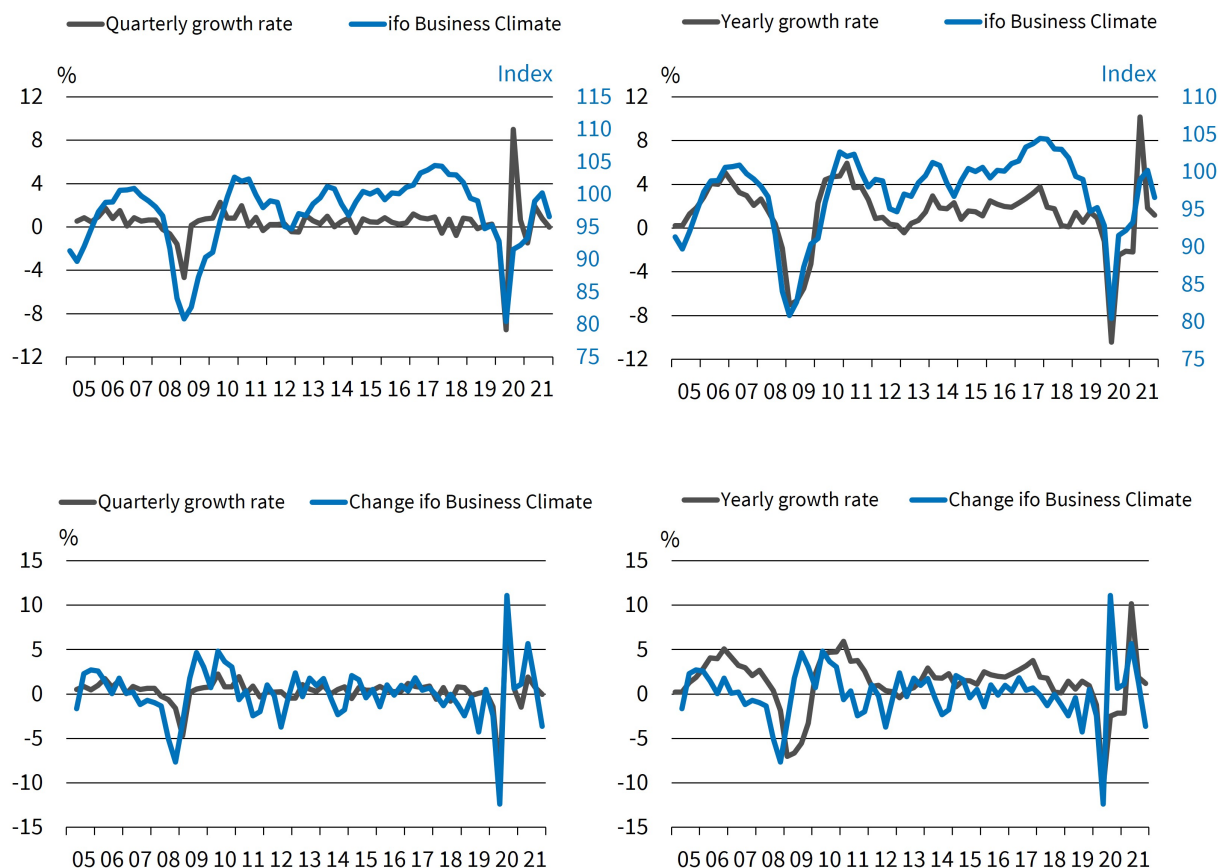
Since the German Federal Statistical Office follows international standards and publishes GDP on a quarterly basis within the framework of national accounts, the focus of economic monitoring is on the rates of change in quarterly data on real GDP. While the graphic illustration of the economy usually shows the rate of change of real GDP against the previous year, the focus of any economic forecast is on the rate of quarterly change. This is calculated as a percentage change over the previous quarter and not – as with the previous year’s rate of change – over the same quarter of the previous year. The advantage of looking at rates of change from the previous year is that they are smoother. This is because the rate of change of the previous year in a given quarter is only approximately calculated as the sum of the four rates of change of the annual period under consideration.

Figure 3.2 shows the ifo Business Climate Index for Germany and the corresponding GDP growth rates.<sup>5</sup> In addition to the level of the ifo Business Climate Index, first differences are also shown. This can be traced back to Wohlrabe and Wollmershäuser (2017), who show that the previous month’s differences of the ifo Business Climate Index can also be a very

<sup>5</sup> In order to get a quarterly value for the ifo Business Climate Index, quarterly averages were calculated.

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**Figure 3.2: Real gross domestic product and ifo Business Climate Index**



Source: ifo Business Survey; Federal Statistical Office.

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good indicator. In general, Figure 3.2 shows a moderate to good lead time and synchronous development of the ifo Business Climate Index compared to GDP. The quarterly GDP growth rate is noticeably more erratic than the corresponding annual rate of change and thus more difficult to forecast. The graphical comparison should be supplemented by a correlation analysis. Table 3.1 shows the corresponding coefficients with a lead time of up to four quarters. It turns out that the ifo Business Climate Index is a good predictor of the quarterly growth rate. This is especially true for the first difference of the Business Climate Index: The synchronous development turns into a lead when the intra-quarterly information of the Business Climate Index is used. Additionally, the first estimate of GDP is released about five weeks after the end of the quarter. The correlation is even more pronounced when the annual growth rate of GDP is considered. In this case, the rate of change has a lead of about three quarters. All in all, the ifo Business Climate Index is confirmed to be an excellent indicator for the German economy.

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**Table 3.1: Cross-correlations between ifo Business Climate Index and the real GDP**

| ifo Business<br>Climate | GDP Growth<br>Rate | Lead in Quarters |              |        |        | Current Quarter |
|-------------------------|--------------------|------------------|--------------|--------|--------|-----------------|
|                         |                    | -4               | -3           | -2     | -1     | 0               |
| Level                   | Quarterly          | -0.232           | -0.059       | -0.033 | -0.031 | <b>0.396</b>    |
| First Difference        | Quarterly          | -0.067           | 0.307        | 0.054  | 0.008  | <b>0.748</b>    |
| Level                   | Yearly             | -0.207           | 0.179        | 0.402  | 0.590  | <b>0.772</b>    |
| First Difference        | Yearly             | 0.191            | <b>0.687</b> | 0.394  | 0.321  | 0.312           |