Creditreform Rating

DEFAULT STUDY

Default Rates in the German Economy

2017

Market analyses
May 2018

Creditreform Rating

Management Summary

1.

Economic development in 2017 continued to be paired with a decline in empirical default rates. Of the approximately 2.8 million active German enterprises, 1.44% defaulted during the last year. Thus the default rate has been on a steady downward trajectory since 2019 (2.17%), although it looks as if it may bottom out at its currently very low level. In 2016 the corresponding rate was only marginally higher, at 1.45%.

2.

As seen in the past, default risks are dependent on as the annual turnover. While the default rate for companies with a turnover of up to 0.5m euros reached 1.50%, the default rate for enterprises with a turnover between 10 and 20m euros amounted to half that share, at 0.71%. The rate of default for large enterprises stood at 0.19%, significantly lower. Last year, companies in all size categories were noticeably more solid than in 2013. The empirical default rate, however, did not drop equally across all turnover categories. Along with the turnover segment between 50 and 250m euros, the risk of default for companies with an annual turnover of between 2 and 10m and between 10 and 20m euros saw the most significant decrease.

3.

An industry comparison shows that enterprises operating in the primary industry remain the most solid, with a default rate of 0.77%. In the medium term we can see that all industrial sectors have contributed to the significant decrease in the macroeconomic default rate since 2013. Default risk declined most dramatically in the transport and logistics sectors (from 3.12 to 2.48%), followed by the consumer goods and consumer services industries. While respectively 1.65% and 1.96% of the companies in these sectors defaulted in 2013, this has most recently dropped to a mere 1.25% and 1.58% respectively.

4.

Our calculations confirm the findings made in recent years that the city-states of Berlin and Bremen have recorded the largest share of corporate defaults. As regards German states, the capital bore the highest default rate; in 2017, 1.95% of enterprises headquartered in

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Berlin defaulted. Bremen also continues to display a relatively high share of defaulted businesses with a rate of 1.87%, with North Rhine-Westphalia further behind at 1.64%, being the German non-city- state with the highest default rate.

5.

The default rate having once again fallen below its historical low during the previous year, we shouldn't prospectively be seeing any further declines comparable to those of the past five years. Nevertheless, we expect the empirical default rate to recede slightly during the current year, falling to a new low as the macroeconomic environment remains conducive to the stability of the corporate sector. In accordance with our base scenario for German macroeconomic development, we expect the default rate to fall to 1.40% in 2018.

1. Definitions and Database

This study aims to examine the current risk position of German enterprises, based on empirical default rate data. The data used in this study is based on the Creditreform Business Database, containing approximately three million active companies and self-employed persons based in Germany, as well as data related to crisis-prone and insolvent enterprises. This database presents a complete view of the German corporate sector, and is considered to be the most comprehensive database on the German corporate sector worldwide. The database contains up-to-date information on corporate finances and credit standing, as well as a set of structural characteristics. Characteristics include, among others, data related to the number of employees of the company, as well as revenue figures, business activities, legal structure, and existing negative judicial characteristics of companies (see details in the appendix).

For this study, we have chosen a definition of a default event which conforms to that provided by Basel III. Existing hard negative entries such as (i) corporate insolvency procedures, (ii) consumer insolvency procedures regarding persons conducting business, or (iii) an arrest warrant or an affidavit leading to an enterprise being assessed as bankrupt. Furthermore, a company can be considered to be in default when, based on Creditreform information, it is deemed highly unlikely that the enterprise will be able to meet its payment obligations. Thus, this definition of default, which is commonly applied in the banking sector, includes more than the corporate insolvencies shown in official statistics (e.g. payment arrears of 60 to 90 days).

This study depicts one-year default rates. Thus, companies assessed as being in default are those which, as of 31 December 2017, have either de-faulted on payments or display negative entries, which, however had been classified as solvent one year prior (31.12.2016). At the end of December 2017 there were approximately 2.785 million active businesses in Germany. This figure comprises companies with active business relations and which have requested financing. All of the following stratification segments are representative samples of the group as a whole, independent of the respective structural characteristic under analysis.

2. Defaults in the German Corporate Sector

The German economy not only grew in 2017 for the eighth consecutive year, but stepped up a gear once again. Real GDP rose last year by 2.2% after the German economy had grown by 1.7 and 1.9% in 2015 and 2016. After getting off to a strong start at the beginning of the year with a first-quarter growth rate of 0.9%, expansion slowed somewhat in the following quarter. Thus a q-o-q gain of 0.6% was recorded in the second quarter. Growth maintained its momentum in the second half of the year with increases of 0.7 and 0.6 q-o-q.
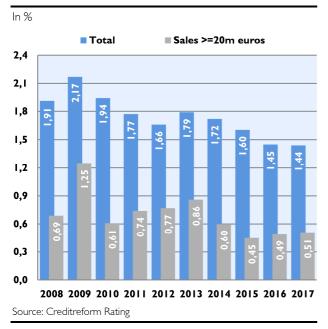
The overall strong economic development seen during the last year continued to be primarily a result of robust domestic demand. Private consumption continued to be the most important driver of the German economy. Real consumer spending rose by 2.0%, contributing 1.1 percentage points to economic growth. Thus the contribution of consumer spending to economic growth was slightly higher than that of gross investment (0.7 percentage points), which was 3.8% higher y-o-y (2016: +2.1%). Last year's upturn in investment activity was primarily due to an increase in investments in machinery and equipment. While construction investment was able to maintain its 2016 momentum, spending on machines and oth-

er equipment increased from 2.2 to 4.0%. In contrast to the previous year, an improved global economic environment, and in particular brighter economic conditions in the euro area, provided a boost to foreign trade. Due to the strong growth of exports (4.8%), net exports made a positive contribution to the expansion of real GDP with 0.2 percentage points (2016: -0.3 percentage points).

On the backdrop of strong economic development in 2017 empirical default rates in the German corporate sector continued to recede (see fig. 1). Of the approximately 2.8 million German enterprises, 40,044 defaulted last year, corresponding to a rate of 1.44%. Thus, the default rate has followed a steady downward trajectory since 2009 (2.17%), although there are indications that it will bottom out at its presently very low level. The corresponding value was only marginally higher in 2016 at 1.45%.

2015, but for slight fluctuations, at a low level. After 0.45% and 0.49% of active businesses had defaulted in 2015 and 2016, last year the default rate amounted to 0.51%, significantly below the averages of the previous ten years (2008-2017: 0.70%).

In this context we can see that the structural observation of a significantly decreasing risk of default as the annual turnover increases has remained unchanged (see fig. 2). While the default rate was at 1.50% for microenterprises with an annual turnover of up to 0.5m euros, for companies with a turnover between 10 and 20m euros it came to half that share at 0.71%. The default rate for large enterprises turning over more than 250m annually was again significantly lower; in this segment, only 0.19% of the enterprises defaulted. Moreover, our calculations show that corporates of all sizes were noticeably stronger last year than five years ago.

Fig. 1: Development of empirical default rates

In %

Source: Creditreform Rating

Fig. 2: Default rates by company size

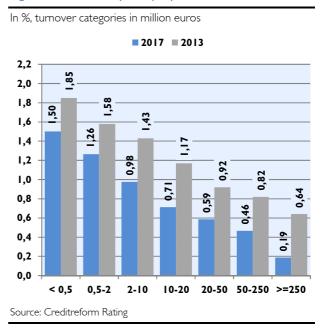In %, turnover categories in million euros

Source: Creditreform Rating

The situation for SMEs (annual turnover of at least 20m euros) is similar. In this sector, the share of defaulted companies has remained stable since
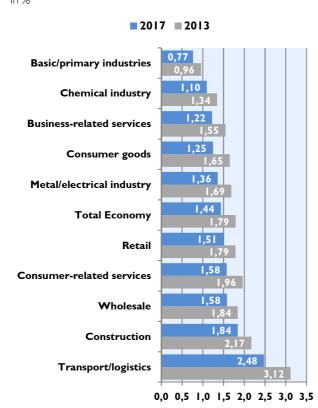
The empirical default rate, however, did not drop equally across all turnover segments. Along with the turnover category of between 50 and 250m euros, for which the rate fell from 0.64 to 0.19%

between 2013 and 2017 (-0.45 percentage points), the default risk for small enterprises with annual revenues of between 2 and 10m and between 10 and 20m euros decreased most significantly. In these two segments, the default rate stood most recently 0.45 and 0.46 percentage points below their 2013 level. For companies with a turnover between 0.5 and 2m, the decline in the rate of default was comparatively moderate. For comparison: in this turnover cluster, 158 default events per 10,000 enterprises were recorded five years ago; last year the figure was 126, corresponding to a decrease in the default rate of 0.32 percentage points.

Fig. 3: Rate of default by industrial sector

In %

■ 2017 ■ 2013

Sector	2017	2013
Basic/primary industries	0,77	0,96
Chemical industry	1,10	1,34
Business-related services	1,22	1,55
Consumer goods	1,25	1,65
Metal/electrical industry	1,36	1,69
Total Economy	1,44	1,79
Retail	1,51	1,79
Consumer-related services	1,58	1,96
Wholesale	1,58	1,84
Construction	1,84	2,17
Transport/logistics	2,48	3,12

0,0 0,5 1,0 1,5 2,0 2,5 3,0 3,5

Source: Creditreform Rating

A comparison of business sectors shows that enterprises operating in the primary industry continue to be the strongest (see fig. 3). Only 77% of these companies display hard negative entries; in
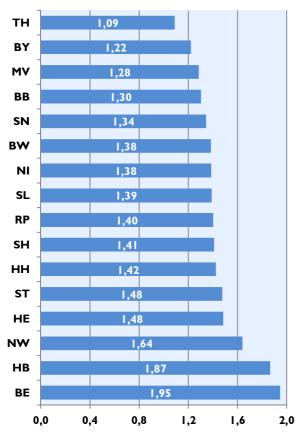
an industry comparison, this is equivalent to the lowest risk of default. A high degree of solidity could also be found in enterprises operating in the chemical industry and the business-related services sector. With a share of 1.10 and 1.22% of their enterprises in default, these sectors occupy the second and third places in the industry ranking. By contrast, the construction and the transport and logistics sector traditionally find themselves at the other end of the spectrum. With a share of 1.84 and 2.48%, these two industrial sectors bore the highest risk of default in 2017.

In the medium term, all industrial sectors have contributed to the significant decrease in the default rate for the economy as a whole since 2013; however, the risk of default did not drop at the same rate across all industrial sectors. The risk of default declined most dramatically in the transport and logistics sector, in which the empirical rate of default stood most recently 0.64 percentage points below its 2013 level, followed by the consumer goods and consumer services industries, which recorded decreases of 0.4 and 0.39 percentage points. While respectively 1.65% and 1.96% of the companies in these sectors defaulted in 2013, most recently the rates stood at a low 1.25 and 1.58%. For orientation: The decline in those industries which displayed very low default rates five years ago was not as pronounced. While the default rate in the chemical industry during the period under review dropped by 0.24 percentage points (2013: 1.34%), the number of defaults in the primary industry fell by 0.19 percentage points (2013: 0,96%).

In addition to a distinct structure related to the size of the company and industrial sector, significant differences in default risk can be distinguished based on geographic distribution, Again, our study shows that the city-states of Berlin and Bremen recorded the largest share of corporate defaults.

Fig. 4: Rate of default by federal state

In %, as of 31 Dec. 2017

Source: Creditreform Rating

122 defaults were recorded for every 10,000 enterprises, Thuringia led with a mere 109, the lowest rate among all of the federal states.

Fig. 5: Default rates by district in 2017

Percentage of companies in default, in %

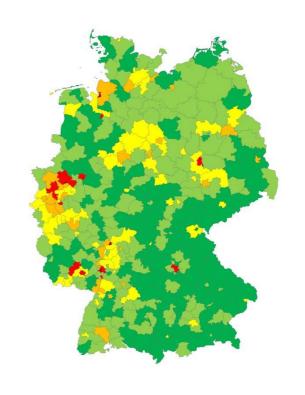| < 1,20% | 1,50% - 1,74% | 2,00% - 2,49% |
| 1,20% - 1,49% | 1,75% - 1,99% | >= 2,50% |

Source: Creditreform Rating

The capital experienced the highest default rate; in 2017, 1.95% of enterprises headquartered in Berlin defaulted (see fig. 4). Bremen also continues to display a relatively high default rate with 1.87%, with North Rhine-Westphalia further behind at 1.64%, being the German non-city-state with the highest rate of default. By contrast, the corporate sector in Eastern Germany is considerably more stable; with the exception of Saxony-Anhalt (1.48%), default rates in all Eastern German non-city-states fell below the national average. Thus only 1.34% of companies based in Saxony-Anhalt defaulted last year; in Brandenburg and Mecklenburg-Western Pomerania, the default rate was somewhat lower, at 1.30 and 1.28 respectively. Only Bavarian and Thuringian enterprises displayed a higher degree of stability. While in Bavaria

Looking at the default rates of individual German states and districts, we can see that rural areas display a more favorable risk structure than cities and urban centers. Thus the default rate of eight of the ten largest German cities was higher than the national average in 2017. Only Hamburg (1.42%) and Munich (1.27%) display a more favorable risk profile (see fig. 5). A look at the rankings of districts and municipalities with the lowest default rates confirms that the corporate sector is also healthy beyond the Bavarian state capital. In
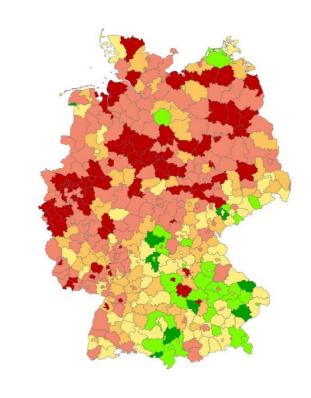
2017, of the 20 non-district cities and districts with the lowest default rates, 10 were to be found Bavaria. The district of Straubing-Bogen recorded the lowest default rate of all districts, with 61 defaults per 10,000 enterprises, followed by Günzburg, with a rate of 0.63%. The Hessian district of Werra-Meißner occupies the third place; the default rate here was just 0.67%.

By contrast, companies in both Bremerhaven and Offenbach are characterized by relatively high default risk. Recently, 2.92 and 2.95% of all businesses in these two cities, respectively, went into default. Only Herne recorded a higher number of defaults; with a default rate of 3.10%, this western German city ranked lowest in the country. Notably, the Ruhr region as a whole is home to many municipalities with comparatively risk-prone enterprises. In addition to Herne, we recorded a further four municipalities with the nationwide highest default risks: Gelsenkirchen (2.46%), Mühlheim an der Ruhr (2.41%), as well as Duisburg (2.34%) and Oberhausen (2.19%).

A look back on the year 2009, when the empirical default rate in the overall economy had reached its highest level to date at 2.17%, confirms that the risk position of companies in cities and districts has improved noticeably (see fig. 6) The most significant improvement during the period of review was observed in Brandenburg an der Havel. While 234 of 10,000 enterprises defaulted as recently as 2009, this figure had fallen to only 87 last year. A significantly smaller number of defaults also occurred in Weiden in Upper Palatinate, as well as in Limburg-Weilburg; the default rates here fell from 2.05 and 2.37% in 2009 to 0.97 and 1.34% last year.

Fig. 6: Default rates by district in 2009

Percentage of companies in default, in %

< 1,20%	1,50% - 1,74%	2,00% - 2,49%
1,20% - 1,49%	1,75% - 1,99%	>= 2,50%

Source: Creditreform Rating

As regards the impact of the age of a company, our study confirms findings made in recent years - so much so that it may be considered a stylized fact. These show that the default risk for young enterprises is fundamentally higher than that of older and well-established companies, whereby the highest risk of default occurs after the start-up phase, when an enterprise is between two and five years old (see fig. 7). These young enterprises accounted for a default rate of 3.06% in 2017, while only 2.07% of fresh startups defaulted. The default rate for long-established enterprises over ten years old was half that figure at 0.92%.

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In the medium-term perspective, the stability of enterprises in the category of long-established companies existing on the market for between five and ten years has increased significantly as measured by the default rate. Between 2013 and 2017, the empirical default rate declined by 0.69 percentage points, from 2.57 to 1.88%. The decline for companies between two and five years old was also substantial during this period, receding by 0.63 percentage points (from 3.68 to 3.06%).
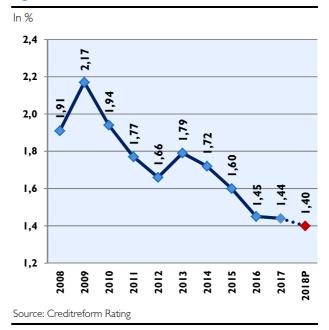
Fig. 7: Default rate by company age

In %

Source: Creditreform Rating

3.   Outlook

After the default rate fell below its historical low of 1.45% last year, albeit only slightly (1.44%), we should prospectively not be seeing any further declines in the default rate of the scale seen in the past five years. Nevertheless, we expect the empirical default rate to recede slightly during the current year, falling to a new low as the macroeconomic environment remains conducive to the stability of the corporate sector. In accordance

with our base scenario for German macroeconomic development, we expect the default rate to fall to 1.40% in 2018 (see fig. 8).

Fig. 8: Forecast for the default rate in 2018

In %

Source: Creditreform Rating

In our opinion, currently available early indicators point to a continuation of the economic upswing in 2018, despite growing indications that the German economy experienced only weak development in the first quarter following recent above-average quarterly growth rates. In April, the ifo Business Climate Index for the industrial economy registered a decline from 103.3 to 102.2 points (see fig. 9). Hence, the index dropped for the fifth consecutive month after reaching an all-time high in November 2017 with 105.2 points. It should be mentioned in this context, however, that the pattern of the ifo index has changed slightly due to its expansion to include the service sector, and had first experienced declines for two consecutive months. The trends in the Purchasing Managers' Index (PMI) for the manufacturing sector and for industrial production likewise indicate a slowdown in the economy at the turn of the year. Although the PMI quotes are well above the threshold of 50 points which indicate positive
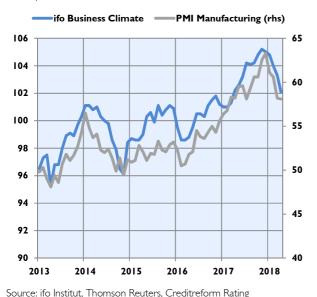
growth, a decline from 63.3 (Dec-17) to 58.2 points (Mar-18) is to be assumed. Meanwhile, German industrial production dropped in February by 2% following the stagnation observed in January. The latest retail figures were also not convincing. Thus retail turnover has declined for the third consecutive month. In February, the downturn from the previous month was 0.7% after revenues had already dropped in January and December by 0.3 and 0.8% respectively.

Fig. 9: Early indicators for the German economy

Index points, ifo 2015=100, PMI 50=Growth threshold value

Source: ifo Institut, Thomson Reuters, Creditreform Rating

We currently assume the economic slowdown at the beginning of the year to be a temporary phenomenon and not an abrupt end to the economic cycle or the transition into a downturn. Extraordinary factors such as the unusually severe flu epidemic, as well as strikes in the metal and electronics industries, should not further dampen growth in the second quarter. We also do not see any cause for alarm in the fact that sentiment indicators have come down from their stratospheric levels; instead, these have begun to approach more realistic levels which seem to correspond more closely with hard fundamental data, following the recent exaggerations. Fear of increasing protectionism has also recently been an adverse factor.

Considering the currently robust macroeconomic situation, we expect the German economy as a whole to maintain the growth momentum seen in 2017. Growth impulses will be provided by foreign trade; however, domestic demand will remain the primary driver of economic expansion. Against the background of the cyclical recovery in the global economy, we expect German exports to continue last year's dynamic expansion. In the light of already high capacity utilization and continuing favorable financing conditions, robust foreign demand should lead to increased investment in the corporate sector. Meanwhile, private consumption should benefit from the sustained favorable conditions in the labor market. In addition to continuing employment growth, noticeable real wage increases will likely strengthen the purchasing power of private consumers. We thus expect that economic growth will reach 2.3% before the German economy decelerates in 2019, expanding by still solid 2.0%.

Overall, the downside risks for the German economy can be seen as moderate. However, should the protectionist tendencies currently observed in the global economy intensify, this could noticeably dampen growth in Germany. Likewise, German growth could suffer in the event of a hard Brexit, or in the event of a significant weakening of economic momentum in the euro area.

Appendix

Database and classification of economic sectors

The Creditreform Business Database contains up-to-date financial and credit information, whereby a data set of all active enterprises is produced and archived on a quarterly basis. This data panel can be used, among others, to analyze developments in individual companies and industrial sectors. Characteristics pertaining to the companies stored in the database which can be selected include:

- full company address, state identification, district identification, and postal code
- information on date of inception, number of employees, turnover, legal form of the company, and credit information
- owner and shareholder structure, proprietary shares, and further information pertaining to the business owners and founders, e.g. number of, age and gender
- existing negative judicial characteristics pertaining to a company
- industrial sector in the form of a five-digit WZ code, according to the classification of economic activities of the Federal Statistics office of 2008

In accordance with the aforementioned classification of economic activities of the Federal Statistics Office, industrial sector groups were created during the course of our comparative analyses, according to industrial sector (see fig. 10).

Fig. 10: Industrial sector key according to WZ 2008

Industry	WZ 2008
Basic and primary industries	01-09, 19, 23
Business-related services	61-63, 69-74, 77-78, 80-82
Chemical industry	20-22
Construction	41-43
Consumer goods	10-18, 31-32
Consumer-related services	55-56, 79, 86-93, 95-96
Metal / electric goods	24-30
Retail	47
Transport / logistics	49-53
Wholesale	46

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