REBASING THE SHORT-TERM INDICES FOR INDUSTRY TO THE YEAR 2015

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ABSTRACT

As of reference month January 2018, the base year of most short-term indices for industry has been moved from 2010 to 2015 as part of the regular rebasing procedure. In addition to the change in the base year of the indices, the index weights were updated and some methodological changes implemented. An index of the stock of orders in manufacturing was introduced and will be published together with the results for reference month January 2018 for the first time.

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Introduction

Short-term industry statistics are monthly and quarterly statistics on the economic performance of production units which are published in the form of sum totals or indices.[1] This article describes the production index for industry as well as the indices of turnover and new orders and the new index of the stock of orders in industry. As of reference month January 2018, these indices will be published using a new base year.

Other industry indices are the monthly index of new orders and the quarterly index of the stock of orders in construction (Federal Statistical Office, 2017a). The new base year 2015 will be adopted for these indices at a later time. The index of new orders in the main construction industry will be rebased from September 2018 (reference month) and the relevant index of the stock of orders from the third quarter of 2018. Rebasing these indices is the topic of a separate publication.

The short-term indices for industry reflect the ratio of the current values of a variable to the values of the same variable in the base year. For instance, an index value of 110 means that the economic performance measured by the index is 10 % higher than in the base year. In Germany, the above indices are constructed as fixed-base indices that are rebased every five years. Rebasing generally covers the following three aspects:

› For practical reasons, the base year of the indices is updated so that the respective values can be interpreted easily and will not become too large. The indices then indicate the ratio of the current values to the values of the year 2015 instead of 2010.[2]

› The weighting information is updated for the new base year. The weights are maintained for a period of five years to ensure that structural shifts between the economic branches have no impact on index development. After the updating procedure, the weights of the indices from the base year refer to the economic situ-

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1 Here sum totals are totals of the absolute values reported by local units, for instance, the total turnover in euros which was achieved in an economic branch by the local units surveyed in the relevant month.

2 The base year indicated in a concise form in tables and figures is changed from "2010 = 100" to "2015 = 100".

ation in 2015 instead of 2010; the indices for earlier years remain unaffected by the changed weighting structures.

› Typically, rebasing is accompanied by methodological changes in index calculation. Chapter 4 provides information on the methodological changes carried out in construction as part of the production index when the new base year 2015 was adopted. In addition, results of the new index of the stock of orders in manufacturing will be published for the first time (see Chapter 7).

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Overview of the short-term indices for industry

2.1 Indices function as economic indicators

The short-term indices published at monthly intervals play a central role in economic monitoring. They provide important information on demand and production and are used e.g. for extrapolation purposes in the quarterly national accounts. From the perspective of the European Central Bank, for instance, industrial production is the most important indicator of current activity in the industry sector (Europäische Zentralbank, 2000, here: page 10). Indices of new orders or the stock of orders are important as early indicators of future production (Europäische Zentralbank, 2000, here: page 10).
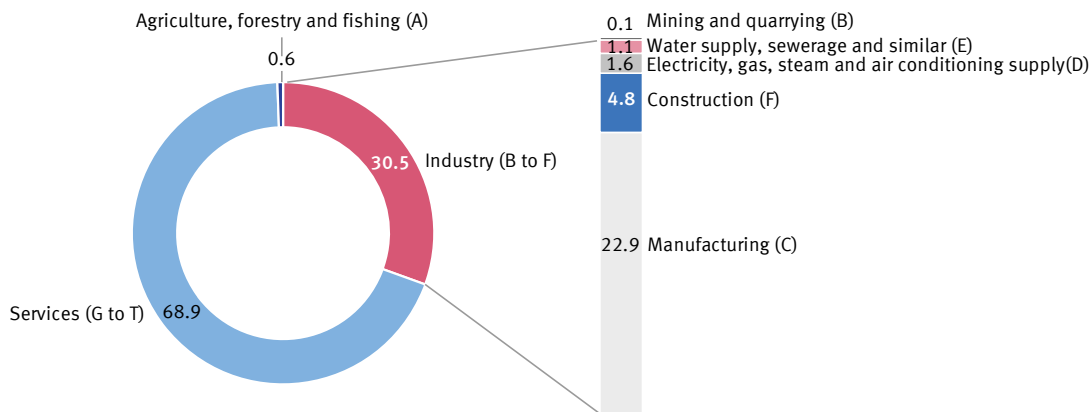
2.2 Scope of the statistics

↘ **Figure 1** shows how gross value added of the national economy is distributed among the various economic sectors in Germany. The letters indicated in brackets refer to individual or aggregated sections of the Classification of Economic Activities, 2008 edition (WZ 2008).[3]

Nearly one third of gross value added of the German national economy is generated in industry, of which

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3 The national WZ 2008 classification has been harmonised with the NACE classification used in the European Statistical System. See the Federal Statistical Office, 2016, here: Table 3.2.1, for gross value added.

Figure 1

Cross value added the national economy broken down by economic sector, 2015
Percent

Agriculture, forestry and fishing (A) — 0.6

Mining and quarrying (B) — 0.1
Water supply, sewerage and similar (E) — 1.1
Electricity, gas, steam and air conditioning supply(D) — 1.6
Construction (F) — 4.8

Industry (B to F) — 30.5

Manufacturing (C) — 22.9

Services (G to T) — 68.9

A to T: Selections of the Classification of Economic Activities, 2008 edition (WZ 2008)

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almost one quarter is contributed by manufacturing and by mining and quarrying. These two sections (C and B) of the Classification of Economic Activities are summarised under the term "industry" in this article.[4] In addition, industry covers construction (Section F) and the various branches of energy supply (electricity and gas) (Section D) as well as water supply, sewerage, waste management and remediation activities (Section E).

↘ **Chart 1** provides information about the scope of the short-term indices for industry. The scope of these indices is laid down in the relevant statistical acts. Regarding the indices of new orders and the stock of orders, these are national regulations, whereas the European Union

Regulation concerning short-term statistics applies to the production and the turnover indices.[5] The production index covers industry as a whole – since 2006, however, without Section E and part of Section D.[6] The turnover index refers to industrial Sections B and C. The indices of new orders and the stock of orders in manufacturing cover only selected branches of economic activity (see Chapters 6 and 7). The original selection was based on the version of the Regulation concerning short-term

4 However, the concept of industry is defined in different ways; for example in the European Statistical System it generally also includes energy supply.

5 Gesetz über die Statistik im Produzierenden Gewerbe in der Fassung der Bekanntmachung vom 21. März 2002 sowie Verordnung (EG) Nr. 1165/98 des Rates vom 19. Mai 1998 über Konjunkturstatistiken (Konjunkturstatistikverordnung).

6 Pursuant to Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006, Section E and Group D 35.3 (Steam and air conditioning supply) of the Classification of Economic Activities were excluded from the scope of the production index for industry as defined by the European Regulation concerning short-term statistics.

Chart 1

Scope of the short-term indices for industry and the indices of new orders and the stock of orders in the construction industry

	Scope	Sections of the Classification of Economic Activities (WZ 2008)
Production index	Industry	B + C + D + F (excl. D35.3)
Turnover index	Manufacturing, mining and quarrying (industry)	B + C
Index of the stock of orders	Selected branches of manufacturing	Parts of C
Index of new orders		
Quarterly index of the stock of orders	Selected segments of the construction industry	Parts of F

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statistics in force until 2006, which still contained an index of new orders. This selection has been maintained ever since. The indices of new orders and the stock of orders in the main construction industry cover parts of Section F.

2.3 Construction principles

All short-term indices for industry are constructed in a similar manner. As a rule, the indices are published as volume indices, eliminating the effects of price changes. Value indices are additionally available for the turnover index and the indices of new orders and the stock of orders. Because of their central function as economic indicators, the indices are presented in a seasonally adjusted form, while the unadjusted (original) indices are available, too.[7] Further calculation steps include normalisation and weighting, which are outlined below using a simplified formula.[8]

Normalisation is a procedure used to construct indices for economic branches by placing the current variable values of a branch in relation to the average value of the same variable across the months of the base year. Typically, the level of detail of the branch indices is that of classes (four-digit headings) of the WZ 2008 classification. The following equation shows normalisation of a value index to base year 2015. The index value of 100 corresponds to the average value of the variable of the relevant economic branch during the months of the base year.

(1) $\quad W(t)_{k,n2015} = \dfrac{w(t)_k}{\frac{1}{12}\sum_{i=1/2015}^{12/2015} w(i)_k} \cdot 100$, where

$W(t)_{k,n2015}$ index for economic branch k in reference month t, normalised to base year 2015

$w(t)_k$ value of the variable of economic branch k in reference month t (for instance total domestic turnover in euros)

$w(i)_k$ value of the variable of economic branch k in months i of the base year

t reference month

i month in the base year

k economic branch

$n2015$ base year to which the branch index is normalised

In a next step, the indices for economic branches are aggregated to form indices at higher levels of breakdown (aggregates). An aggregated index is constructed as the weighted average of the branch indices included. Regarding the production index, for instance, an overall index is constructed for industry, or index aggregates are calculated for other aggregations of economic branches. The following equation shows the calculation of a value index; volume indices are calculated in a comparable manner using price-adjusted branch indices.

(2) $\quad I(t)_{g2015} = \sum_{k=1}^{m} g(2015)_k \cdot W(t)_{k,n2015}$, where

$I(t)_{g2015}$ overall index or index aggregate, weighting of base year 2015

$g(2015)_k$ weight of economic branch k in base year 2015

m number of economic branches included in the aggregate

Weights are also referred to as weighting factors and the total of weights of an index as its weighting pattern or structure.

3

Adopting a new base year

3.1 Recalculation of indices as of the new base year 2015

The short-term indices for industry are rebased every five years, with the base years ending on 0 or 5 for reasons of international comparability.[9] Regular rebasing

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7   The short-term indices for industry are available in Tables 42151 to 42155 of the GENESIS-Online database (www.destatis.de/genesis). Regarding the main construction industry (building construction and civil engineering), the index of new orders is provided in Table 44111 and the index of the stock of orders in Table 44141. The index of the stock of orders in the main construction industry is not seasonally adjusted. Indices of orders are not calculated for building completion work.

8   See Bald-Herbel, 2013, for a detailed description of how the individual indices are calculated.

9   Article 11 of the Regulation concerning short-term statistics.

is especially required for updating the weights with the aim to account for structural changes in Germany's economy that took place in the previous years (Eurostat, 2006, here: page 23). Rebasing includes the recalculation of indices as of January of the new base year and the linking of these indices to indices of earlier years that were moved to the new base year beforehand. As mentioned above, recalculation comprises normalisation, price adjustment and weighting. Rebasing earlier index values and linking these to the recalculated indices will be explained in the following paragraphs.

3.2 Rebasing of earlier branch indices and aggregates

The values of the indices for economic branches of periods before January 2015 are rebased by dividing them by their 2015 average. The following equation shows the rebasing of branch indices originally normalised to base year 2010. The values of branch indices of earlier periods that were originally normalised to previous base years such as 2005, 2000 etc. are moved to the new base year 2015 at the same time.

$$(3) \qquad W(t)_{k,u2015} = \frac{w(t)_{k,n2010}}{\frac{1}{12}\sum_{i=1/2015}^{12/2015} w(i)_{k,n2010}} \cdot 100 \text{ , where}$$

$W(t)_{k,u2015}$ branch index originally normalised to 2010, rebased to base year 2015

In addition to the indices for economic branches, the overall indices and aggregates are each rebased separately. Equation (4) outlines the rebasing of overall indices or aggregates originally normalised to base year 2010; here the index values of earlier periods are rebased, too.

$$(4) \qquad I(t)_{g2010,u2015} = \frac{I(t)_{n2010,g2010}}{\frac{1}{12}\sum_{i=1/2015}^{12/2015} I(i)_{n2010,g2010}} \cdot 100 \text{ , where}$$

$I(t)_{g2010,u2015}$ overall index originally normalised to 2010, weights of 2010, rebased to base year 2015

Rebasing means that 2015 becomes the new base year for both overall indices and index aggregates. Nonetheless, the weights used for index calculation still refer to the economic situation in 2010 or, regarding earlier indices, to that of preceding base years (see Figure 2).

The change rates calculated from index values of periods before January 2015 (month-on-month or year-on-year index changes) are neither affected by rebasing.

3.3 Linking of branch indices and of aggregates

To form continuous series, the rebased earlier branch indices are linked to the new branch indices at the level of classes of economic activity. The series consist of rebased indices before January 2015 and of recalculated indices thereafter. The continuous time series – also called long time series – obtained at the level of economic branches refer to the common base year 2015.[10]

$$(5) \qquad W(t)_{k,\,2015} = \begin{cases} W(t)_{k,n2015} & \text{für } t \geq 01/2015 \\ W(t)_{k,u2015} & \text{für } t < 01/2015 \end{cases} \text{, where}$$

$W(t)_{k,2015}$ branch index on base 2015, long time series

The rebased overall indices or index aggregates with 'older' weights are linked to the new overall index in a similar manner.

$$(6) \qquad I(t)_{2015} = \begin{cases} I(t)_{g2015} & \text{für } t \geq 01/2015 \\ I(t)_{g2010,u2015} & \text{für } t < 01/2015 \end{cases} \text{, where}$$

$I(t)_{2015}$ overall index on base 2015, long time series

To simplify things, linking to the index based on weights of base year 2010 is shown in equation (6). As five years ago this index was linked to indices based on earlier weights, a continuous series of overall indices with changing weighting structures is obtained where the latter are intended to represent the various economic structures.

↘ **Figure 2** illustrates the described combination of normalisation, rebasing and linking in one timeline. The approach to creating long time series can also be referred to as 'splicing'.

A new base year can only be adopted when the data for the calculation of weights are available.[11] To the

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10   However, the branch indices for different base years may differ with respect to the calculation methods and composition at levels below that of classes of economic activity.

11   For the production index in particular, the data required for weighting become available with a considerable delay; see also Chapter 7.

Figure 2

Chain-linking of overall indices with different weights

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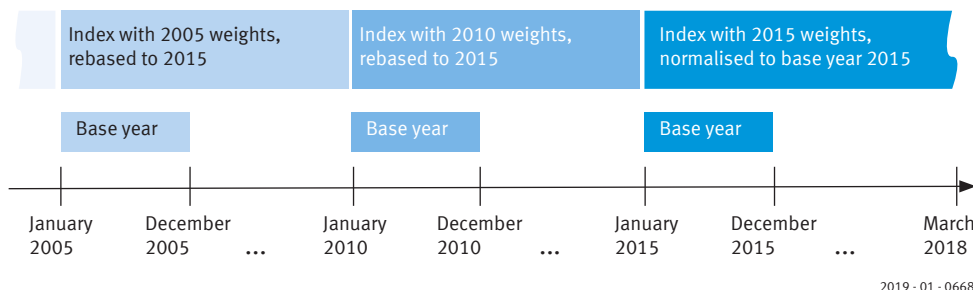
extent possible, the indices based on European legal acts are to be rebased using a common time schedule in the European Statistical System. Therefore rebasing takes place with a delay of two years. After the rebased index is released the index values published previously will be revised. As regards the indices of periods before January 2015, the adoption of the new base year causes changes in the index level, but not in the change rates.

After the common index construction principles of normalisation, weighting and chain-linking have been described, the special characteristics of the individual indices and the respective weighting patterns will be discussed in the following chapters.

4

Production index for industry

4.1 Characteristics

The price adjusted production value is the variable generally used for production index calculation.[12] The production values of industry branches are enquired in monthly and quarterly production statistics surveys which cover local units with more than 50 or with at least 20 persons employed (Statistisches Bundesamt, 2016a). In 2015, the number of these local units amounted to just over 20,000 or 24,000, respectively. Total gross value added at factor cost of the branches

of economic activity is used for weighting the production index. Hence the production index can be regarded as a calculation system used for the monthly updating of gross value added at constant prices that was measured in the given economic branches in the base year (Strohm, 1985, here: page 23).

The production index comprises a total of 246 branch indices each of which is assigned a weight of its own. Regarding industry branches, the WZ 2008 breakdown is at class level (four-digit headings), while it is at group level (three-digit headings) in energy (electricity and gas) supply. A special breakdown into so-called segments (building construction, civil engineering, and building completion work) is used for the construction industry in Germany. Building construction and civil engineering together are also referred to as the main construction industry.

4.2 Methodological changes in the production index

In the main construction industry (building construction and civil engineering), value added of the base year is updated based on a variable to reflect the hours worked in all local units of the main construction industry. While data on the hours worked in local units with 20 or more persons employed are available from monthly surveys, information on the hours worked in all local units is collected in a supplementary census only once a year in June. To calculate the above variable, the development of hours worked in local units with 20 or more persons employed ("hoursworked20+") was therefore multiplied by a grossing factor to take account of the annual development of hours worked in all local units.

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12   In both construction and energy (electricity and gas) supply, the price adjusted production value must be approximated using other variables because relevant data are not available. See Bald-Herbel, 2013, for more details, here: page 188.

The grossing factor had to be recalculated every year, which regularly led to rather high revisions of the production index. Studies have revealed that the development of output is reflected not less appropriately by the development of "hoursworked20+" as such than by the given variable plus the grossing factor used before. As, in addition, the regular annual revisions caused by the grossing factor would no longer be required when applying "hoursworked20+", it was decided to use – in the future – only "hoursworked20+" for value added in the main construction industry for production index compilation. This change in the method of index calculation was made at the beginning of 2017 (Linz, 2017).

In the past, the calculation of weights for the main construction industry was also based on extrapolation using results of the census in June. This approach was given up, too, when the new base year was adopted. Since then, weighting in construction has been based on the same method as used for the industry branches of the production index, which will be explained in the following chapter. As a result of this reconciliation of the calculation method, however, the weights in construction are no longer comparable with the weights of previous base years. In the production index, the methodological change has led to clearly higher weights of both building completion work and civil engineering in construction, while the weight of building construction has become smaller (see Paragraph 4.3).

4.3 Calculation of weights in the production index

Target variable of the calculation

Gross value added at factor cost comprises the value of all produced goods and services at market prices – less all intermediate consumption. So it is the value added to intermediate consumption by processing. The relevant derivation is based on the following scheme:

Total turnover from own products, resale of goods and other activities (excl. turnover tax)

+ changes in stocks of work in progress and finished products of own production (e.g. production for stock)

+ own-account production of fixed assets

= **gross production value** (total output), excl. turnover tax

– material consumption, input of goods for resale, cost of contract work

= **net production value,** excl. turnover tax

– other intermediate consumption (e.g. industrial or craft services, agency workers, rents)

= **gross value added,** excl. turnover tax

– other taxes linked to production (e.g. real property tax, motor vehicle tax, excise duties)

+ subsidies on current production

= **gross value** added at factor cost

Enterprises[13] are used as statistical units to measure gross value added because the detailed information is only available for an enterprise as a whole rather than the individual local units.

Data for enterprises with 20 or more persons employed

The cost structure surveys conducted in industry, construction and energy supply are the main data source for calculating the weights in the production index (Statistisches Bundesamt, 2017b; Statistisches Bundesamt, 2017c; Statistisches Bundesamt, 2017d). The surveys cover enterprises with 20 or more persons employed. In the survey year 2015, these were approximately 16,000 enterprises in industry, roughly 6,000 in construction and about 2,000 in energy supply. The cost structure surveys collect detailed information on the economic situation of enterprises so that gross value added at factor cost can be directly calculated from the survey variables.

Data for smaller enterprises

The cost structure surveys only cover enterprises with 20 or more persons employed. To include smaller enterprises as well, supplementary structural surveys are conducted in the industry branches and the construction industry (Statistisches Bundesamt, 2017e, Statistisches Bundesamt, 2016b). Here enterprises with less than

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13 In the German official business statistics, the following definition of an enterprise has been used to date: "An enterprise is defined as the smallest legally independent unit which keeps accounts." See Redecker/Sturm, 2017, for the enterprise concept.

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20 persons employed are surveyed. The sample size in industry and construction amounts to 6,000 enterprises each, and the sampling fraction of the structural surveys ranges between 2 % and 3 %. To reduce the burden on smaller enterprises, the scope of variables is very limited in the structural surveys.

Data are not collected for the following variables needed to calculate gross value added at factor cost: changes in stocks (for instance the value of production for stock), the value of own-account production of fixed assets, and subsidies received. The missing variables must be estimated using factors which reflect the average relation between turnover and gross value added. These factors are derived from the results obtained for the smallest employment size class of the cost structure surveys (enterprises with 20 to 49 persons employed). They are applied to total turnover resulting from the grossed-up results of the structural surveys; the estimation is made at the level of individual data for enterprises. As a structural survey is not conducted in energy (electricity and gas) supply, the relevant weights are derived exclusively from the data for enterprises with 20 or more persons employed.

Table 1

Overview of the weighting pattern for the production index for industry

| | | Gross value added at factor cost | |
| | | % | |
		2015	2010
Industry (excl. E and D35.3)		100	100
B	Mining and quarrying	0.83	1.19
05	Mining of coal and lignite	0.25	0.57
06	Extraction of crude petroleum and natural gas	0.18	0.20
08	Other mining and quarrying	0.38	0.38
09	Mining support service activities	0.02	0.04
C	Manufacturing	79.79	79.24
10	Manufacture of food products	4.93	5.14
11	Manufacture of beverages	0.80	0.84
12	Manufacture of tobacco products	0.25	0.18
13	Manufacture of textiles	0.57	0.63
14	Manufacture of wearing apparel	0.32	0.38
15	Manufacture of leather and related products	0.10	0.13
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.97	1.04
17	Manufacture of paper and paper products	1.54	1.62
18	Printing and reproduction of recorded media	1.01	1.37
19	Manufacture of coke and refined petroleum products	0.60	1.04
20	Manufacture of chemicals and chemical products	5.90	6.37
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	2.39	2.68
22	Manufacture of rubber and plastic products	3.84	3.81
23	Manufacture of other non-metallic mineral products	2.27	2.32
24	Manufacture of basic metals	2.90	3.09
25	Manufacture of fabricated metal products, except machinery and equipment	7.41	7.32
26	Manufacture of computer, electronic and optical products	4.41	4.00
27	Manufacture of electrical equipment	5.54	6.37
28	Manufacture of machinery and equipment n.e.c.	12.73	12.17
29	Manufacture of motor vehicles. trailers and semi-trailers	14.16	11.62
30	Manufacture of other transport equipment	1.81	1.62
31	Manufacture of furniture	1.06	1.17
32	Other manufacturing	2.16	2.16
33	Repair and installation of machinery and equipment	2.12	2.17
D	Electricity and gas supply (excl. D 35.3)	5.34	8.34
F	Construction	14.04	11.24
	Construction of buildings (41.2 + 43.1 + 43.9)	4.34	3.32
	Civil engineering (42)	1.69	2.03
	Building completion (41.1. + 43.2 + 43.3)	8.01	5.89

Classification of Economic Activities, 2008 edition (WZ 2008).

Weighting patterns for the base years 2010 and 2015

↘ Table 1 provides an overview of the weighting structures for the last two base years.[14] In the two largest economic branches, namely the manufacture of machinery and equipment and the manufacture of motor vehicles, trailers and semi-trailers, the proportion of gross value added partly increased significantly between 2010 and 2015. This means that concentration of gross value added in the large economic branches has grown. Other branches with a markedly increased proportion of gross value added include the manufacture of tobacco products, the manufacture of other transport equipment, the manufacture of computer, electronic and optical products and the manufacture of fabricated metal products, except machinery and equipment.

In mining and quarrying, the proportion of gross value added declined significantly in the same period. This was mainly attributable to the development of mining of coal and lignite (especially mining of hard coal). Regarding electricity, gas, steam and air conditioning supply (here the production index only includes the two major branches of electric power generation, transmission and distribution as well as the manufacture of gas, distribution of gaseous fuels through mains), the relevant proportion of gross value added decreased, too. Electric power generation etc. was by far the larger item with a weight of just under 5%. Although in 2015, its turnover was one third above the relevant turnover in 2010, intermediate consumption increased even more markedly (e.g. due to higher market prices for fuel procurement). Therefore gross value added declined by just over a quarter in the same period. Regarding the manufacture of gas and distribution of gaseous fuels through mains, a decline was recorded in both gross value added and turnover.

As they are represented by percentage weights, the shares of some economic branches of the production index in total gross value added of industry have declined although the absolute gross value added of these branches has increased.

Percentage weight changes are partly also attributable to the fact that the above methodological change in weight calculation has led to an increased proportion of value added in the construction industry. Due to the methodological change, the weights of the construction industry in Table 1 that are indicated for the base year 2010 are not comparable with those for the base year 2015. Table 2 contains percentage weights for the base year 2010 which were not applied in production index calculation on base 2010, but were computed using the same method as for the 2015 values (see the paragraph on Data for smaller enterprises). For this reason they can be compared with the current values. According to this calculation, the proportion of value added increased in all branches of the construction industry, especially in building completion work and building construction. ↘ Table 2

Table 2
Methodologically comparable weights of the construction industry in the production index for industry

		Gross value added at factor cost	
		%	
		2015	2010
F	Construction	14.04	11.67[1]
	Construction of buildings (41.2 + 43.1 + 43.9)	4.34	3.75[1]
	Civil engineering (42)	1.69	1.58[1]
	Building completion (41.1 + 43.2 + 43.3)	8.01	6.34[1]

Classification of Economic Activities, 2008 edition (WZ 2008).
1 The marked values are intended as additional information; they were not used in production index calculation on base 2010.

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14 The mining of metal ores (branch of economic activity 07) is not mentioned as its weight is zero in statistical calculation.

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5

Index of turnover in industry

The turnover index measures the monthly development of price adjusted turnover in the industry branches.

Turnover comprises the total final invoice amounts (excl. turnover tax) for supplies and services provided to other local units or enterprises. Supplies and services among local units of the same enterprise are not considered in turnover calculation. A distinction is made between turnover generated in relation to other domestic enterprises, enterprises in the euro area and enterprises in

Table 3

Overview of the weighting patterns for the index of turnover in industry

		Total turnover in the base year							
		Total		Domestic territory		Euro area		Other countries	
		%							
		2015	2010	2015	2010	2015	2010	2015	2010
B + C	Industry	100	100	50.77	53.27	20.18	20.56	29.05	26.16
B	Mining and quarrying	0.40	066	0.13	0.59	0.01	0.04	0.00	0.03
05	Mining of coal and lignite	0.14	0.25	0.13	0.24	0.01	0.00	0.00	0.00
06	Extraction of crude petroleum and natural gas	0.13	0.23	0.01	0.22	0.01	0.00	0.01	0.00
08	Other mining and quarrying	0.11	0.16	0.01	0.10	0.01	0.03	0.01	0.02
09	Mining support service activities	0.02	0.03	0.00	0.02	0.00	0.01	0.00	0.00
C	Manufacturing	99.60	99.34	50.40	52.68	20.14	20.52	29.03	26.13
10	Manufacture of food products	8.44	8.44	6.48	6.70	1.39	1.28	0.57	0.46
11	Manufacture of beverages	1.18	1.22	1.03	1.09	0.08	0.09	0.06	0.05
12	Manufacture of tobacco products	0.44	0.56	0.34	0.46	0.05	0.06	0.05	0.04
13	Manufacture of textiles	0.67	0.70	0.33	0.38	0.18	0.17	0.15	0.15
14	Manufacture of wearing apparel	0.45	0.47	0.30	0.28	0.09	0.12	0.07	0.07
15	Manufacture of leather and related products	0.18	0.20	0.12	0.14	0.03	0.04	0.03	0.02
16	Manufacture of wood and of products of wood and cork. except furniture; manufacture of articles of straw and plaiting materials	1.05	1.04	0.78	0.74	0.16	0.20	0.11	0.11
17	Manufacture of paper and paper products	2.39	2.64	1.44	1.59	0.56	0.61	0.39	0.44
18	Printing and reproduction of recorded media	0.88	1.09	0.74	0.90	0.08	0.12	0.07	0.07
19	Manufacture of coke and refined petroleum products	2.58	3.43	2.26	3.13	0.21	0.17	0.09	0.13
20	Manufacture of chemicals and chemical products	7.82	8.33	3.21	3.66	2.01	2.09	2.59	2.58
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	2.33	2.38	0.80	0.90	0.65	0.75	0.87	0.72
22	Manufacture of rubber and plastic products	4.36	4.24	2.58	2.56	1.00	0.94	0.78	0.75
23	Manufacture of other non-metallic mineral products	1.79	1.85	1.23	1.27	0.28	0.31	0.27	0.28
24	Manufacture of basic metals	5.92	6.61	3.50	4.13	1.36	1.42	1.05	1.05
25	Manufacture of fabricated metal products. except machinery and equipment	6.13	5.80	4.06	3.93	1.11	1.09	0.98	0.78
26	Manufacture of computer. electronic and optical products	4.63	4.77	1.77	2.06	0.92	0.96	1.95	1.75
27	Manufacture of electrical equipment	5.28	5.43	2.55	2.79	1.12	1.24	1.60	1.40
28	Manufacture of machinery and equipment	13.66	12.35	5.29	4.76	2.83	2.60	5.57	4.98
29	Manufacture of motor vehicles. trailers and semi-trailers	21.25	19.97	7.48	7.33	4.04	4.30	9.71	8.33
30	Manufacture of other transport equipment	2.96	2.53	1.02	0.80	1.12	1.03	0.81	0.70
31	Manufacture of furniture	1.15	1.16	0.79	0.83	0.22	0.22	0.14	0.11
32	Other manufacturing	1.41	1.26	0.60	0.57	0.27	0.27	0.53	0.41
33	Repair and installation of machinery and equipment	2.65	2.87	1.70	1.67	0.36	0.46	0.60	0.73

Classification of Economic Activities. 2008 edition (WZ 2008).

other countries. Monthly data are collected in a monthly survey of industrial local units with 50 or more persons employed. In 2015, these were slightly less than 23,000.[15] Methodological changes were not made in the turnover index when the new base year 2015 was adopted. The respective adjustments only referred to the normalisation of the indices and updating of the weighting pattern. As far as weighting is concerned, the same turnover data are used as for the relevant variable in branch index calculation. The weights are derived from average total turnover calculated as the average across all months of the base year in the given economic branches. Regarding the turnover index, roughly 240 branch indices are computed for the industrial classes of the Classification of Economic Activities, each for the domestic territory, the euro area and other countries. ↘ **Table 3** provides an overview of the weighting structures for 2010 and 2015.

On the whole, domestic turnover and turnover within the euro area have become less important in the turnover index, while the importance of turnover generated in relation to other countries has markedly increased in nearly all economic branches. Due to different concepts of measurement, there are also some differences between the turnover index and the production index regarding the development of the percentage weights of economic branches. In the production index, gross value added is used for weight calculation and enterprises serve as the statistical units for the relevant measurements. In the turnover index, however, so-called kind-of-activity units are formed to calculate turnover shares. A kind-of-activity unit comprises an establishment's economic activities that belong to a given class of the Classification of Economic Activities (establishments are local units of enterprises). Turnover measured in this way is more homogeneous and, for instance, does not include the turnover of other establishment or enterprise units which focus on trade or transport activities. When the total turnover of an economic branch is calculated, however, the turnover of the relevant economic activity generated by enterprises of other branches is also taken into consideration.

As far as the manufacture of tobacco products is concerned, for example, the percentage weight of the turno-

ver index decreased, whereas gross value added was markedly higher in 2015 compared with five years earlier. When we look at the total turnover of enterprises instead of the turnover of kind-of-activity units, an increase was recorded for the former. The enterprises which, in accordance with their main activity, were allocated to the 'manufacture of tobacco products' branch of economic activity, hence increased their turnover by other (especially trading) activities. By contrast, a decline was recorded in the total kind-of-activity related turnover of local units manufacturing tobacco products (at least regarding sales to customers in the domestic territory and the euro area).

6

Index of new orders in manufacturing

The index of new orders measures the monthly development of the value of new orders in enterprises in selected branches of manufacturing. New orders are all orders definitely accepted by the establishments in the reference month which refer to the supply of products manufactured either by themselves or through contract work. Here again a distinction is made between orders received from enterprises in the domestic territory, the euro area or other countries. The methods of data collection, index calculation, price adjustment and weighting scheme specification are the same as those used in turnover index construction. The average value of new orders across the months of the base year is used for weighting purposes. When the new base year was adopted, methodological changes were made neither in the index of new orders. To construct the index of new orders in manufacturing, roughly 130 branch indices are calculated for selected industrial classes of the Classification of Economic Activities, each for the domestic territory, the euro area and other countries. The current weighting structures and those of the previous base year are shown in ↘ **Table 4**.

Differences in comparison to the development of the turnover index percentage weights are attributable to the differently defined reference variable of the relevant percentages. While the reference variable in the new orders index is the total of new orders in selected economic branches, all industry branches are included in the

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15 See Statistisches Bundesamt, 2014, for data collection. See Bald-Herbel, 2013, here: p. 195 ff., for detailed information on turnover index construction.

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Table 4

Overview of the weighting patterns for the index of new orders in manufacturing

		Total of new orders in all economic branches included in the base year							
		Total		Domestic territory		Euro area		Other countries	
		%							
		2015	2010	2015	2010	2015	2010	2015	2010
Parts of manufacturing included		100	100	43.12	44.84	21.66	22.68	35.22	32.48
13	Manufacture of textiles	0.91	0.96	0.45	0.52	0.25	0.24	0.21	0.20
14	Manufacture of wearing apparel	0.65	0.67	0.42	0.41	0.14	0.16	0.11	0.10
17	Manufacture of paper and paper products	3.29	3.64	1.97	2.18	0.76	0.85	0.55	0.61
20	Manufacture of chemicals and chemical products	10.27	11.19	4.27	4.87	2.67	2.78	3.34	3.55
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	3.23	3.17	1.09	1.20	0.92	1.00	1.22	0.97
24	Manufacture of basic metals	7.67	9.18	4.58	5.64	1.82	2.12	1.28	1.42
25	Manufacture of fabricated metal products. except machinery and equipment	8.41	8.00	5.54	5.36	1.54	1.55	1.34	1.09
26	Manufacture of computer. electronic and optical products	6.40	6.90	2.44	2.92	1.30	1.37	2.64	2.61
27	Manufacture of electrical equipment	7.43	7.55	3.57	3.98	1.58	1.63	2.29	1.95
28	Manufacture of machinery and equipment	19.15	18.18	7.27	6.82	4.06	3.72	7.80	7.64
29	Manufacture of motor vehicles. trailers and semi-trailers	28.33	27.01	10.16	9.78	5.01	5.83	13.16	11.40
30	Manufacture of other transport equipment	4.26	3.53	1.36	1.17	1.60	1.41	1.30	0.95

Classification of Economic Activities, 2008 edition (WZ 2008).

turnover index. Furthermore, the cyclical development of new orders may deviate from that of turnover. In 2010 when many branches had passed through the depths of the financial and economic crisis, a very strong upswing was observed. During that upward trend, for instance, the total of new orders was higher than total turnover

Figure 3

Trend development (BV 4.1 trends) of the indices of new orders and turnover in the "manufacture of machinery and equipment" branch
2015 = 100
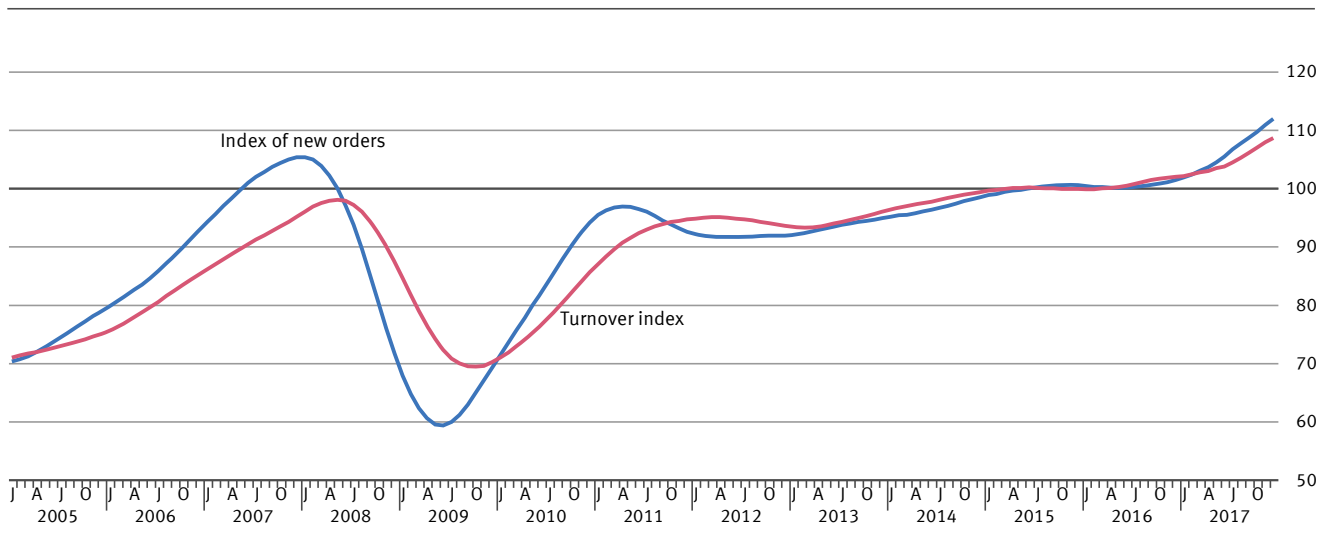
BV 4.1: Berliner Verfahren version 4.1 – seasonal adjustment and trend calculation method used by the Federal Statistical Office.

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in the manufacture of machinery and equipment. By comparison, economic development was rather weak in 2015, and the relevant difference between new orders and turnover was smaller. Due to the lead of new orders over turnover in 2010, the total value of orders in the manufacture of machinery and equipment rose less markedly than total turnover between 2010 and 2015. ↘ Figure 3 shows the cyclical development of the manufacture of machinery and equipment.

7

Index of the stock of orders in manufacturing

Since January 2014 information has been collected on the stock of orders in conjunction with the survey of new orders (Linz et al, 2016). So far, the results of the stock of orders have only been presented as monthly year-on-year rates of change of the total value of the stock of orders in a breakdown by groups (three-digit headings) of the Classification of Economic Activities, and as ranges. As of March 2018, however, the results of the stock of orders will be published in the form of a stock of orders index. The index series begins in January 2015 (Statistisches Bundesamt, 2018a, 2018b).[16] The data sources, methods and breakdowns used for calculation coincide with those of the index of new orders (including seasonal adjustment). As far as the stock of orders is concerned, however, a distinction is only made between the domestic territory and other countries; there is no further breakdown by euro and non-euro area. The weights of the stock of orders index are derived from the average stock of orders across the months of the base year 2015. Like the index of new orders, the index of the stock of orders in manufacturing is based on roughly 130 branch indices calculated each for the domestic territory and for other countries. ↘ Table 5 provides an overview of the weighting structure for the base year 2015.

Concentration of high values in a small number of large economic branches is very pronounced in the index of the stock of orders; this refers especially to orders from abroad. The three largest branches, namely the manufacture of machinery and equipment, the manufacture of motor vehicles, trailers and semi-trailers, and the manufacture of other transport equipment account for

16 Date regarding the index of the stock of orders are provided in Table 42155 and data on ranges in Table 42113 of the GENESIS-Online database (www.destatis.de/genesis).

Table 5
**Overview of the weighting pattern for the index of the stock of orders in manufacturing**

		Total of the stock of orders in all economic branches included in the base year 2015		
		Total	Domestic territory	Other countries
		%		
Parts of manufacturing included		100	32.71	67.29
13	Manufacture of textiles	0.32	0.16	0.17
14	Manufacture of wearing apparel	0.38	0.22	0.17
17	Manufacture of paper and paper products	0.71	0.38	0.34
20	Manufacture of chemicals and chemical products	1.88	0.75	1.13
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	0.85	0.15	0.70
24	Manufacture of basic metals	4.51	2.40	2.12
25	Manufacture of fabricated metal products, except machinery and equipment	6.70	4.00	2.68
26	Manufacture of computer, electronic and optical products	5.02	1.89	3.12
27	Manufacture of electrical equipment	6.11	2.88	3.23
28	Manufacture of machinery and equipment	29.64	8.71	20.95
29	Manufacture of motor vehicles, trailers and semi-trailers	14.96	5.58	9.38
30	Manufacture of other transport equipment	28.92	5.59	23.29

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nearly 80 % of the total amount of the stock of orders. In other branches, for instance the manufacture of wearing apparel, of chemicals and chemical products or of basic pharmaceutical products and pharmaceutical preparations, the products are less "tailor-made". These products can rather be produced for stock and directly be sold so that large stocks of orders do not occur. Just-in-time production can be expected to play an important role among producers of intermediate goods like those engaged in the manufacture of basic metals. Here products are delivered on call, that is, again promptly after an order has come in.

↘ Figure 4 shows the development of the seasonally adjusted index of the stock of orders since January 2015.

Figure 4
Seasonally adjusted stock of orders
2015 = 100

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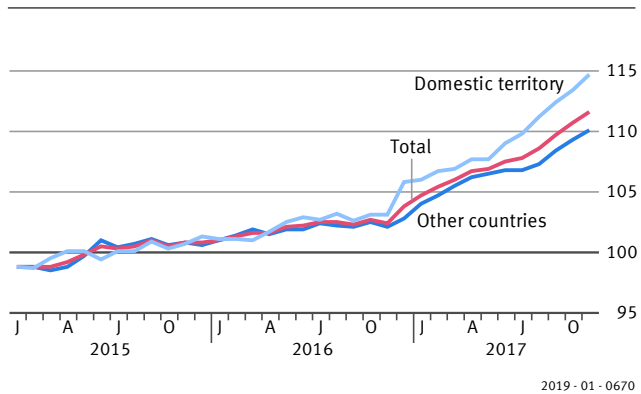
Since the end of 2016, the seasonally adjusted month-on-month increase in the index of the stock of orders has been more marked for the domestic territory than for other countries. In absolute terms, the total of orders received from abroad and not yet completed has been about twice as high as the total of open domestic orders. The stock of domestic orders showed a slight trend towards catching up in 2017. ⊞

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LEGAL BASIS

Gesetz über die Statistik im Produzierenden Gewerbe in der Fassung der Bekanntmachung vom 21. März 2002 (BGBl. I Seite 1181), das zuletzt durch Artikel 271 der Verordnung vom 31. August 2015 (BGBl. I Seite 1474) geändert worden ist.

Council Regulation (EC) No 1165/98 of 19 May 1998 concerning short-term statistics (OJ EC L 162, p. 1).

Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains (OJ EU L 393, p. 1).

Abbriviations

WISTA	=	Wirtschaft und Statistik
JD	=	annual average
D	=	average (for values which cannot be added up)
Vj	=	quarter of a year
Hj	=	half-year
a. n. g.	=	not elsewhere classified
o. a. S.	=	no main economic activity
St	=	piece
Mill.	=	million
Mrd.	=	billion

Explanation of symbols

–	=	no figures or magnitude zero
0	=	less than half of 1 in the last digit occupied, but more than zero
.	=	numerical value unknown or not to be disclosed
. . .	=	data will be available later
X	=	cell blocked for logical reasons
I or —	=	fundamental change within a series affecting comparisons over time
/	=	no data because the numerical value is not sufficiently reliable
( )	=	limited informational value because numerical value is of limited statistical reliability