

Short-term industrial business statistics in Turkey

The aim of this short publication is to compare and contrast industrial developments in Turkey with those of the European Union (EU-27) as a whole. There has been a considerable improvement in the transmission of Turkish short-term industrial business statistics to Eurostat in recent years, and this is expected to continue in the coming months.

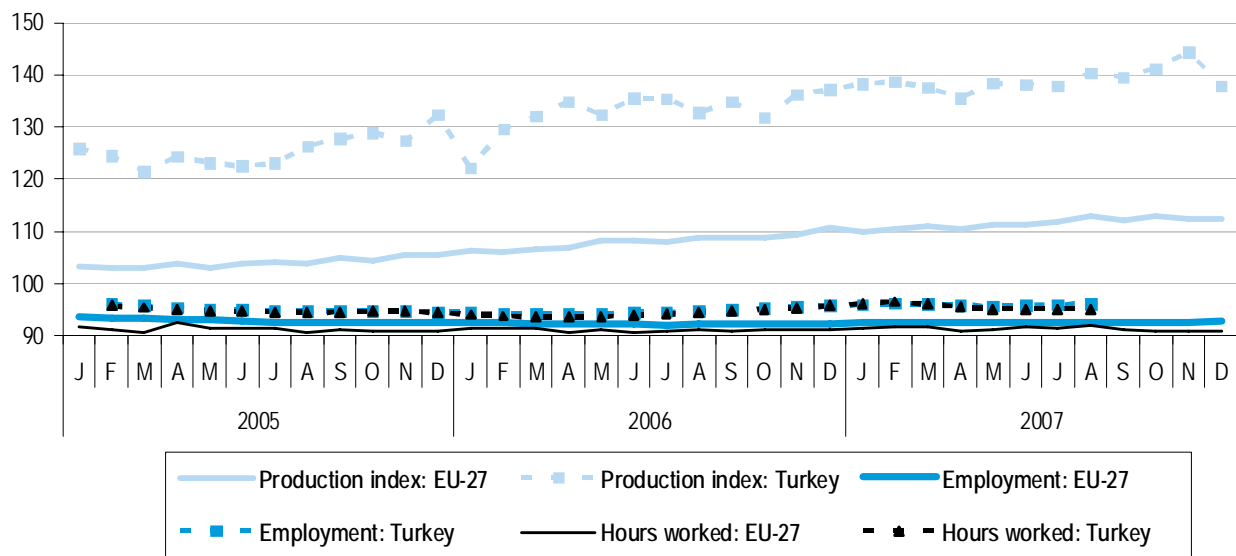
In this publication the evolution of industrial developments in Turkey is also compared with the two Member States that most recently joined the EU, Bulgaria and Romania, as well as another candidate country, Croatia, from whom Eurostat also receives a range of indicators. The comparison is based on short-term business statistics that are a vital tool for the analysis of business cycles.

The seasonally adjusted EU-27 index of production generally followed a gradual upward trend over the period 2005 to 2007; the index was at its lowest level (103.0) in March and May 2005 and at its highest level (112.9) in August and October 2007.

The seasonally adjusted Turkish production index also followed an upward trend with more accentuated changes and was sometimes punctuated by sharp decreases: for example, -7.6 % in January 2006 (compared with the month before) or -4.6 % in December 2007.

During the period studied, the EU-27's and Turkish seasonally adjusted employment indices initially followed a downward trend until signs of modest increases in the level of industrial employment from the second quarter of 2006 for Turkey and the fourth quarter of 2006 for the EU-27. The relative stability of employment indices compared with generally increasing industrial output suggests that productivity in both the EU-27 and Turkey was rising during the period considered.

Figure 1: Key indicators, seasonally adjusted (2000=100) (1)

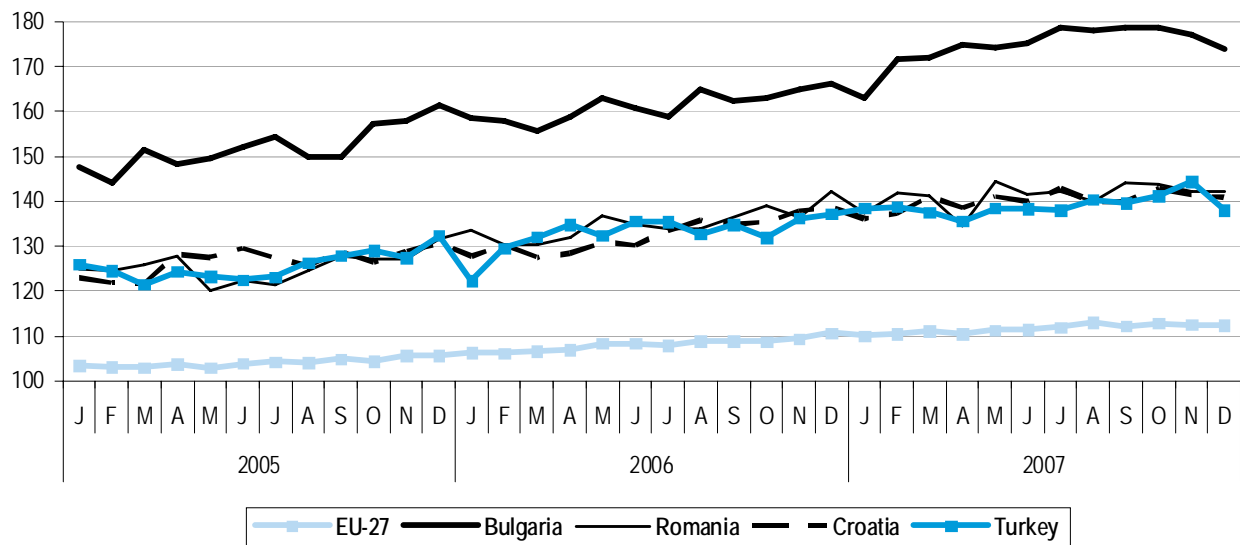


Source: Eurostat (STS)

(1) Production index: industry; employment and hours worked, manufacturing. Employment and hours worked for Turkey: quarterly series.

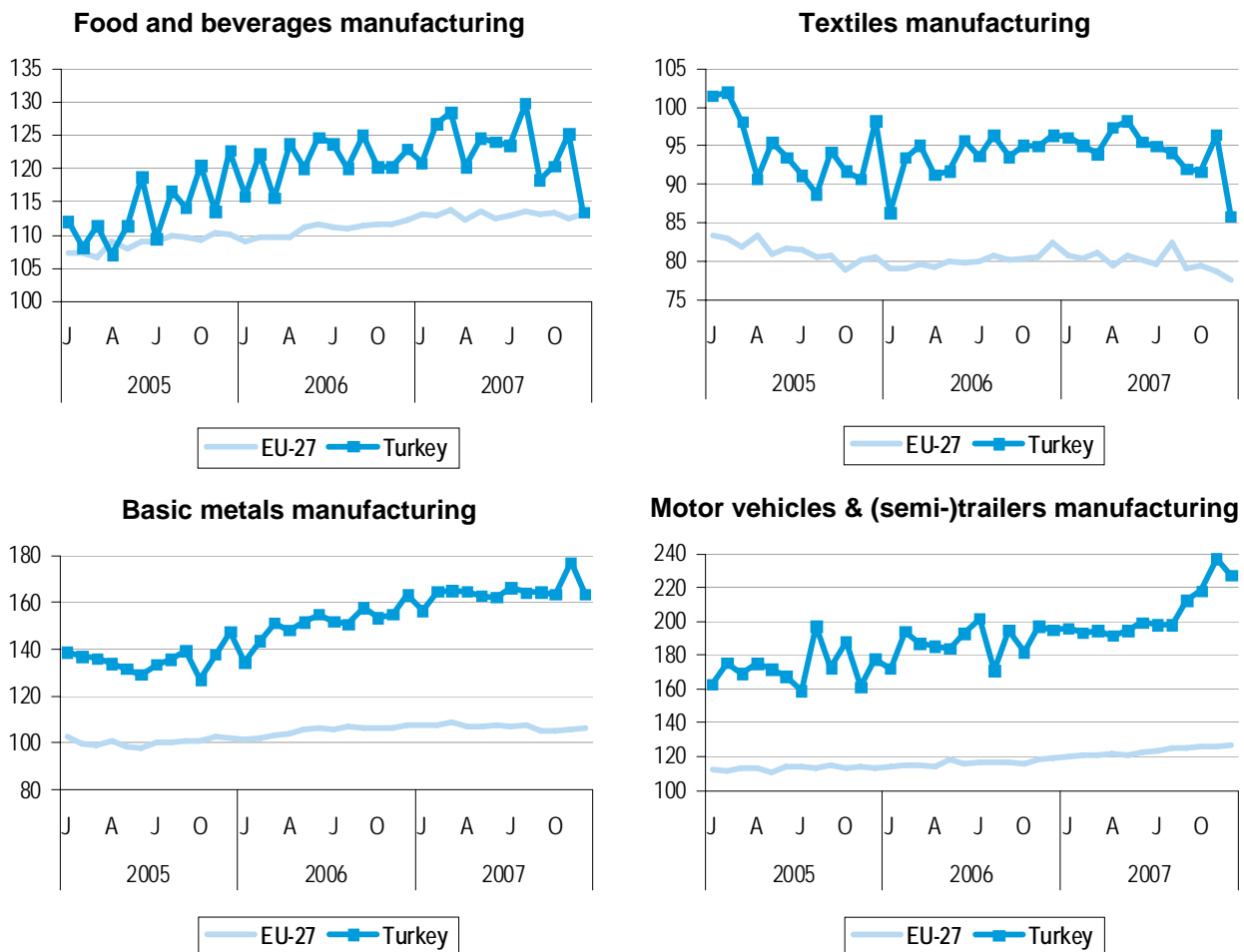
Industrial production

Figure 2: Production index, industry, seasonally adjusted (2000=100)



Source: Eurostat (STS)

Figure 3: Production index, seasonally adjusted (2000=100) (1)



Source: Eurostat (STS)

(1) Note that a different scale has been used for each graph.

All of the countries shown in Figure 2 displayed an increasing trend in industrial output between January 2005 and December 2007. In relation to the base year of 2000, the highest output gains were recorded in Bulgaria, while the rates of change in the industrial economies of Croatia, Romania and Turkey were very similar; the output of the EU-27 grew in comparison at a lower rate.

A comparison of industrial production indices for specific manufacturing activities between the EU-27 and Turkey shows that production indices for Turkey tended to remain at a higher level than in the EU. The evolution of output for food and beverages manufacturing in Turkey followed a rather erratic development, the index (2000=100) ranging between a high of 129.8 in August 2007 and a low of 107.0 in April 2005 (the only time that a Turkish index was below the corresponding EU-27 figure among the four activities covered in Figure 3). Two considerable reductions in the output of food and beverages during 2007 led to the Turkish index returning to the same level as for the EU-27 by the end of the period considered.

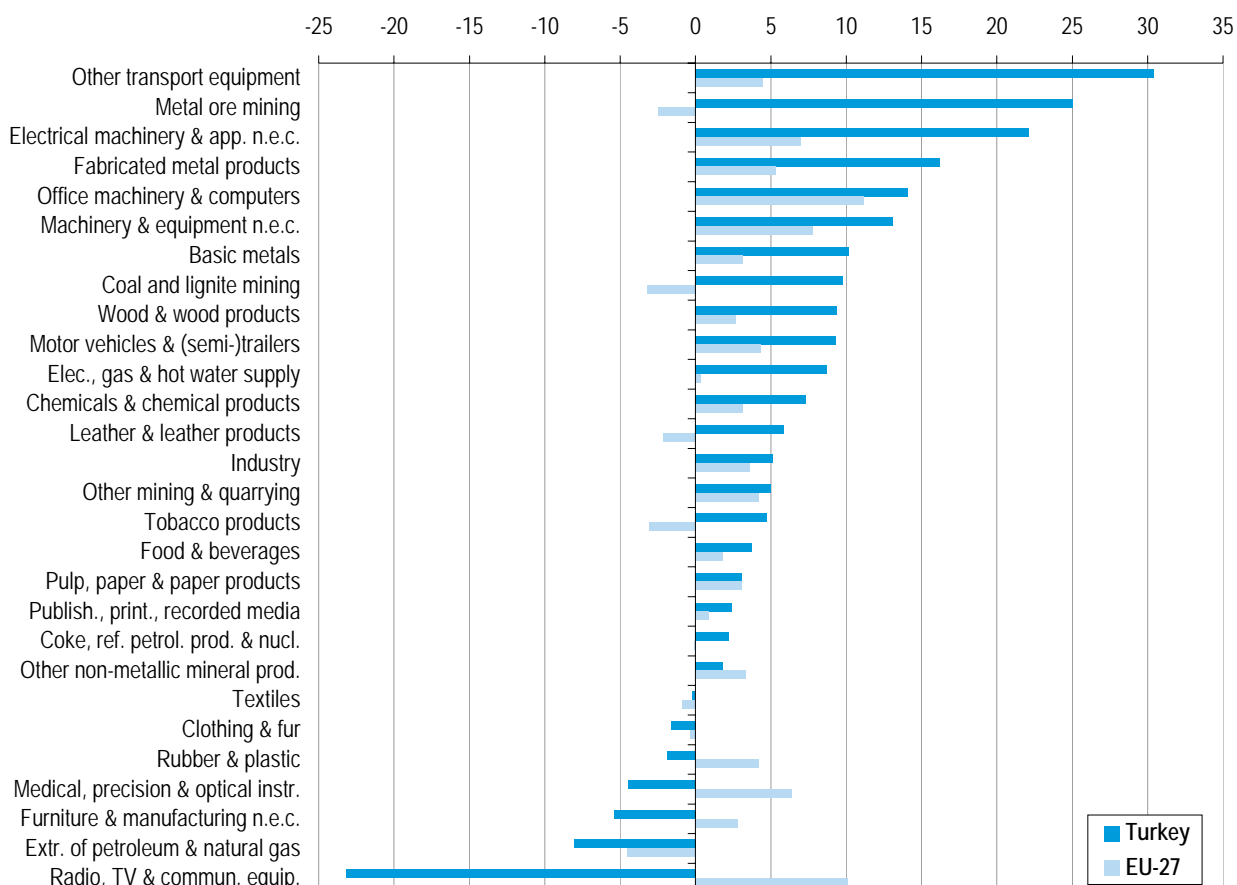
Both the EU-27 and Turkey recorded contractions in their output of textiles. Turkey reported a more erratic evolution, with particularly large reductions in April 2005 (-7.6 %), January 2006 (-12.2 %) and December 2007 (-11.0 %). These losses contributed towards an overall reduction of 15.4 % in Turkish production between the

start of 2005 and the end of 2007 (compared with a loss of 7.0 % for the EU-27).

While there was little overall change in the production index for basic metals in either the EU-27 or Turkey during 2005, the index for Turkey subsequently progressed by 10.8 % during 2006, growing at a slower pace in 2007, with the maximum value for this series (during the period studied) being recorded in November 2007. Between January 2005 and December 2007 the production index for basic metals manufacturing rose overall by 3.5 % for the EU-27 and 17.9 % for Turkey.

Although erratic in terms of its development, the Turkish index of production for motor vehicles and (semi-)trailers manufacturing rose overall by approximately 20 % between the start of 2005 and the end of 2006. However, output growth quickened in the second half of 2007, as production rose by 19.8% from August to November. Among the four activities for which data are shown in Figure 3, motor vehicles and (semi-)trailers manufacturing recorded the highest production gains during the period studied for both the EU-27 and Turkey. Output rose overall by 12.2 % for the EU-27 between January 2005 and December 2007, while the corresponding rate for Turkey was more than three times as high (39.5 %).

Figure 4: Production index, average annual rate of change, working day adjusted, 2005-2007 (%) (1)



(1) NACE divisions 12, 37 and 41, incomplete information.

Source: Eurostat (STS)

Manufacturing employment and hours worked

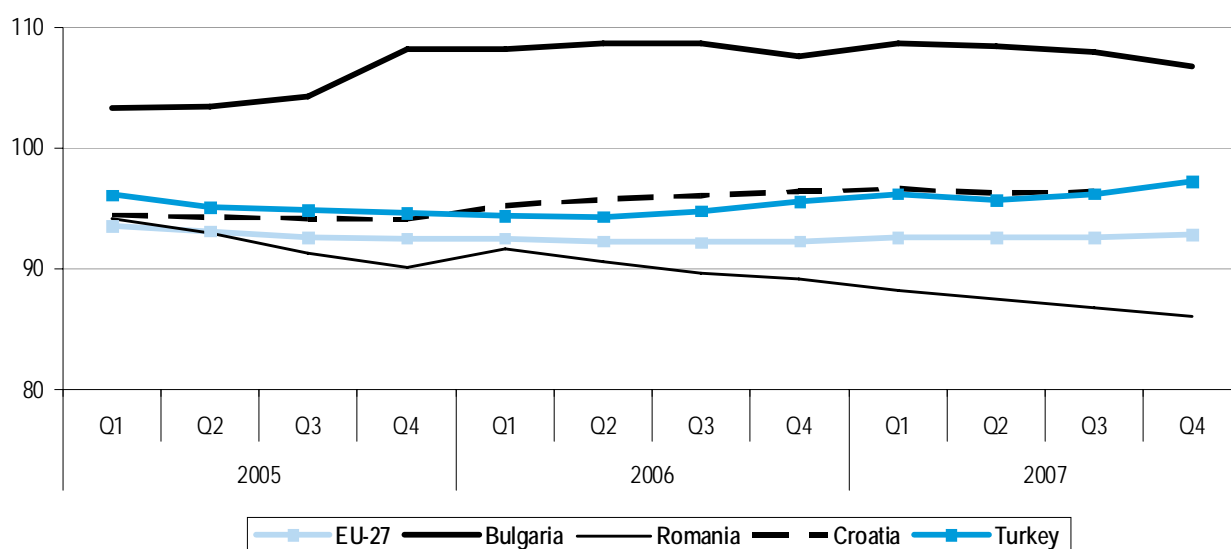
The seasonally adjusted manufacturing indices of employment and hours worked, unsurprisingly, followed a more stable evolution when compared with developments in output.

Indeed, there was only a slight change in manufacturing employment levels in Turkey from the start of 2005 through to the final quarter of 2007 (+1.1 % overall), with a gradual increase in persons employed from a low in the first quarter of 2006. The index of employment for EU-27 manufacturing reached a low in the third quarter of 2006, after which there was also a modest recovery, although the total number of persons employed fell overall by 0.8 % from the start of 2005 to the end of 2007.

Among those countries shown in Figure 5, the most pronounced reductions in manufacturing employment were recorded in Romania, where the manufacturing workforce contracted by 8.5 % overall between the start of 2005 and the final quarter of 2007.

The manufacturing employment index for Bulgaria stood out from the remaining series insofar as its level remained well above the base level (2000=100). Bulgaria recorded an expansion in its manufacturing workforce (+3.3 % overall between the first quarter of 2005 and the final quarter of 2007); while Croatia also recorded an overall gain in persons employed, equal to 2.0 % (through to the third quarter of 2007).

Figure 5: Employment index, manufacturing, seasonally adjusted (2000=100)



Source: Eurostat (STS)

Table 1: Hours worked index, quarter on quarter rate of change, manufacturing, seasonally adjusted, (%) (1)

	2005			2006				2007			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
EU-27	0.5	-0.8	-0.1	0.4	-0.6	0.2	0.2	0.3	-0.1	0.2	-0.3
Bulgaria	1.1	0.8	2.9	0.8	0.4	-0.7	-0.2	1.2	0.0	0.2	-0.8
Romania	-0.5	-2.3	-1.1	1.8	-1.1	-1.2	-0.6	-0.6	-0.8	-1.2	-0.7
Turkey	-1.1	-0.3	0.3	-1.0	-0.1	0.8	1.0	1.2	-1.5	0.1	1.3

Source: Eurostat (STS)

(1) Croatia, not available.

The evolution of the index of hours worked fluctuated slightly more than that for employment (perhaps as a result of overtime being used/refused in peak/slack periods, while employers may be less prone to hire/fire in response to short-term changes in demand). As such, it is perhaps not surprising to find that the hours worked index for manufacturing in Bulgaria followed an atypical pattern, reaching a high of 111.1 in the third quarter of 2007 and remaining well above its base value of 2000=100. Hours worked remained relatively stable between the start of 2005 and the end of 2007 for most of the other countries for which data are available, although there was a relatively large contraction in hours worked in Romania between the start of 2005 and the end of 2007 (-8.2 %).

The evolution of the seasonally adjusted number of hours worked in manufacturing followed a similar pattern in Turkey and the EU-27, as both recorded their minimum value in the second quarter of 2006, after which the number of hours worked tended to rise slowly back towards the level recorded at the start of 2005.

Table 2 shows in more detail (NACE divisions) the latest evolution of employment and hours worked indices for Turkey and the EU-27. Across the four quarters of 2007, the manufacture of electrical machinery and apparatus n.e.c. recorded by far the highest employment growth in Turkey, with gains of close to 5 % in each quarter (compared with the quarter before). There were also considerable expansions in the number of persons

employed in Turkey for the manufacture of motor vehicles & (semi-)trailers manufacturing and coke, refined petroleum products and nuclear fuel (largely as a result of very high growth in the third quarter of 2007). On the downside, there were considerable and persistent job losses recorded for radio, television & communication equipment manufacturing.

The change in employment levels in the EU-27 fluctuated much less than for Turkey. The biggest increases in EU-27 employment (averaged over the four quarters of 2007) were reported for the manufacture of fabricated metal products and for the manufacture of machinery and equipment n.e.c., with gains of 0.5 % or more each quarter. The most rapid contraction of labour in the EU-27 was recorded for the manufacture of clothing and fur products, textiles, and tobacco products.

There were sometimes quite large disparities between the evolution of employment and hours worked indices during 2007. For example, while the number of persons employed in the motor vehicle manufacturing sector rose in Turkey, the number of hours worked fell (in the second and third quarters – although there was a big correction in the final quarter of the year). In a similar vein, tobacco manufacturing in the EU-27 reported the largest average decline in persons employed, while registering almost no change in hours worked. These anomalies were, however, generally against the rule, as hours worked and employment tended to evolve along similar paths.

Table 2: Labour input indicators, quarter on quarter rate of change, seasonally adjusted, 2007 (%) (1)

		Employment								Hours worked							
		Turkey				EU-27				Turkey				EU-27			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Manufacturing	D	0.7	-0.6	0.6	1.0	0.3	0.0	0.1	0.2	1.2	-1.5	0.1	1.3	0.2	-0.1	0.2	-0.2
Electrical machinery & app. n.e.c.	31	5.3	5.0	5.4	5.6	1.0	-0.1	0.6	0.1	7.9	3.5	1.7	5.4	0.3	0.0	0.6	-0.3
Motor vehicles & (semi-)trailers	34	2.5	0.4	2.8	5.2	0.2	0.3	0.0	0.6	0.4	-1.1	-2.6	11.1	0.7	0.4	0.5	-0.1
Coke, ref. petrol. prod. & nucl. fuel	23	-0.4	0.2	6.4	1.5	0.7	-0.4	0.0	-1.0	1.1	0.4	4.7	0.6	0.0	0.6	0.3	0.4
Rubber & plastic	25	1.1	0.7	1.7	3.3	0.5	0.7	0.5	0.2	1.4	0.6	1.7	2.5	0.5	0.4	0.5	0.3
Basic metals	27	3.2	-1.3	1.2	2.5	-0.2	-0.2	0.7	0.1	2.7	-2.3	1.8	2.5	0.3	-1.2	0.5	0.1
Tobacco products	16	1.9	-3.8	-4.5	11.0	-5.5	-2.8	0.0	-0.2	7.3	-8.5	-11.7	32.3	1.2	-2.1	0.7	-1.8
Machinery & equipment n.e.c.	29	1.7	-0.7	-0.6	3.8	0.6	1.2	0.6	0.7	0.6	-1.0	-2.4	4.7	0.6	0.7	0.7	0.6
Fabricated metal products	28	-1.2	0.0	1.4	3.4	1.4	0.7	0.5	0.9	0.6	0.0	0.8	2.3	0.9	0.6	0.9	0.2
Publish., print., recorded media	22	-3.2	-1.5	5.2	2.6	0.2	-0.5	-0.3	0.0	-1.4	-2.5	4.3	3.0	0.3	-0.6	0.1	0.0
Other non-metallic mineral prod.	26	1.6	-1.7	1.3	0.9	1.3	0.0	0.2	0.5	3.0	-2.9	1.4	1.0	1.8	-1.3	0.4	-0.8
Pulp, paper & paper products	21	1.4	-0.9	2.0	-0.9	-1.1	0.5	-1.6	-0.3	2.5	-3.1	1.9	-0.4	-0.5	-0.4	-0.9	-0.8
Food & beverages	15	4.4	-1.7	0.0	-1.7	-0.3	0.0	0.5	0.2	6.3	-2.5	-1.0	-1.3	0.0	-0.2	0.1	-0.3
Other transport equipment	35	-3.8	1.3	0.5	3.1	0.8	0.3	0.8	1.1	-1.7	0.3	1.4	2.1	0.6	0.8	0.7	0.6
Furniture & manufacturing n.e.c.	36	-0.3	-1.8	-1.4	3.5	-0.3	0.0	0.1	-0.1	0.9	-1.2	-2.0	7.9	0.4	-0.2	-0.3	-0.3
Wood & wood products	20	-4.4	-1.2	1.0	3.3	0.0	-0.5	0.3	-0.1	-3.6	-1.9	2.8	2.2	-0.7	-0.8	0.6	-1.2
Clothing & fur	18	-3.5	-2.4	2.3	2.2	-1.0	-1.4	-2.5	-2.0	-3.2	-3.2	3.5	0.2	-1.3	-1.3	-2.0	-1.8
Medical, precision & optical instr.	33	1.0	-3.7	-3.3	4.2	0.8	1.0	-0.1	0.2	0.6	-5.1	-3.4	8.1	1.5	-0.6	1.1	0.0
Textiles	17	1.5	-2.9	-0.4	-0.7	-2.1	-2.0	-1.6	-1.2	2.3	-2.1	-0.9	-1.9	0.9	-2.5	-0.3	-2.0
Chemicals & chemical products	24	-3.8	0.3	1.0	-0.1	0.0	-0.4	0.3	-0.4	-4.8	-1.4	2.4	-0.4	-0.2	-0.4	-0.4	-0.2
Leather & leather products	19	2.0	-5.7	2.6	-1.9	-0.5	-1.0	-1.4	-1.3	0.9	-4.3	0.2	-1.1	-1.1	-1.5	-1.7	-1.4
Office machinery & computers	30	7.7	-16.1	-0.2	-9.1	0.4	0.1	0.1	-0.1	7.8	-16.8	-4.2	2.7	3.1	-0.8	0.7	-1.0
Radio, TV & commun. equip.	32	-9.8	-9.5	-10.7	-4.9	-1.1	0.0	0.8	0.0	-11.3	-6.0	-2.0	-12.2	0.4	-1.7	1.3	-0.7

Source: Eurostat (STS)

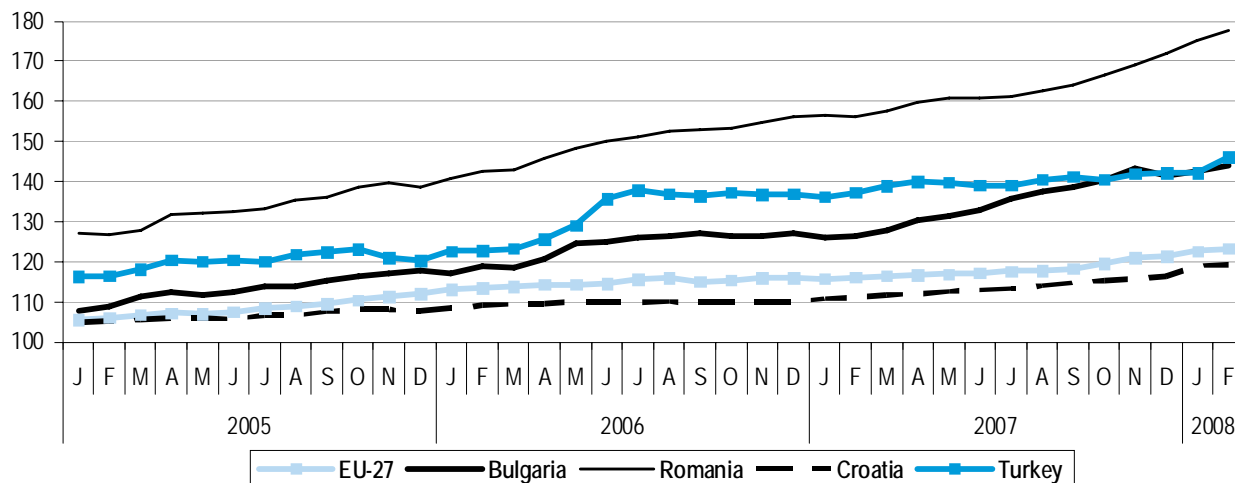
(1) Ranked on employment growth in Turkey during 2007.

Industrial producer prices

The Turkish domestic industrial producer price index has been more volatile during the period 2005 to 2007 than in the EU-27 or other countries shown in Figure 6, although

its annual average growth (6.9 %) was lower than in Romania.

Figure 6: Domestic output price index, industry (2003=100)



Source: Eurostat (STS)

Table 3: Domestic producer price index, month on month rate of change (%)

Industry	C-E	Turkey						EU-27					
		2007			2008			2007			2008		
		Sep	Oct	Nov	Dec	Jan	Feb	Sep	Oct	Nov	Dec	Jan	Feb
Industry		0.5	-0.5	1.1	0.1	0.1	2.7	0.5	1.0	1.2	0.3	1.1	0.5
Coal and lignite mining	10	0.3	6.7	0.2	1.2	0.6	0.5	0.6	1.2	1.0	2.0	6.6	0.1
Extr. of petroleum & natural gas	11	-6.8	7.5	3.8	9.7	-0.3	-2.2	4.2	4.4	6.3	1.3	3.3	2.9
Metal ore mining	13	-3.1	-3.3	-0.5	-0.3	11.7	1.8	-1.2	0.2	-10.4	-5.9	4.3	6.6
Other mining & quarrying	14	1.3	-2.7	0.5	-0.5	-0.9	0.9	-0.1	0.4	0.3	-0.3	3.1	2.1
Food & beverages	15	2.5	2.0	0.7	0.1	0.8	1.7	1.3	1.5	0.8	0.6	0.8	0.6
Tobacco products	16	0.0	0.0	1.4	0.0	-1.6	-0.1	0.0	0.2	0.0	0.1	0.8	0.0
Textiles	17	-1.8	1.1	-1.3	1.5	-0.7	2.4	0.1	0.2	0.3	-0.2	0.4	0.2
Clothing & fur	18	9.5	2.5	1.9	-0.5	-6.9	3.6	0.0	0.1	0.0	0.1	0.3	0.0
Leather & leather products	19	0.0	3.5	2.5	-0.1	-1.7	-1.1	0.4	0.2	-0.4	-0.1	-0.4	0.1
Wood & wood products	20	0.4	-0.4	-0.1	-0.2	0.4	-0.6	0.2	0.3	-0.1	-0.1	0.5	0.3
Pulp, paper & paper products	21	-1.6	-1.0	-1.4	-1.5	-0.3	-0.3	0.3	0.4	0.1	0.0	0.9	0.2
Publish., print., recorded media	22	0.1	0.0	3.8	0.3	1.8	0.3	0.1	0.1	0.2	0.1	0.5	0.0
Coke, ref. petrol. prod. & nucl. fuel	23	-0.2	0.2	11.7	-1.5	-0.1	2.4	2.4	1.4	7.4	0.1	-0.2	1.3
Chemicals & chemical products	24	0.0	-1.5	-0.1	2.1	2.0	0.6	-0.1	0.3	0.3	0.7	1.2	0.7
Rubber & plastic	25	1.4	-1.5	-0.2	0.0	0.4	-0.2	0.1	0.1	0.1	0.0	0.5	0.3
Other non-metallic mineral prod.	26	-0.2	0.1	-0.2	0.4	-0.4	0.2	-0.1	0.1	0.0	0.0	1.7	0.6
Basic metals	27	-1.9	-3.7	-2.2	0.3	4.1	6.6	-1.0	-0.2	-1.3	-1.5	0.9	1.6
Fabricated metal products	28	-0.2	0.3	-1.3	-0.1	2.2	1.5	-0.1	0.1	0.0	0.0	0.5	0.4
Machinery & equipment n.e.c.	29	0.0	-0.5	0.1	2.0	-0.6	1.0	0.2	0.1	0.1	0.1	0.7	0.6
Office machinery & computers	30	-7.8	-2.7	-6.3	0.2	-2.0	2.0	-0.5	-0.4	-0.1	-0.7	-0.6	-0.4
Electrical machinery & app. n.e.c.	31	0.5	-0.4	-0.4	-0.5	0.9	1.2	-0.1	0.4	0.0	-0.2	0.2	0.1
Radio, TV & commun. equip.	32	-1.8	-4.9	-1.0	-3.2	-0.4	-1.9	0.0	-0.3	0.1	-0.2	-0.1	-0.2
Medical, precision & optical instr.	33	0.9	-1.6	-1.5	-0.3	-0.2	-5.3	0.3	0.0	-0.3	0.0	0.6	0.2
Motor vehicles & (semi-)trailers	34	0.2	-0.3	0.0	-0.4	-0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1
Other transport equipment	35	0.1	0.1	0.0	0.1	-1.8	-3.9	0.1	-0.2	0.1	0.3	0.8	0.0
Furniture & manufacturing n.e.c.	36	1.0	0.5	-2.1	-3.2	-3.5	2.3	0.1	0.3	0.1	0.2	1.0	0.5
Elec., gas & hot water supply	40	-0.3	-10.3	-0.9	-1.2	2.2	21.3	1.0	3.6	3.0	1.2	3.1	0.1
Water supply	41	0.5	0.4	8.1	0.6	0.2	0.2	0.0	0.1	0.1	0.1	1.2	0.2

Source: Eurostat (STS)

METHODOLOGICAL NOTES

Legal basis

The legal basis for the STS indices is Council Regulation [No 1165/98 of 19 May 1998](#) ⁽¹⁾ concerning short-term statistics and Regulation (EC) [No 1158/2005](#) of the European Parliament and of the Council of 6 July 2005 ⁽²⁾ amending Council Regulation (EC) No 1165/98.

Definition of indicators ⁽³⁾ and activity coverage

The production index aims to show changes in the volume of output and provides a measure of the volume trend in value added over a given period. The production index is a theoretical measure that must be approximated by practical measures, for example using deflated gross production values or labour input measures. Dependent on the approximation method used, the index of production should take account of: variations in type and quality of inputs and outputs; changes in stocks of finished goods and work in progress; changes in technical input-output relations (processing techniques); changes in related services. The theoretical formula for an index of production is a Laspeyres-type volume index.

The industrial production index is required for activities within NACE Rev. 1.1 Sections C, D and E, except for Division 41 and Group 40.3.

The number of persons employed is defined as the total number of persons who work in the observation unit (inclusive of working proprietors, partners working regularly in the unit and unpaid family workers), as well as persons who work outside the unit who belong to it and are paid by it (e.g. repair and maintenance teams). It includes persons absent for a short period (e.g. sick, paid or special leave), and also those on strike, but not those absent for an indefinite period. It also includes part-time workers who are regarded as such under the laws of the country concerned and who are on the payroll, as well as seasonal workers and apprentices on the payroll. The number of persons employed should be determined as a representative figure for the reference period. Note that Member States may use an index of (paid) employees to approximate the index of the number of persons employed.

The hours worked index aims to show the development in the volume of work done. The total number of hours worked represents the hours actually worked for the output of the observation unit during the reference period, and so excludes hours paid but not actually worked (such as paid or sick leave), as well as meal breaks and commuting between home and work. Included are normal and overtime hours and time at the place of work preparing the site and short periods of rest at the workplace.

The index of the number of persons employed and the hours worked index are required for Sections C, D and E, but in this publication these indices are presented for NACE Rev. 1.1 Section D, in other words manufacturing.

The producer price index (or output price index) aims to show monthly changes in transaction prices. Indices are compiled for the domestic and the non-domestic market: the index shown in this publication is the domestic price index. All price-determining characteristics of the products should be taken into account. The price excludes VAT and similar deductible taxes on the goods and services invoiced by the unit, while subsidies on products received by the producer, if any, should be added.

The producer price index is required for activities within NACE Rev. 1.1 Sections C, D and E, with the exceptions of Groups 12.0, 22.1, 23.3, 29.6, 35.1 and 35.3.

Decomposition – forms of indices

The normal breakdown of a gross or unadjusted time series makes it possible to identify the trend, the cycle, the seasonal variation and the erratic fluctuations. Most of the indices presented in this publication are based on seasonally adjusted data.

Seasonal adjustment aims, after adjusting for calendar effects, to take account of the impact of the known seasonal factors that have been observed in the past. If the national statistical office providing the data does the seasonal adjustment, these series are used. If no seasonally adjusted series are supplied, Eurostat perform the seasonal adjustment.

Base year and comparison period

Indices disseminated by Eurostat at the present time are set with 2000=100, and weights from the 2000 reference year are used for aggregation. An exercise to implement weights from 2005, and to adopt 2005=100 as the comparison period is underway and is expected to be completed later in 2008. Some countries have already started rebasing the indices published nationally.

In this publication the domestic PPI has been presented with 2003=100 as the comparison period, as 2003 is the beginning of the Turkish PPI. In order to facilitate comparison the PPIs for the EU-27 and for the other countries presented have also been rescaled to 2003=100.

Geographical coverage

The reporting entity of EU-27 is an aggregate that is consistently composed of the current 27 Member States.

Symbols

: not available

⁽¹⁾ [Official Journal No L 162, of 5 June 1998.](#)

⁽²⁾ [Official Journal No L 191, of 22 July 2005.](#)

⁽³⁾ [Official Journal No L 281, of 12 October 2006.](#)





Further information

Data: [Eurostat Website: http://ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)

Select your theme on the left side of the homepage and then 'Data' from the menu.

Data: [EUROSTAT Website/Home page/Industry, trade and services/Short-term business statistics/Data](#)

Industry, trade and services - horizontal view

-  Short-term Business Statistics - Monthly and Quarterly (Industry, Construction, Retail Trade and Other Services)
-  Industry (NACE Rev.1 C-F)
-  Construction (NACE Rev.1 F) - Building and civil engineering
-  Trade and other services (NACE Rev.1 G-K)

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Eurostat set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all Member States as well as in some EFTA countries.

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