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International Unit Labour Cost Position in Manufacturing Deteriorated in 2016

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According to recent data, the Austrian economy experienced a deterioration in its international unit labour cost position for goods manufacturing in 2016, compared to the weighted average of its global trading partners, as well as in comparison to the EU trading partners and to Germany. This was mostly due to a higher rise in labour costs in Austria. In the long term, the Austrian unit labour cost position was comparatively stable, with a negative trend since 2013.

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1. Relative unit labour costs as a measure of price competitiveness

Production costs, productivity and exchange rates play a central role in the international competitiveness of economies. The relative development of unit labour costs is a synthetic measure that allows the representation of the effects of fluctuations in labour costs, productivity and the exchange rate on the cost-determined competitiveness of economies in an index. The development of unit labour costs (labour costs per unit produced) measures the change in labour costs in relation to productivity development. As econometric studies show, the change in relative unit labour costs contributes significantly to the explanation of shifts in market shares between trading partners (e.g. *Carlin – Glyn – van Reenen, 2001*).

The present contribution investigates price competitiveness, based on the evolution of unit labour costs in manufacturing of goods and in the economy as a whole in Austria and in main trading partners. The analysis covers the period from 1995 up to and including 2016, the most recent year for which national accounts data are available.

2. Nominal-effective exchange rate rose by 0.2 percent in 2016

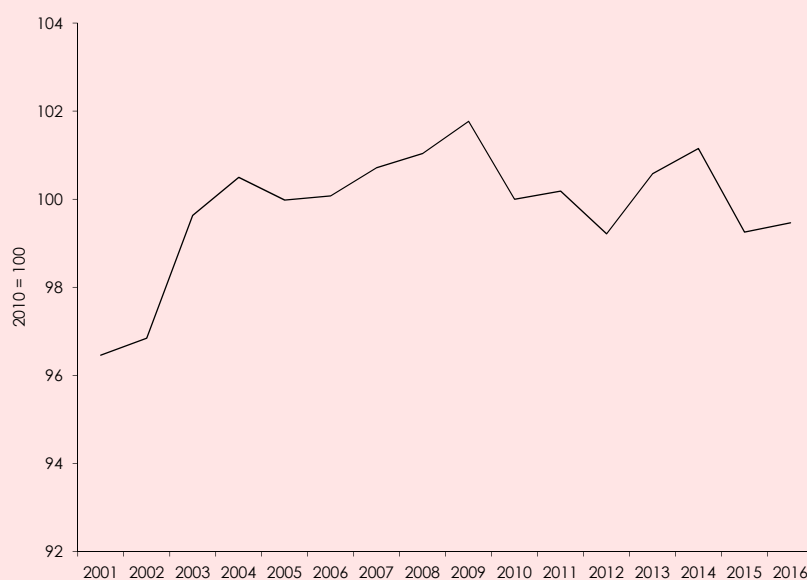
The relative unit labour cost position of an economy reflects the real external value of the national currency in international competition and corresponds to a real-effective exchange rate of the national currency. The starting point for any consideration of price competitiveness is the nominal-effective exchange rate – that is, a comparison of the value of the national currency with a basket of currencies, which represents the relevance of each trading partner based on a weighting scheme (see box "Calculation method and data basis for the comparison of unit labour costs"). The nominal-effective exchange rate is subsequently deflated with unit la-

bour costs to determine the unit labour cost position of domestic manufacturing. Since the introduction of the euro, exchange rate fluctuations have lost some of their significance for the Austrian export industry, as the main trading partners are also members of the euro zone. In the effective exchange rate weighting scheme used here, more than 70 percent are accounted for by euro zone countries. Nevertheless, the course of the nominal-effective exchange rate (Figure 1) remains an important determinant of price competitiveness, as seen in 2015, for example, when the euro depreciated significantly against the dollar.

In a longer-term perspective, there have been significant fluctuations in the exchange rate index weighted by foreign trade shares, in particular in the 1990s and early 2000s. Between 1995 and 2000 the nominal-effective exchange rate decreased from an Austrian perspective¹. Between 2000 and 2009, on the other hand, the euro appreciated noticeably against the dollar, as well as against the currencies of other relevant trading partners. The resulting increase in the nominal-effective exchange rate cheapened imports from the non-euro area, while making Austrian exports more expensive.

From 2009 to 2016, the development was more favourable from the point of view of Austria's export industry: the nominal-effective exchange rate dropped by 2.3 percent during this period. The increase between 2012 and 2014 (+2.0 percent) was offset by the depreciation of the euro against the trading partners' currencies, in particular against the dollar in 2015 (-16.5 percent). In 2016, the nominal-effective exchange rate remained almost unchanged compared to the previous year (+0.2 percent), although the pound depreciated significantly against the euro (12.8 percent) and the Chinese renminbi also lost 5.4 percent. This was due to a significant devaluation of the euro against the yen (10.4 percent), while the exchange rate against the dollar remained virtually unchanged.

Figure 1: Development of the nominal-effective exchange rate index for industrial goods



Source: WIFO calculations. Weighted average of group of countries according to unit labour cost calculation.

¹ An increase in the exchange rate corresponds with an appreciation of the euro (or before 1999 the Austrian schilling), and a decline corresponds with a depreciation.

Calculation method and data basis for the comparison of unit labour costs

Unit labour costs in national currency (*ULC*) in an industry, a sector or the total economy are defined by the relation between the nominal wage sum (*WS*) and real gross value added (*GVA*):

$$ULC = \frac{WS}{GVA}.$$

If one divides both the wage sum and value added by a measure of labour input, this yields both components of unit labour costs: labour costs per labour unit and labour productivity. A change in the share of self-employed in the number of persons engaged can be considered through a representation of unit labour costs as a quotient of labour costs per employee (*LF*) and gross value added, measured against the number of all persons engaged in employment (*EMP*):

$$ULC = \frac{\frac{WS}{LF}}{\frac{GVA}{EMP}}.$$

WIFO uses this formula and data obtained following the national accounts methodology to calculate the unit labour costs. For the determination of the Austrian manufacturing, however, instead of using the person-based concept (employees and persons engaged), it bases its calculations on the number of jobs.

For international comparisons, unit labour costs have to be expressed in a common currency, as exchange rate fluctuations can alter the cost position of a country similarly to the development of unit labour costs. The relative unit labour cost position of a country is the ratio of unit labour costs of both countries, as measured in a single currency. For a comparison with several countries, a weighted method has to be used, as the relevance of countries to an international comparison will usually differ. Independently of the methodological approach, such a weighted scheme is based on foreign trade data statistics and therefore reflects the foreign trade interdependence of an economy.

WIFO uses a harmonised method, which is also used by the central banks of the euro area to measure international competitiveness. The weighting scheme consists of simple (bilateral) import weights and double (multilateral) export weights for industrial goods (SITC 5 to 8). In 2013 a new calculation of the weights and a new method of interlinking the weighted country data were implemented (for a detailed illustration and explanation of this method, see *Mooslechner, 1995, Köhler-Töglhofer – Magerl, 2013, Köhler-Töglhofer – Url – Glauningner, 2017*). Due to the double export weighting, competition with trading partners on the respective domestic markets can be taken into account, in addition to competition on all other export markets. The weights are calculated and applied for specific time periods. The most recent calculations are based on the three-year averages for the periods 1995-1997, 1998-2000, 2001-2003, 2004-2006, 2007-2009 and 2010-2012; and the most recent weights are applicable for the period after 2010. Using this variable weighting method makes it possible to take into account shifts in market shares. The new calculation should ensure as accurate a picture as possible of country-specific trade interdependencies.

The data on gross wages, productivity and unit labour costs in manufacturing and the economy as a whole were largely generated based on Eurostat figures. Where the Eurostat database did not contain current values, figures from the ECB database, the AMECO database and national statistics of the respective countries were used (this applied to the USA, Canada and Japan).

Information on the selection of countries

The "EU trading partners" aggregate refers to the following countries: EU 28 without Austria, Malta, Cyprus, Croatia, Romania and Bulgaria. The term "all trading partners" considers data from the following countries: EU 28 without Austria, Malta, Cyprus, Croatia, Romania and Bulgaria, but including Norway, the USA, Canada and Japan. This selection of countries covers more than three quarters of all Austrian exports and all imports.

3. Rise in labour costs with modest productivity growth

The present analysis assesses the evolution of labour costs in the manufacturing of goods on the basis of gross wages per employee in national currency (Table 1). This key figure from the national accounts records salaries, including employers' per capita social contributions.

In nominal terms, gross per capita pay in Austrian manufacturing increased by 2.8 percent in 2016, according to the national accounts. Labour costs thereby rose more sharply in Austria than in the previous year (+1.7 percent), and in 2014 the increase in labour costs was also slightly weaker at +2.3 percent. In an international comparison, the rise in labour costs in Austria in 2016 was about 1 percentage point higher than in the trading partners. However, the currently available national accounts figures for the increase in gross compensation in manufacturing in 2016 appear high in the light of the collective agreements², as well as with respect to the evolution of the hourly labour costs monitored in the Labour Cost Survey³. Like all national accounts, these may still be revised. From today's perspective, a downward adjustment appears conceivable.

Independently of the most recent annual value, labour costs in Austria developed more dynamically in a longer-term perspective than in the average of the trading partners. In the past ten years they rose by 2.6 percent p.a. in Austria, while in the average of EU trading partners and all trading partners, the increase was 2.4 percent and 2.2 percent per year, respectively.

As the computation in a single currency (i.e. taking into account exchange rate fluctuations) shows, labour in Austria appreciated considerably relative to the countries of comparison, especially in the crisis period 2008 and 2009 (Figure 2). In 2010, relative labour costs again declined in Austria, but between 2011 and 2014 they again increased (in a single currency) more significantly than in the average of the trading partners.

Germany plays a special role as the most important trading partner in the consideration of labour costs and indirectly influences the wage determination process in Austria. In the 2000s and until the outbreak of the economic crisis in 2008, labour costs in German manufacturing of goods increased very moderately. Although productivity increases were passed on to wages only partially (Leoni, 2017), in this period the rise in labour costs was more pronounced in Austria than in Germany. As shown in Figure 2, this pattern changed after the outbreak of the financial and economic crisis. Between 2008 and 2015 gross per capita wages increased at a similar pace as in Germany, with some fluctuations. The most recent figures for 2016 show 1.2 percentage point higher cost dynamics in Austria than in Germany (+2.8 percent compared to +1.6 percent).

In the other countries of the euro zone, especially those that were or are still more affected by the crisis, the wage dynamics took a different course than in Germany. After a sharp rise in labour costs before the onset of the crisis, a noticeable correction has since then been observed in a number of countries – that is, the costs rose only slightly or partly declined. This correction was particularly pronounced in Greece, with labour costs also rising much more slowly in Portugal and Spain than in the EU average.

Since the 1990s, a catching-up process has taken place in the Central and Eastern European countries in terms of labour costs compared to the Western European high-wage countries. However, since the outbreak of the crisis, labour costs have developed in a differentiated manner: while the catching-up process continued after a crisis-related interruption in 2011, particularly in the Baltic countries and Hungary, over the last five years the Czech Republic and Slovenia, as well as Poland,

² In 2016 the standard wage index increased by 1.6 percent compared to the previous year in Austrian industry.

³ Hourly labour costs rose by 1.5 percent in the manufacture of goods (Table 4).

have seen wage growth rates only marginally above those of the EU trading partners.

The assessment of price competitiveness not only requires an international comparison of exchange rate relations and fluctuations in labour costs, but also of the development of productivity. This is measured as real gross per capita value added (employed persons).

Productivity has shown below average development in Austrian goods manufacturing in recent years. For the 2011-2016 period, a slight productivity disadvantage of Austrian manufacturing (+1.0 percent p.a.) compared to the average of the EU trading partners (+1.4 percent) and all trading partners (+1.3 percent) can be observed. In 2006-2011, productivity in Austrian manufacturing developed somewhat more dynamically (+1.6 percent), although this period also includes the crisis years. However, productivity growth in this period was somewhat weaker than that of the trading partners (difference: -0.1 percentage point annually in 2006-2011). Compared to Germany, however, productivity growth advantage of +0.7 percent and +0.5 percent per year, respectively, was observed in both periods (2006-2011 and 2011-2016).

Table 1: Development of per-capita labour costs in the manufacturing sector

In national currency

	Ø 2006- 2011	Ø 2011- 2016	Ø 2006- 2016	2014	2015	2016
	Year-to-year percentage changes			Percentage changes from previous year		
Austria	+ 2.6	+ 2.7	+ 2.6	+ 2.3	+ 1.7	+ 2.8
Belgium	+ 2.5	+ 2.1	+ 2.3	+ 2.8	+ 0.4	+ 0.0
Denmark	+ 3.8	+ 2.0	+ 2.9	+ 1.9	+ 2.5	+ 2.2
Germany	+ 1.5	+ 2.3	+ 1.9	+ 2.9	+ 2.1	+ 1.6
Ireland	+ 5.1	+ 2.6	+ 3.8	+ 3.9	+ 2.5	+ 2.7
Greece	+ 2.4	- 4.7	- 1.2	- 2.5	- 1.4	+ 0.2
Spain	+ 3.9	+ 0.6	+ 2.2	+ 0.2	- 0.3	+ 0.3
France	+ 3.0	+ 1.5	+ 2.3	+ 1.7	+ 0.9	+ 1.5
Italy	+ 2.3	+ 1.6	+ 2.0	+ 2.0	+ 2.8	+ 0.8
Luxembourg	+ 1.0	+ 1.3	+ 1.2	+ 2.0	+ 0.3	- 0.1
Netherlands	+ 2.7	+ 2.1	+ 2.4	+ 3.5	- 0.4	+ 2.1
Portugal	+ 2.6	+ 0.9	+ 1.7	+ 0.8	+ 1.0	+ 2.0
Finland	+ 2.2	+ 1.5	+ 1.9	+ 1.1	+ 2.5	+ 1.8
Sweden	+ 3.2	+ 2.8	+ 3.0	+ 2.7	+ 4.0	+ 2.2
UK	+ 3.2	+ 2.8	+ 3.0	+ 0.3	+ 3.3	+ 4.2
Czech Republic	+ 3.5	+ 2.7	+ 3.1	+ 3.6	+ 3.2	+ 4.1
Estonia	+ 5.2	+ 7.0	+ 6.1	+ 8.0	- 0.2	+ 3.0
Latvia	+ 7.7	+ 8.0	+ 7.8	+ 9.4	+ 9.1	+ 8.0
Lithuania	+ 4.6	+ 6.4	+ 5.5	+ 9.4	+ 8.3	+ 5.1
Hungary	+ 4.6	+ 5.6	+ 5.1	+ 4.7	+ 5.7	+ 4.9
Poland	+ 6.6	+ 2.7	+ 4.6	+ 5.0	+ 2.2	- 0.1
Slovenia	+ 4.9	+ 2.6	+ 3.7	+ 3.7	+ 2.1	+ 2.0
Slovakia	+ 5.2	+ 3.6	+ 4.4	+ 3.1	+ 3.4	+ 2.6
Norway	+ 3.3	+ 3.2	+ 3.3	+ 3.5	+ 1.4	+ 2.2
USA	+ 1.7	+ 1.3	+ 1.5	+ 2.9	+ 1.8	+ 0.4
Japan	- 0.3	+ 0.7	+ 0.2	+ 1.9	+ 1.1	+ 0.6
Canada	+ 1.9	+ 2.9	+ 2.4	+ 3.3	+ 2.9	+ 1.2
All trading partners ¹	+ 2.3	+ 2.2	+ 2.2	+ 2.7	+ 2.1	+ 1.7
EU trading partners ²	+ 2.5	+ 2.3	+ 2.4	+ 2.7	+ 2.1	+ 1.8
Austria						
All trading partners ¹ = 100	+ 0.3	+ 0.5	+ 0.4	- 0.4	- 0.4	+ 1.2
EU trading partners ² = 100	+ 0.1	+ 0.4	+ 0.3	- 0.4	- 0.4	+ 1.0
Germany = 100	+ 1.0	+ 0.4	+ 0.7	- 0.6	- 0.4	+ 1.2

Source: Eurostat, AMECO, national statistics, Conference Board, European Central Bank, WIFO calculations. – ¹ Without Austria, Malta, Cyprus, Romania, Bulgaria, Croatia, but including Norway, the USA, Canada and Japan; weighted average of the trading partners based on the calculation of the WIFO Exchange Rate Index. – ² Without Austria, Malta, Cyprus, Romania, Bulgaria, Croatia; weighted average of the trading partners based on the calculation of the WIFO Exchange Rate Index.

Table 2: Development of per-capita productivity in the manufacturing sector

In national currency

	Ø 2006- 2011	Ø 2011- 2016	Ø 2006- 2016	2014	2015	2016
	Year-to-year percentage changes			Percentage changes from previous year		
Austria	+ 1.6	+ 1.0	+ 1.3	+ 2.5	+ 0.3	+ 0.5
Belgium	+ 2.1	+ 3.9	+ 3.0	+ 6.6	+ 5.7	+ 1.5
Denmark	+ 3.5	+ 3.2	+ 3.4	+ 0.9	+ 1.3	+ 3.1
Germany	+ 0.9	+ 0.6	+ 0.7	+ 4.9	+ 1.0	+ 1.4
Ireland	+ 9.3	+ 13.5	+ 11.4	+ 8.0	+ 87.2	- 1.6
Greece	- 1.5	+ 1.2	- 0.2	- 3.9	+ 3.2	- 0.3
Spain	+ 2.2	+ 3.3	+ 2.8	+ 4.1	+ 5.3	+ 0.7
France	+ 2.4	+ 1.7	+ 2.0	+ 2.3	+ 2.2	+ 2.5
Italy	+ 0.2	+ 1.1	+ 0.6	+ 2.5	+ 3.2	+ 0.3
Luxembourg	- 6.5	+ 6.5	- 0.2	+ 12.5	- 0.9	- 2.1
Netherlands	+ 1.4	+ 1.3	+ 1.4	+ 2.3	+ 1.1	+ 2.8
Portugal	+ 3.0	+ 0.2	+ 1.6	+ 0.4	- 1.7	- 0.9
Finland	- 0.0	- 0.6	- 0.3	+ 1.9	+ 0.0	+ 2.2
Sweden	+ 2.6	+ 0.6	+ 1.6	+ 0.6	+ 5.0	+ 1.5
UK	+ 2.1	- 0.2	+ 0.9	+ 2.3	- 1.1	+ 0.6
Czech Republic	+ 5.4	+ 0.9	+ 3.1	+ 4.8	+ 1.6	+ 5.1
Estonia	+ 3.6	+ 2.4	+ 3.0	+ 8.9	- 3.8	+ 0.1
Latvia	+ 2.6	+ 3.1	+ 2.8	+ 5.7	+ 5.6	+ 6.8
Lithuania	+ 6.3	+ 2.5	+ 4.4	+ 4.8	+ 0.7	- 0.2
Hungary	+ 0.8	+ 2.9	+ 1.9	+ 3.6	+ 8.7	- 1.8
Poland	+ 8.1	+ 2.3	+ 5.2	+ 5.7	+ 3.9	+ 0.1
Slovenia	+ 3.4	+ 1.8	+ 2.6	+ 5.1	+ 0.6	+ 3.2
Slovakia	+ 7.0	+ 6.0	+ 6.5	+ 14.0	+ 10.3	+ 3.8
Norway	+ 1.4	+ 1.2	+ 1.3	+ 3.0	+ 0.0	- 0.4
USA	+ 2.3	- 0.5	+ 0.9	- 0.6	- 0.0	- 0.6
Japan	+ 0.6	+ 1.9	+ 1.3	+ 2.2	+ 2.1	- 1.5
Canada	+ 0.3	+ 1.8	+ 1.1	+ 4.1	- 0.6	+ 1.8
All trading partners ¹	+ 1.7	+ 1.3	+ 1.5	+ 3.9	+ 2.9	+ 1.2
EU trading partners ²	+ 1.7	+ 1.4	+ 1.6	+ 4.4	+ 3.2	+ 1.4
Austria						
All trading partners ¹ = 100	- 0.1	- 0.2	- 0.2	- 1.4	- 2.5	- 0.6
EU trading partners ² = 100	- 0.1	- 0.4	- 0.2	- 1.8	- 2.8	- 0.9
Germany = 100	+ 0.7	+ 0.5	+ 0.6	- 2.3	- 0.7	- 0.8

Source: Eurostat, AMECO, national statistics, Conference Board, European Central Bank, WIFO calculations. – ¹ Without Austria, Malta, Cyprus, Romania, Bulgaria, Croatia, but including Norway, the USA, Canada and Japan; weighted average of the trading partners based on the calculation of the WIFO Exchange Rate Index. – ² Without Austria, Malta, Cyprus, Romania, Bulgaria, Croatia; weighted average of the trading partners based on the calculation of the WIFO Exchange Rate Index.

In 2016, productivity growth in the Austrian export economy (+0.5 percent) was lower compared to both Germany and the weighted average of the trading partners (Table 2). In Germany, gross per capita value added (employees) increased by 1.4 percent in 2016, amounting to 0.8 percent more than in Austria. In the EU trading partner countries the rate of change was +1.4 percent, and in the average of all trading partners +1.2 percent. This corresponds to 0.9 percent (EU trading partners) or 0.6 percent (all trading partners) more dynamic development than in Austria. In the previous year (2015), the growth advantage of the trading partners was even more pronounced at +2.8 percent (EU countries) and +2.5 percent (all countries), respectively.

Looking at the individual countries, however, the picture is heterogeneous: the majority of countries, especially the crisis countries Greece, Portugal, Ireland, Italy and Spain, but also Norway, Poland, Hungary, Estonia, Lithuania, Luxembourg and the UK, as well as Japan and the USA, recorded weak to even declining productivity ratios in 2016. The average has been lifted by a few high-growth countries (mainly

Eastern European countries and, to a lesser extent, Denmark, the Netherlands and France)⁴.

4. Relative unit labour cost position of manufacturing worsened

The development of unit labour costs (labour costs per unit of production) is calculated based on the change in labour costs (gross wages) and productivity (gross per capita value added). After increasing by 1.4 percent in 2015, unit labour costs increased for the second time in a row in 2016 (+2.3 percent). This rise was well above the long-term average of +1.3 percent annually for the years 2006 to 2016.

In relation to the average of all trading partners, wage cost competitiveness in Austria deteriorated by almost ½ percentage point per year between 2006 and 2016, with a different development before and after the outbreak of the crisis. Austria's unit labour cost position improved gradually until the outbreak of the crisis compared to the EU trading partners as well as to the average of all trading partners. Afterward, unit labour costs in Austria, with the exception of the years 2010 and 2015, increased more quickly than in the trading partner countries.

While the increase in 2016 was mainly due to the sustained growth of Austrian labour costs, the medium-term deterioration with respect to the EU trading partners in the years following the crisis up to 2015 can be primarily explained by the below-average productivity development in Austria. In addition, the reduction of imbalances within the euro zone and the related improvement in unit labour cost development in the southern European crisis countries are reflected in the relative deterioration of Austria's position. In these countries, the unit labour cost position has improved since 2009. In Spain and Portugal this was mainly due to the above-average increase in productivity in manufacturing (in the context of a decline in employment). In Greece, a decrease in per capita labour costs (as well as in the number of employees) was observed in the 2011-2016 period. Overall, the mechanisms for a reduction of imbalances in price competitiveness in the euro zone also appear to be having an effect in terms of unit labour costs.

When interpreting unit labour cost dynamics, however, it should be kept in mind that average rates of change over a period are strongly influenced by the choice of the start and end years. Thus, for the 2006-2016 period, an increase in unit labour costs of Austrian manufacturing of almost 1.3 percent p.a. was observed, whereas for the 2005-2015 period, shifted by one year, we find a change in unit labour costs of +0.8 percent p.a. On the basis of the graphic presentation of the development of the Austrian unit labour cost position – that is, of the real-effective exchange rate deflated by unit labour costs, turning points and shifts over time become more evident (Figure 2). As we can see, the price competitiveness of Austrian manufacturing improved significantly compared to the average of all trading partners in the second half of the 1990s. After an opposite trend in the early 2000s, it changed little in 2003-2008. Since the economic crisis there has been a deterioration, particularly with respect to the EU trading partners since 2013.

The most recent statistics published by the European Commission (DG Economic and Financial Affairs) show similar dynamics of unit labour costs despite differences in the data basis (*European Commission, 2017*). According to the Commission calculations, the relative unit labour cost position of Austrian manufacturing improved somewhat more significantly in 2015 than according to the WIFO calculations, while the 2016 deterioration is reported by the European Commission as slightly less pronounced than in this report.

⁴ The change in Ireland in 2015 is due to an adjustment of national accounts, which took into account the tax performance of multinational corporations. Due to the low weight of Ireland in Austria's foreign trade, the impact of this anomaly on the results presented in this article is negligible.

5. Relative unit labour costs in manufacturing developed in parallel to the economy as a whole

The competitiveness of the export economy is determined by the unit labour costs of manufacturing, as well as those of the economy as a whole: if services and non-tradable goods are important inputs, their cost development will have an influence on the competitiveness of the sectors involved in foreign trade (*Deutsche Bundesbank*, 1998).

Table 3: Development of per-capita unit labour costs in the manufacturing sector and in the total economy

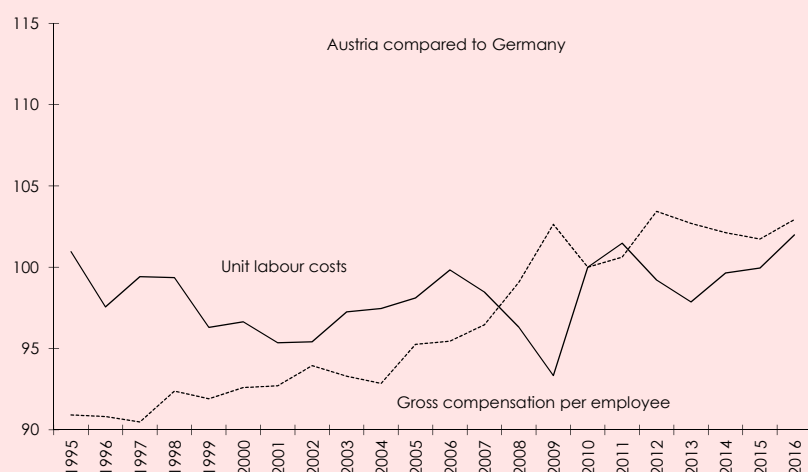
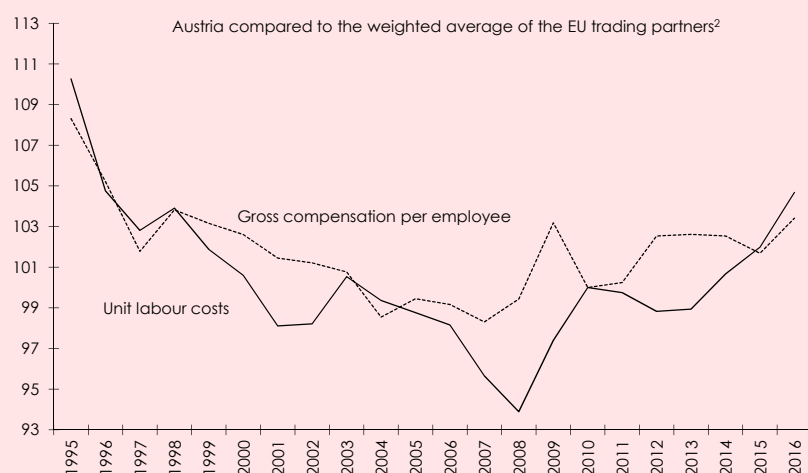
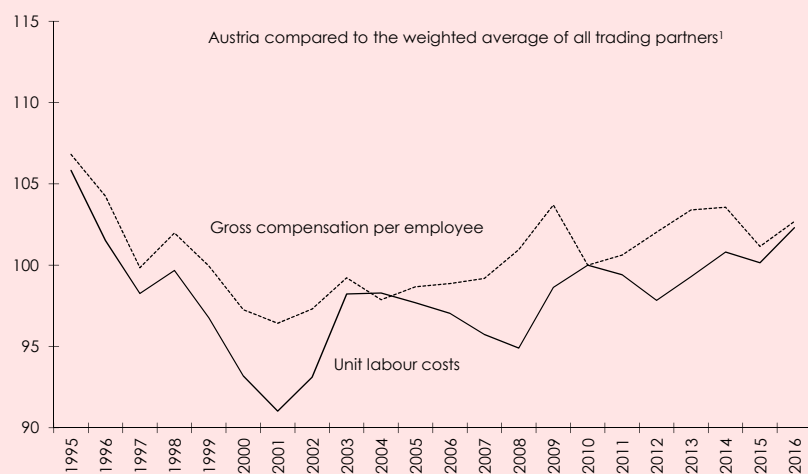
In €

	Ø 2006-2011	Ø 2011-2016	Ø 2006-2016	2014	2015	2016
	Year-to-year percentage changes			Percentage changes from previous year		
<i>Manufacturing</i>						
Austria	+ 1.0	+ 1.6	+ 1.3	- 0.1	+ 1.4	+ 2.3
Belgium	+ 0.4	- 1.8	- 0.7	- 3.5	- 5.0	- 1.5
Denmark	+ 0.2	- 1.2	- 0.5	+ 1.0	+ 1.1	- 0.8
Germany	+ 0.7	+ 1.7	+ 1.2	- 1.9	+ 1.1	+ 0.3
Ireland	- 3.9	- 9.6	- 6.8	- 3.8	- 45.3	+ 4.4
Greece	+ 3.9	- 5.8	- 1.1	+ 1.5	- 4.4	+ 0.5
Spain	+ 1.7	- 2.7	- 0.5	- 3.8	- 5.3	- 0.3
France	+ 0.6	- 0.2	+ 0.2	- 0.7	- 1.3	- 1.0
Italy	+ 2.2	+ 0.5	+ 1.3	- 0.5	- 0.4	+ 0.5
Luxembourg	+ 8.0	- 4.9	+ 1.4	- 9.4	+ 1.2	+ 2.0
Netherlands	+ 1.2	+ 0.8	+ 1.0	+ 1.2	- 1.4	- 0.7
Portugal	- 0.4	+ 0.8	+ 0.2	+ 0.3	+ 2.7	+ 2.9
Finland	+ 2.3	+ 2.1	+ 2.2	- 0.9	+ 2.5	- 0.4
Sweden	+ 1.1	+ 1.2	+ 1.2	- 3.0	- 3.7	- 0.5
UK	- 3.6	+ 4.2	+ 0.2	+ 3.3	+ 16.0	- 8.2
Czech Republic	+ 1.1	- 0.1	+ 0.5	- 6.8	+ 2.5	- 0.1
Estonia	+ 1.6	+ 4.5	+ 3.0	- 0.8	+ 3.8	+ 2.9
Latvia	+ 4.7	+ 4.9	+ 4.8	+ 3.4	+ 3.3	+ 1.1
Lithuania	- 1.6	+ 3.8	+ 1.1	+ 4.3	+ 7.6	+ 5.3
Hungary	+ 2.6	+ 0.4	+ 1.5	- 2.8	- 3.1	+ 6.3
Poland	- 2.5	- 0.8	- 1.7	- 0.3	- 1.6	- 4.3
Slovenia	+ 1.4	+ 0.8	+ 1.1	- 1.3	+ 1.4	- 1.1
Slovakia	+ 2.6	- 2.3	+ 0.1	- 9.5	- 6.3	- 1.2
Norway	+ 2.5	- 1.5	+ 0.5	- 6.1	- 5.3	- 1.1
USA	- 2.5	+ 6.6	+ 1.9	+ 3.4	+ 22.0	+ 1.3
Japan	+ 4.6	- 2.7	+ 0.9	- 7.9	+ 3.4	+ 14.0
Canada	+ 2.2	- 0.3	+ 1.0	- 7.4	+ 7.1	- 3.9
All trading partners ¹	+ 0.5	+ 1.2	+ 0.9	- 1.6	+ 2.1	+ 0.1
EU trading partners ²	+ 0.7	+ 0.8	+ 0.7	- 1.8	+ 0.1	- 0.3
<i>Austria</i>						
All trading partners ¹ = 100	+ 0.5	+ 0.4	+ 0.4	+ 1.5	- 0.7	+ 2.2
EU trading partners ² = 100	+ 0.3	+ 0.8	+ 0.6	+ 1.8	+ 1.3	+ 2.6
Germany = 100	+ 0.3	- 0.1	+ 0.1	+ 1.8	+ 0.3	+ 2.0
<i>Total economy</i>						
Austria	+ 2.0	+ 2.3	+ 2.1	+ 2.0	+ 1.6	+ 2.2
All trading partners ¹	+ 1.6	+ 1.7	+ 1.7	+ 0.8	+ 3.2	+ 1.2
EU trading partners ²	+ 1.8	+ 1.3	+ 1.5	+ 0.8	+ 1.2	+ 0.9
<i>Austria</i>						
All trading partners ¹ = 100	+ 0.4	+ 0.5	+ 0.5	+ 1.2	- 1.5	+ 1.0
EU trading partners ² = 100	+ 0.2	+ 1.0	+ 0.6	+ 1.1	+ 0.4	+ 1.3
Germany = 100	+ 0.5	+ 0.2	+ 0.4	- 0.0	- 0.1	+ 0.5

Source: Eurostat, AMECO, national statistics, Conference Board, European Central Bank, WIFO calculations. Unit labour costs: quotient of per-capita gross wages (employees) and real per-capita gross value added or GDP (persons employed). - ¹ Without Austria, Malta, Cyprus, Romania, Bulgaria, Croatia, but including Norway, the USA, Canada and Japan; weighted average of the trading partners based on the calculation of the WIFO Exchange Rate Index. - ² Without Austria, Malta, Cyprus, Romania, Bulgaria, Croatia; weighted average of the trading partners based on the calculation of the WIFO Exchange Rate Index.

Figure 2: Development of relative labour and unit labour costs in the manufacturing sector

In €, 2010 = 100



Source: Eurostat, AMECO, ECB, national statistics, WIFO calculations. – ¹ Without Bulgaria, Croatia, Cyprus, Malta, Austria, Romania, but including Norway, the USA, Japan and Canada. – ² Without Bulgaria, Croatia, Cyprus, Malta, Austria, Romania.

In Austria, labour costs per unit of production increased by 2.2 percent in 2016 across all sectors, which was 1.0 percentage point more than in the weighted average of all trading partners. Compared to the EU trading partners, relative aggregate unit labour costs increased by 1.3 percentage points in 2016. In 2015, aggregate unit la-

bour costs in Austria rose by 1.6 percent, which meant an improvement of 1.5 percent compared to the trading partners.

In the long term (2006-2016), across all sectors in Austria, unit labour costs grew 0.5 percent p.a. faster than in the average of the trading partners. In the medium term (2011-2016), the upswing was also ½ percentage point higher per year. In the pre-crisis period this pattern was mainly determined by Germany; in no other country did unit labour costs in the overall economy rise as slowly. The gap between Germany and the other EU countries was particularly pronounced from the beginning of the 2000s to 2008. Since the superation of the economic crisis, wage developments in Germany have picked up and in recent years become more similar to those of the other trading partners. In the 2011-2016 period, the gap to the development in Austria was therefore also smaller. After two years of weaker growth than in Germany, Austria's overall unit labour costs rose again more significantly for the first time in 2016 compared to Germany (+0.5 percent).

In the longer term, unit labour costs in the economy as a whole increased more significantly than they did in the manufacturing of goods, both in Austria and among the trading partners. This is in line with expectations, as the greatest potential for increasing labour productivity through mechanisation and automation can be found in manufacturing.

6. Summary

The available data show a deterioration in the relative unit labour cost position of the Austrian economy in 2016. At +2.8 percent, labour costs increased at a significantly higher rate than in the average of the trading partners. After a modest increase in productivity in 2015 (+0.3 percent), gross per capita value added also increased at a below-average rate in 2016 (+0.5 percent). The nominal-effective exchange rate development in 2016 was also not as favourable as in the previous year.

Together, these developments resulted in a 2.3 percent rise in unit labour costs. As a consequence, Austria's unit labour cost position worsened by 2.2 percent in 2016 compared to the weighted average of all trading partners. The available data also show a deterioration of wage-related competitiveness compared with the EU trading partners in 2016 (+2.6 percent). Compared to Germany, relative unit labour costs in manufacturing also rose significantly in 2016 (+2.0 percent). Unit labour costs in the total economy increased by 2.2 percent in 2016, which was slightly more than in the average of all trading partners and the EU trading partners. For the first time in two years, a slight deterioration in overall unit labour costs was found compared to Germany in 2016.

In a longer-term perspective, different phases in the development of the price competitiveness of the Austrian export industry can be observed. A strong improvement compared to the average of all trading partners in the second half of the 1990s was followed by an opposite trend in the early 2000s. Between 2003 and 2008, the relative unit labour cost position of Austrian manufacturing fluctuated only slightly and remained largely constant. Since 2008 the trend has been slightly negative. This is especially true of the most recent years and in comparison with the EU trading partners. A deterioration of Austria's unit labour cost position compared to Germany can also be observed since 2013. The worsening of Austria's unit labour cost position in 2016 can partly be attributed to the cyclical slow-down, as economic growth in Austria in 2016 lagged behind that of Germany and the euro zone as a whole (Bilek-Steindl *et al.*, 2017). Moreover, the above-average increase in labour costs in relation to weak productivity development, which had a significant impact on the development of unit labour costs, should be interpreted with caution. The national accounts data on which these calculations are based show a significantly more dynamic development of labour costs than other indicators.

In the last decade, Austrian foreign trade grew at a weaker rate than world trade and than the Austrian export markets. The low rise in productivity in Austria was

therefore accompanied by a deterioration in international competitiveness. This would also point towards difficulties in the application of innovations in productivity growth (Janger *et al.*, 2017, Tichy, 2017). Whether the below-average productivity growth in Austria is due to medium-term cyclical shocks, or whether long-term supply-side structural factors such as the specialisation patterns of the Austrian export economy are responsible for this development will have to be seen in the coming years.

7. Appendix: hourly labour costs in the manufacturing of goods

While only data on labour costs per employed person are available for the calculation of current, internationally comparable unit labour costs in manufacturing, labour costs per hour worked are available for the European countries. These are based on the Labour Cost Survey conducted every four years in the EU countries. The annual development between two surveys is updated using the Labour Cost Index.

Figure 3: Labour costs in the manufacturing sector in international comparison

Hourly labour costs in €, 2016, Austria = 100



Source: Eurostat, employee survey 2012, Labour Cost Index; WIFO calculations. Without apprentices. Malta: no data available.

Unlike the Labour Cost Survey, the Labour Cost Index is not calculated using the same statistical approach in all countries. Thus, international comparability is somewhat limited. For Austria, the index is based on data from the business survey. Due to these methodological limitations, the results of the Labour Cost Index should be interpreted with caution.

Table 4 shows the labour costs per hour for the 2012-2016 period, calculated on the basis of the Labour Cost Index. In 2016, a working hour in Austrian manufacturing cost 36.7 €. Austria thereby ranked 8th in European comparison. In 2011-2016, hourly labour costs rose by an average of +2.6 percent in Austria, which was slightly more

than in the average for the EU countries (+2.1 percent p.a.) and at the same rate as in Germany (+2.6 percent p.a.). In 2016 the data show an increase of 1.5 percent for Austria, 1.7 percent for the EU 25 and 2.5 percent for Germany.

Table 4: Hourly labour costs in the manufacturing sector

	2012	2013	2014 ln €	2015	2016	Ø 2011-2016 Percentage change
Bulgaria	2.82	2.94	3.10	3.39	3.73	+ 6.9
Romania	3.68	3.93	4.11	4.38	4.76	+ 5.6
Lithuania	5.53	5.83	6.07	6.53	7.16	+ 6.3
Latvia	5.49	5.79	6.11	6.64	7.16	+ 6.6
Poland	6.85	7.05	7.40	7.69	7.66	+ 2.9
Hungary	7.54	7.58	7.54	7.81	8.21	+ 2.5
Croatia	8.03	8.16	8.07	8.29	8.73	+ 2.4
Czech Republic	9.67	9.60	9.39	9.78	10.17	+ 1.1
Estonia	8.24	8.88	9.38	9.97	10.56	+ 6.6
Slovakia	8.93	9.40	9.80	10.20	10.63	+ 4.5
Portugal	10.94	10.82	10.69	11.15	11.27	- 0.4
Cyprus	13.49	12.96	12.83	12.83	12.82	- 1.0
Greece	15.48	14.66	14.78	14.69	14.60	- 2.1
Slovenia	14.64	14.76	15.31	15.39	15.90	+ 2.2
Spain	22.42	22.67	22.80	22.69	22.78	+ 0.8
UK	24.02	23.26	25.03	28.58	25.62	+ 3.4
EU 28	24.89	25.41	25.96	26.46	26.93	+ 2.1
Italy	27.11	27.63	27.79	27.87	27.54	+ 0.9
EU 25	26.59	27.15	27.71	28.24	28.72	+ 2.0
Luxembourg	30.24	31.03	31.54	31.36	31.30	+ 1.1
Ireland	30.83	31.01	31.72	31.32	31.66	+ 1.0
Netherlands	33.29	33.72	34.82	34.99	35.65	+ 2.1
Austria	33.38	34.41	35.38	36.12	36.65	+ 2.6
Finland	35.03	35.38	36.05	36.78	37.03	+ 2.1
France	36.10	36.46	36.93	37.47	38.05	+ 1.6
Germany	36.13	37.25	38.23	39.24	40.21	+ 2.6
Sweden	41.35	42.20	41.20	41.22	42.06	+ 2.1
Belgium	42.02	42.73	43.24	43.28	43.36	+ 1.3
Denmark	40.63	41.28	42.11	42.77	43.99	+ 1.9
Norway	53.77	53.56	51.81	48.91	48.14	- 0.6

Source: Eurostat, employee survey 2012, Labour Cost Index; WIFO calculations. Without apprentices. Malta: no data available.

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