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Increasing competitiveness at any price? A dispute with Dustmann et al. (2014): "From sick man of Europe to economic superstar: Germany's resurgent economy"

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INCREASING COMPETITIVENESS AT ANY PRICE?

A dispute with Dustmann et al. (2014): „From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy"[1]

Nora Albu[2], Heike Joebges[3], Rudolf Zwiener[4]

ABSTRACT

Dustmann/ Fitzenberger/ Schönberg/ Spitz-Oener (2014) praise the flexibility of German labour market institutions for the German turn-around from "Sick Man of Europe" to "Economic Superstar": The more decentralized, firm-specific wage-setting process since the mid-1990s increased wage inequality and reduced pay increases. According to the authors' novel calculations for unit labour costs of the "end product" the German export-oriented manufacturing sector experienced a very high decrease in unit labour costs between the mid-1990s and 2007. The authors claim that this increase in price competitiveness is behind exporting success and (implicitly) the turn-around in economic growth. While we value the authors' efforts to incorporate inputs from other sectors into the calculation of unit labour costs of the manufacturing sector through an input-output approach, we show that the calculation is unconvincing in several regards and overstates the costs reduction. Besides this, we also show that the link from unit labour costs to exports is weaker than implicitly assumed by the authors. We also criticize the implicit assumption that export success based on low wage growth furthers GDP growth, as the positive effect of low wages on exports has to be balanced against the negative effect on domestic demand. Overall, our findings suggest, the policy conclusions from the authors – real wage cuts were necessary to improve German competitiveness for turning around the economy – overstate the role of unit labour costs for GDP growth.

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1 Dustmann, Christian; Fitzenberger, Bernd; Schönberg, Uta; Spitz-Oener, Alexandra (2014): From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy, Journal of Economic Perspectives, Vol. 28 (1).

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Increasing competitiveness at any price?

- a dispute with Dustmann et al. (2014): „From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy"[1]

Nora Albu,[2] Heike Joebges,[3] and Rudolf Zwiener[4][5]

Abstract

Dustmann/ Fitzenberger/ Schönberg/ Spitz-Oener (2014) praise the flexibility of German labour market institutions for the German turn-around from "Sick Man of Europe" to "Economic Superstar": The more decentralized, firm-specific wage-setting process since the mid-1990s increased wage inequality and reduced pay increases. According to the authors' novel calculations for unit labour costs of the "end product" the German export-oriented manufacturing sector experienced a very high decrease in unit labour costs between the mid-1990s and 2007. The authors claim that this increase in price competitiveness is behind exporting success and (implicitly) the turn-around in economic growth.

While we value the authors' efforts to incorporate inputs from other sectors into the calculation of unit labour costs of the manufacturing sector through an input-output approach, we show that the calculation is unconvincing in several regards and overstates the costs reduction. Besides this, we also show that the link from unit labour costs to exports is weaker than implicitly assumed by the authors. We also criticize the implicit assumption that export success based on low wage growth furthers GDP growth, as the positive effect of low wages on exports has to be balanced against the negative effect on domestic demand. Overall, our findings suggest, the policy conclusions from the authors – real wage cuts were necessary to improve German competitiveness for turning around the economy – overstate the role of unit labour costs for GDP growth.

JEL classification

E02, F16, J31, J32

Key words

German export success, labour market reforms, Hartz reforms, price competitiveness, unit labour costs, REER, wage-led economy, bazaar economy, German unification costs.

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[1] Dustmann, Christian; Fitzenberger, Bernd; Schönberg, Uta; Spitz-Oener, Alexandra (2014): From Sick Man of Europe to Economic Superstar: Germany's Resurgent Economy, Journal of Economic Perspectives, Vol. 28 (1).

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[5] We are grateful for comments and suggestions received from Camille Logeay and Udo Ludwig as well as from participants of an Economics Seminar at IMK. We especially thank Bernd Fitzenberger for clarifying comments.

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1. Introduction

The title of the work of Christian Dustmann, Bernd Fitzenberger, Uta Schönberg, and Alexandra Spitz-Oener (2014) "From Sick Man of Europe to Economic Superstar" is provocative and holds out lots of promise. They claim that the major reason for Germany's astonishing economic development in the last decade was a sharp decline in their newly developed indicator for unit labour costs in export-orientated manufacturing industry. The authors see the pivotal element behind the German turn-around as residing in its system of industrial relations (Dustmann et al. 2014: 167). According to the authors, flexible German labour market institutions reacted to pressures from the mid-1990s onwards to allow for a more decentralized, firm-specific wage-setting process that increased wage inequality and reduced pay increases. Wage developments did not fully match productivity increases in the export-oriented manufacturing sector and this led to a sharp drop in its unit labour costs, at least if one believes in the novel calculation of unit labour costs for the "end product" by the authors. They claim that the real increase in German price competitiveness had been much higher than measured by the OECD, and is key for the export success and, implicitly, for the turn-around in economic growth: "[It]… has been the main reason for Germany's economic success over the last decade." (Dustmann et al. 2014: 168). The authors judge other factors such as the introduction of the euro and the Hartz reforms as being of minor relevance (Dustmann et al. 2014: 183-4).

The novel calculation of unit labour costs for the export-orientated manufacturing sector is central for the authors' findings. The approach implies substantial differences from standard calculations of sectoral unit labour costs provided by international institutions like the OECD. The authors try to correct for inputs from other sectors as well as for imported inputs. We will discuss the pros and cons of this indicator by comparing it to standard approaches.

Independently of our criticism regarding its construction, we doubt that one can use the single indicator for judging relative competitiveness. Instead, this would require similarly constructed indicators for Germany's trade partners, corrected for exchange rate developments. The worldwide increase in imported inputs decreases the calculation of unit labour costs within the manufacturing sector by the authors' construction of the index. Similarly calculated for other countries, this factor could in turn decrease manufacturing costs at Germany's main trading partners. Yet, the authors provide calculations for Germany alone.

We also doubt that cost developments in the manufacturing sector are the sole explanation for Germany's export developments and economic success over the last decade. We will therefore complement the authors' presentation by discussing the relevance of unit labour costs developments for exports, the effect of German wage developments on domestic demand, and with it the overall impact on GDP growth.

We do agree with several of the authors' findings: From the mid-1990s, average wage developments were almost in line with average productivity growth, leading to stagnating unit labour costs for the whole economy from then until 2007. We also share the finding that wage restraint was lower in manufacturing than in the other sectors. As unit labour costs at most competing trade partners increased, stagnation in Germany contributed to increasing price competitiveness and supported export success.

We appreciate how the authors demonstrate increasing wage inequality since the mid-1990s for different sectors and explicitly discuss sectoral wage and productivity developments, taking inter-sectoral relations into account. We agree that unit labour costs calculations for the export-orientated manufacturing sector are not an appropriate indicator for price competitiveness of this sector. We appreciate that the authors explicitly correct for inputs from other sectors. Even so, we believe that the novel approach of calculating unit labour costs for the "end product" of the export-orientated manufacturing sector is far from convincing and heavily understates costs, as we will try to show below.

We appreciate that the authors provide sectoral data on domestic versus foreign inputs, thus providing evidence against Hans-Werner Sinn's hypothesis of Germany being a "bazaar economy", according to which Germany is mainly reassembling foreign inputs for exports (Sinn 2006). This hypothesis is clearly rejected by the authors, as domestic inputs still account for 70% of tradable manufacturing products in 2007 (Dustmann et al. 2014: 174, table 1), as had been shown by Brautzsch/Ludwig (2005) and Loschky/Ritter (2007).

We also see the main trigger for Germany becoming the "sick man of Europe" in German unification. Yet the authors will only concede that the "extraordinary costs of German unification burdened the economy in an unprecedented way" (Dustmann et al. 2014: 182), without explaining the transmission channels. We will complement this point by arguing that the political decision about the way of financing unification costs implied shifting a large part of the burden of adjustment to non-wage-labour-costs (see Meinhardt/Zwiener 2005 and below).

Our criticism concentrates on the following points:

- We disagree with the authors' implicit assumption in explaining the success of manufacturing exports as down to decreasing unit labour costs, even though we agree that they do play a role in increasing German price competitiveness from the mid-1990s up to the financial crisis. We will instead stress the following points that modify their role:
    i. Not the level but the relative development compared to other trade partners' unit labour costs and exchange rate changes are important.
    ii. Low unit labour costs have not been fully transmitted to export prices, as profit margins have increased during the period under study. As a result, unit labour cost changes can only partially affect export volumes.

iii. Export success is due to an even larger extent to high demand growth in export destination countries.
iv. Part of the apparent export success is due to increasing global trade integration. The shares of imported inputs as well as the import content of exports increased worldwide up to the year 2007.

- We agree that the standard way of calculating unit labour costs in the manufacturing sector ignores inputs from other sectors. Even so, we disagree with the authors' alternative approach to measuring productivity and unit labour costs in manufacturing. Based on an input-output analysis for the manufacturing sector, we will show that this novel calculation is unconvincing and overplays the development of price competitiveness.
- We disagree that the Hartz reforms were less important for shrinking unit labour costs and increasing German price competitiveness. Instead, we judge them to be an important additional factor decreasing unit labour costs from 2004 onwards. Even the authors' own figures on wage developments portray the added impetus towards greater wage inequality as due to the lower wages that surfaced after the reforms.
- We disagree with the implicit assumption that higher exports generated by lower wages imply higher GDP growth. The reason is that we deem the overall growth effect negative: wage increases below productivity support exports' price competitiveness, but have to be balanced against the negative effect of lower domestic demand growth, especially for large economies like Germany. In addition, the distributional consequences endanger stable economic and political developments. We therefore disagree with the recommendation that the peripheral euro area countries follow the German example and cut unit labour costs if they can. Critically, this cannot be a sensible strategy for all euro area countries.

The next section 2 will discuss the relevance of unit labour costs for exports. While they are an important element for price competitiveness, this section is designed to show that the link is weaker than one might assume reading the publication by Dustmann et al. (2014). Section 3 will concentrate on how to measure unit labour costs in the manufacturing sector, if accounting for inputs from other sectors. This section will explain our criticism regarding the novel calculation of unit labour costs in the manufacturing sector by Dustmann et al. (2014). Section 4 will portray developments in wages, labour costs, and price competitiveness since 1980. Section 5 will explain why the fall of the Iron Curtain and German unification had such a strong negative impact on the price competitiveness of German companies. We will stress that this mainly resulted from policy decisions. Section 6 will discuss the additional effect of the Hartz reforms. Section 7 shows that the overall growth effect of low wage and unit labour costs development is negative for Germany and destabilizes the euro area. Section 8 concludes. Based on our analysis, we disagree with the economic policy conclusions of Dustmann et al. (2014).

2. Unit labour costs and price competitiveness

Reading Dustmann et al. (2014), one may get the impression that national unit labour costs developments are the main success factor for exports, and with it, economic growth. Unit labour costs measure the average costs of labour per unit of output.[6] Yet, export growth depends not only on price competitiveness, but also on factors like non-price competitiveness, the structure of export products, growth in export destination countries, and, as a result, demand from these countries (see Altomonte et al. 2013, Karadeloglou/Benkovskis 2015 for overviews). Non-price competitiveness comprises the size of firms and technological capacities, taxation, access to finance, public support for R&D, and the location of the country that can explain geographical as well as product specialization (Altomonte et al. 2013).

Several authors stress that German export performance is less about high price competitiveness but, rather, strong world economic develpment from 2003 up to the financial crisis in 2008/9 and, consequently, high demand for German products: these are seen as the key factors (see e.g. Allard et al. 2005, Horn et al. 2017), especially given the specific nature of German exports (Storm/Naastepad 2015). In addition, an important driver of high growth rates in world trade in recent decades has been a global trend towards greater world trade integration via global value chains, export processing, and other forms of trade integration that also affect German exports. Consequently, the contribution of imported inputs to value added of exports and imports for re-exports increased from 30% in 1995 to about 44% in 2006 (Loschky/Ritter 2007: 485).

Yet, even if one concentrates on the price competitiveness of exports alone, national unit labour costs are only one factor influencing price competitiveness. While the authors provide a figure for competition-weighted relative unit labour costs developments (Dustmann et al. 2014: 170, figure 1), they then solely concentrate on the level of unit labour costs of the exporting manufacturing sector in Germany, no longer relating domestic cost developments to unit labour costs developments in other countries.

In order to measure price competitiveness, domestic unit labour costs compared to those in trading partner countries and their interplay with exchange rate developments are important. A depreciating exchange rate can dampen rising national production costs in the eyes of foreign buyers (and vice versa, see Leigh et al. 2017 for a multi-country study, and Logeay et al. 2005 for the Euro Area). As demand reacts to price levels (and not to production costs), the concentration on unit labour costs implies the assumption of a full pass-through of unit-labour costs to final prices. Yet, this would only happen in the theoretical case of perfectly competitive markets, but international trade is, rather,

[6] Unit labour costs for the total economy relate wages and salaries of employees, including social security contributions of the employers, to real output per person employed. Not the level of unit labour costs, but the development relative to other countries and taking exchange rate changes into account is relevant for price competitiveness.

characterized by imperfect competition and pricing-to-market strategies (see e.g. Krugman 1986). We stress these additional factors that go unmentioned by the authors as they did not remain constant during the period under study.

The most prevalent indicator for measuring a country's price competitiveness is the real effective exchange rate (REER), a weighted average of indexed nominal bilateral rates between countries that are adjusted for relative movements of price or cost indicators of the respective countries. The most common REER calculations offered by international data providers like the IMF, the OECD, or the EU are REERs that are corrected for unit labour costs (ULC-based) or adjusted for consumer price inflation (CPI-based). According to recent studies, broad-based price or cost indicators, like the REER based on total economy unit labour costs, perform better in explaining and forecasting real exports than the CPI-based REERs (see e.g. Deutsche Bundesbank 2016b[7], Bayoumi et al. 2011). Weighting of bilateral exchange rates can be based on export shares, trade shares (exports plus imports), or even account for third country competition as in the REER calculations from the IMF. Neary even advocates weighting schemes of the exchange rates by marginal sectoral trade shares in GDP, in order to account for sectoral shifts (see Neary 2006).

Exchange rate developments continue to be a relevant factor for export success, even in times of higher trade integration and global value chains. Leigh et al. (2017) find for a large country sample of advanced economies (as well as developing countries) that exchange-rates continue to affect export prices and volumes significantly, and in spite of increasing trade integration, in a stable way, but stress that the effect is not immediate. This might explain why Dustmann et al. (2014: 185) consider exchange rate developments as less relevant, pointing to the 30 % devaluation of the Pound Sterling during 2008-2009 and the absence of any visible effect on exports. Yet, it is surprising that the authors regard the effect of the exchange rate change as negligible for price competitiveness, even one of this magnitude, but at the same time discuss relatively smaller changes in unit labour costs as the main impetus for export growth. Both components are relevant for price competitiveness.

Besides the delayed effect of exchange rate changes, exporters may not allow for a full pass-through of exchange rate changes to final prices. "Estimated elasticities for export and import prices suggest that only about half of any change in exchange rates feeds through to a change in price competitiveness: this would imply that euro area exporters have rather importantly utilised changes in their profit margins which have limited the impact on their market shares" (Anderton et al. 2004: 5).

Similarly, several studies point to the finding that exporters in the euro area did not allow, what's more, for a full pass-through of unit labour costs to final export prices. There is a

[7] The report generally favours broad based price or cost indicator, showing that REER based on total economy unit labour cost might perform similarly well as REER based on the GDP deflator.

remarkable difference between national unit labour costs developments, even in manufacturing alone, and final export prices that change over time and differ between member countries (see Herzog-Stein et al. 2015: 8-13, IMF 2013, EC 2013).

Even if German exporters fully passed-through (labour) cost developments to final (export) prices, the effect on demand for German exports would depend on the price elasticity of demand for exports. According to Leigh et al. (2017), price elasticity of exports (and imports) is statistically significant in their sample of industrialized countries and has not decreased over time. Leigh et al. (2017) use an indicator of price competitiveness based on unit labour costs. Several other authors also find a significant role for price competitiveness measured by REERs based on unit labour costs (see Bayoumi et al. 2011, Deutsche Bundesbank 2016b, Cerra et al. 2003, Neary 2006), at least for manufacturing exports. Results mainly differ in the magnitude of the effect: Carlin et al. (2001) find that price elasticity of exports, measured by an indicator based on unit labour costs, plays a significant role for Germany, even if this is lower than for other EU countries in their sample.

Storm and Naastepad (2015: 15) provide an overview of the estimated export elasticities of relative unit labour costs in different studies for OECD and EMU countries. According to their findings, exports react to relative unit labour costs changes by about -0.1 to -0.4 %.[8] Even if estimated relative price elasticities would amount to -1, unit labour costs could only explain around 17 percentage-points of the export increase of around 120 % from the year 2000 until 2017.[9] As unit labour costs developments as an element in REER seem to play a significant role for export success, the following section will address the question of how to measure them correctly for the export industry.

3. Unit labour costs of the export industry

While relative unit labour costs can be shown to be relevant for the price competitiveness of exports, several authors discuss the adequate calculation of unit labour costs for manufacturing exports: Total economy wages would include public sector wages and wages from private sectors like the services sector. Consequently, total economy unit labour costs are not always considered as adequate for determining the price competitiveness of the export industry. The Bundesbank shows that for the peripheral euro area crisis countries the main driver of unit labour cost increases was mainly high public sector wages, not private sector ones (see Deutsche Bundesbank 2016a). Similarly, Gaulier and Vicard (2012) stress

[8] The authors calculate the reaction to unit labour cost changes out of estimates for the price elasticity of exports. The IMK model for the German economy estimates relative price elasticity to lie between -0.1 and -0.2 (Horn et al. 2017).

[9] According to data from the Deutsche Bundesbank, the relative price competitiveness compared to the rest of the world (measured in terms of differences in unit labour cost development) has improved by 17.3 % since the beginning of 1999, see: Deutsche Bundesbank: Harmonised competitiveness indicators based on unit labour costs indices for the total economy, accessed on June 2018, https://www.bundesbank.de/Navigation/EN/Statistics/ESCB_statistics/Price_competitiveness/eszb_table_view_node.html?statisticId=hci_ulct.

that wage developments in non-tradable sectors (instead of export-oriented manufacturing sectors) triggered the overall increase in unit labour costs and prices in peripheral euro area products only. The "compendium on the diagnostic toolkit for competitiveness" argues that "measuring price competitiveness based solely on unit labour cost (ULC) developments risks conveying misleading signals" (Karadeloglou/Benkovskis 2015: 4). In times of increasing internationalization of trade, even wage and unit labour costs developments for individual sectors may be inappropriate as they hide inter-firm differences. Barba Navaretti et al. (2016) show that average productivity developments may mask very different distributions of company productivity, regarding the length of the tails and the skewed nature of the distribution. In addition, non-price competitiveness may be just as relevant (Karadeloglou/Benkovskis 2015).

Dustmann et al. (2014) try explicitly to calculate adjusted unit labour costs for German exporting industries, only including those manufacturing segments where export shares are above 25 %. While this should be far more correct than looking at the entire manufacturing sector, the difference of unit labour costs is negligible (see appendix, figure A1). In the following, we therefore stick to the overall manufacturing sector.

The standard calculation for total unit labour costs (i.e. manufacturing labour costs) is gross wages and salaries plus social security contributions from employers in the manufacturing sector divided by persons employed (or hours of employment), in relation to productivity per person (or per hour) in that sector. Productivity per person (or per hour) is measured by real manufacturing gross value added divided by employment in persons (or hours) or labour force in that sector.[10] However, Dustmann et al. (2014) use a simplified calculation for the tradable manufacturing sectors (see Dustmann et al. 2014 Appendix Figure 4 and Table A2). For the means of comparison between the Dustmann et al. (2014)-version of unit labour costs and our calculations, we mirror the authors' approach, but in contrast to Dustmann et al. (2014) we are using the methodologically consistent data provided by an input-output analysis (Albu 2018).

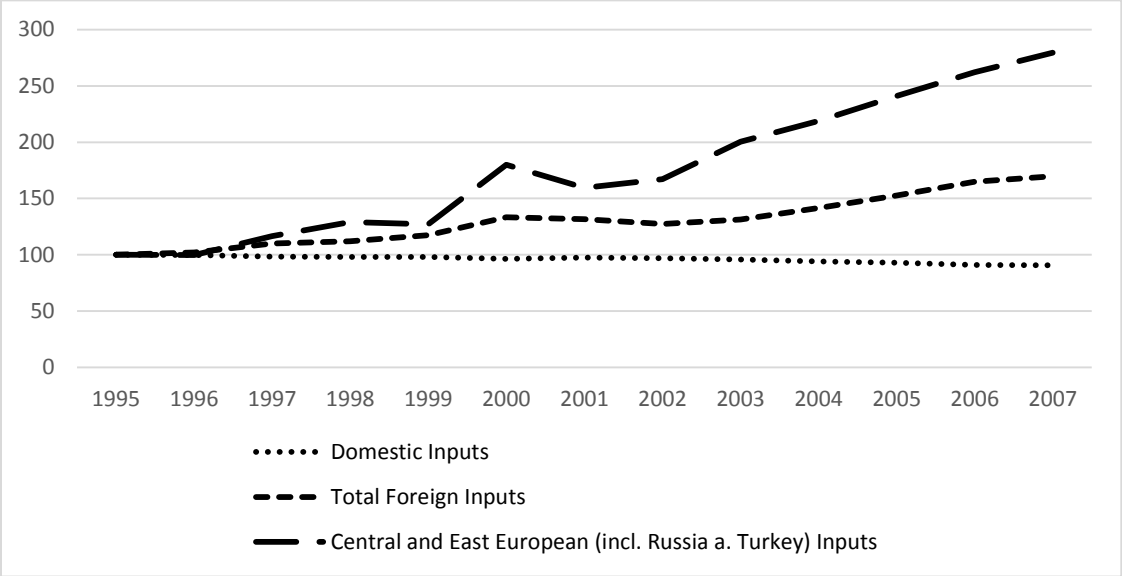
While in most EU countries wage costs are similar in manufacturing and services, labour costs for the manufacturing sector in Germany have been much higher than for the services sector, in contrast to most other euro area countries (see Logeay et al. 2011 and Hartwig/Krämer 2017). The cost difference between the two sectors is highest in Germany and amounted to about 20% during the 2000s (Herzog-Stein et al. 2015: 7). Consequently, any outsourcing of activities to the services sector should lower wage costs of production in the manufacturing sector. Yet, as we will show below, the procedure by which interlinkages between manufacturing and service sectors are included is more complicated.

[10] The data we use below are from Eurostat and follow the NACE Classification Rev.2. The unit labour costs of the industry considered here include NACE Sections B, C, D and E accordingly.

In order to exactly determine the wage-cost-relief effect for the German manufacturing sector through the use of domestic inputs from the services sector, Albu (2017) used an input-output analysis. By taking the interdependence between the production sectors into account, the approach allows one to measure and compare the overall labour costs of each final product, directly accounting for compensation of employees in production according to the different sectors. As the data provides information on wage costs per person in different production stages, a hypothetical value for macroeconomic labour costs can be calculated by statistically aligning the distribution of working hours of all production areas and their hourly wages with the distribution of working hours and hourly wages in manufacturing. Ludwig (2013) and Albu (2017) correct for the differences in full-time and part-time shares between the manufacturing and the services sector. Albu (2017) finds a wage-cost relief effect for the German manufacturing industry through the procurement of domestic services of between 8 % and 10 %. Albu (2017) and Ludwig (2013) concentrate on direct and indirect labour costs effects, not unit labour costs.

Besides inputs from services, imported intermediate products increased from 1995 to 2007 by 70%, as figure 1 below shows. Imports increased especially from Central and East European countries (including Turkey and Russia). Consequently, German domestic total inputs have decreased during the same time, but still amount to about 66% of overall total inputs in 2007 (Albu 2018).[11]

Figure 1: Development of inputs relative to output (production value) for the German Manufacturing sector since 1995, 1995=100



***Notes**: Inputs relative to production value ("end product"); imports from Central and East European countries include those from Turkey and Russia; for further details see Albu (2018).*
***Source**: Intercountry Input-Output Tables from World Input-Output Database, Release 2013 for the years 1995 to 2007; own calculations; 1995=100.*

[11] Similarly, Dustmann et al. (2014: 174) calculate 70%.

We therefore agree with Dustmann et al. that ignoring inputs from other sectors and from overseas distorts true unit labour costs in manufacturing (Dustmann et al. 2014: 173f). Yet, their novel indicator remains unconvincing. As Dustmann et al. changed the standard approach in several ways, we will try to explain the problems involved in a step-by-step procedure, also trying to explain the relevance of each particularity. As already explained, Dustmann et al. (2014) concentrate on the export-orientated manufacturing sector (those segments of the manufacturing sector with an export share above 25%), but any difference with the total manufacturing sector regarding unit labour costs is negligible (see appendix, figure A1). Consequently, we will concentrate on showing the effects for the whole manufacturing sector.

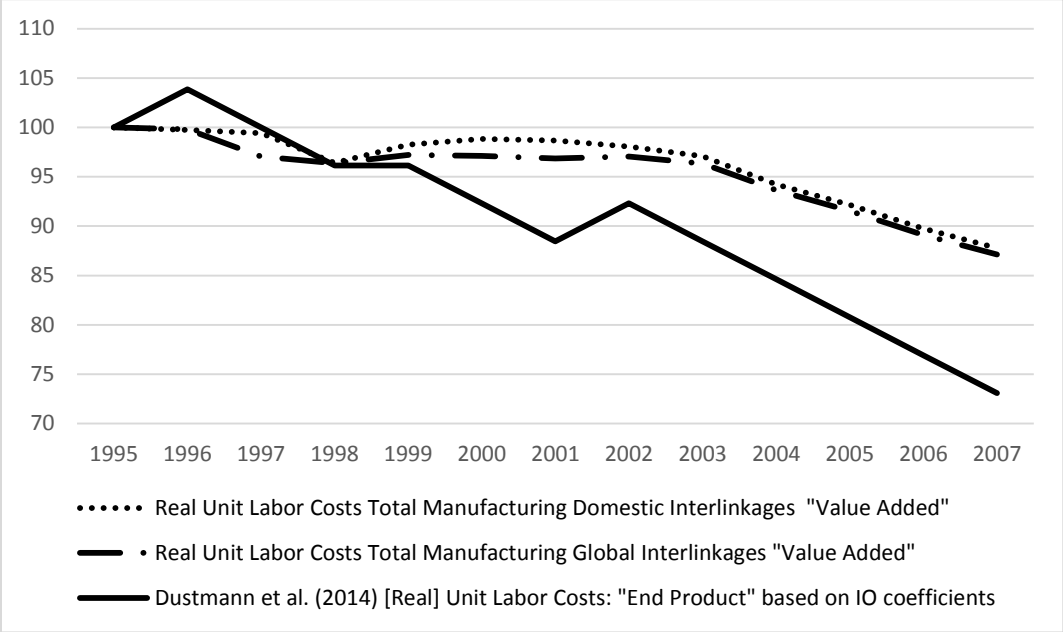
Particularities involve the calculation for the "*end product*" instead of for the *value added*, increasing the calculated cost-relief. One peculiarity is that the authors claim several times the importance of increased imported inputs, put corrected only for inputs from other domestic sectors. While we deem the adjustment to be inadequate, the effect on final cost-relief estimates is comparatively small. Another important change relates to the use of *real* unit labour costs instead of *nominal* ones. This has an important effect on final cost-relief calculations. But the largest effects arise from the usage of "*end product*" instead of "*value added*" and from the incorrect adjustment for inputs from other sectors.

Based on their novel method, the authors conclude that *real* unit labour costs for exporting industries have decreased by 25% from 1995 to 2007. As already mentioned, the concentration on unit labour for the "*end product*", instead of on "*value added"*, is one important deviation from standard approaches. The authors argue that this is important for correcting for inputs from other sectors as well as including imported inputs. While the idea is appealing, the calculation appears to be inconsistent: The authors use nominal total manufacturing output in the denominator, but only domestic wages in the numerator, ignoring the wages incorporated in the imported inputs. In times of increasing imported inputs this approach generates a negative trend in the calculated indicator. Consequently, the indicator can no longer be interpreted as unit labour costs. In addition, the correction for inputs from other sectors is not complete, as the authors use inadequate IO-coefficients, as we will explain below.

Correcting only for these three peculiarities (1) calculating unit labour costs for the value added instead of for the end product and 2) using correct interlinkages with other sectors plus 3) including all relevant wage costs while not correcting for the concentration on real instead of nominal unit labour costs), real unit labour costs for this sector decrease by only 12% (see figure 2).

In figures 2 and 3, the bold line "Dustmann et al. (2014) [Real] Unit Labour Costs: 'End product' based on IO coefficients" always represents unit labour costs of the exporting manufacturing sector as calculated by Dustmann et al.: in real terms, for the "end product", and based on IO coefficients in order to account for inputs from other sectors.

Figure 2: Real unit labour costs for the "*end product*" according to Dustmann et al. (2014) compared to real unit labour costs for the "*value added*" including domestic and global interlinkages based on IO-analysis, 1995=100



***Notes**: Real Unit Labour Costs Total Manufacturing Domestic Interlinkages "Value Added" as well as Real Unit Labour Costs Total Manufacturing Global Interlinkages "Value Added" indices are based on input-output analysis; for further details see Albu (2018).*
***Source**: Federal Statistical Office; National Accounts, Input-Output-Rechnung, Fachserie 18 Reihe 2, Input-Output-Tables (IOT) at basic prices of domestic production for Germany for the years 1995 to 2007 inclusive; IOT for the year 2010 corresponds to the revised version; Intercountry Input-Output Tables of World Input-Output Database Release 2013 for the years 1995 to 2007; own calculations; 1995=100.*

In more detail, we disagree with the following:

i. The data sources selected by the authors when calculating the real unit labour costs "end product" are inconsistent (see Dustmann et al. 2014: Appendix B, Table 2a). While the authors use output variables from the Federal Statistical Office, they do not complement it with the consistent sectoral labour cost data available for this purpose for their IO calculations, but use instead data from the *IAB company panel* for West German employees coupled with IO coefficients (see v. for further details). By using this data set, several distortions occur: The specific development in East Germany is ignored and the changes in employers' social security contributions are not taken into account. The non-use of official data is also baffling because, contrary to the authors' statement (Dustmann et al. 2014: 171), the increasing wage spread in individual sectors cannot have any influence on the calculation of unit labour costs, as only average labour costs per capita are used for this purpose.
ii. In contrast to the standard approach of calculating sectoral productivity, the authors use *nominal* "*end product*" instead of *real value added* in the denominator.

Consequently, they calculate unit labour costs for the "*end product*" but only include domestic inputs, losing intercountry interlinkages. This methodological shift accounts for about 15 percentage-points difference of the final decrease in costs (see the dotted line "global Interlinkages" for the corrected value added approach that at the same time corrects for global interlinkages with other countries/sectors versus the bold line for Dustmann et al. (2014) "end product" in figure 2). Yet, to our knowledge, there is neither a theoretical nor an empirical justification for using the end product. By ignoring the wage costs incorporated in the imported inputs but using overall output at the same time it is not surprizing that the unit labour costs for the end product calculated by Dustmann et al. decreases. Yet, the purported decline stems from an inconsistent construction.

iii. The authors try to account for inputs from other sectors. Yet, instead of conducting an entire input-output (IO) analysis for the unit labour cost index, required from a methodological point of view, they use the coefficients of the inverted IO-matrix for including wage costs from other sectors. This approach does not correctly account for all interlinkages and economies of scope and, in particular, does not correct for *differences in the share of part-time workers* between sectors. The latter has a significant influence on the calculation of the cost advantages of the German industry relative to the industries of other countries in the use of cost-effective inputs from the services sector, as Ludwig (2013) and Albu (2017) show. Even more important: The methodology used by Dustmann et al. neglects the lower productivity shares obtained in the services sector. Implicitly, it assumes that productivity in the low-wages services sector is the same as in the high-wages manufacturing sector.

iv. The authors calculate *real* unit labour costs instead of *nominal* ones. This is a consequence of having nominal values for wages and salaries in the numerator and nominal values for output in the denominator, by using the nominal "end product" instead of real value added and IO coefficients of Destatis based on input-output tables with nominal values. Consequently, they calculate an indicator for distribution (a sort of inverted wage share), instead of an indicator for nominal costs per unit of output. While they argue that the difference between real and nominal unit labour costs is negligible, we show below that this difference amounts to about 10 percentage-points for the manufacturing sector and cannot be ignored (see appendix, figure A4).

v. Furthermore, Dustmann et al. justify the decision to measure unit labour costs on the basis of the industrial end product by the fact that not only upstream inputs from Germany but also those from abroad are to be included, since the production value includes all imports (Dustmann et al., 2014: 176). In principle, nothing would stand in the way of the inclusion of imported intermediate inputs, especially as these have increased sharply over the period under study, especially imports of German manufacturing from Eastern Europe (Albu 2018). However, the *linkages with other countries are absent in the indicator Unit Labour Costs*: "End Product", since the IO

coefficients of Destatis used by Dustmann et al. in connection with the production value (Dustmann et al. 2014, Appendix B, Table A2) refer only to domestic production, excluding imports, and therefore do not offer weights for foreign inputs to production. In order to correctly account for imported inputs, the authors should have used global intercountry IO-tables, provided e.g. by WIOD.[12] Figure 2 shows that the use of input coefficients stemming from global IO-tables for interlinkages and economies of scope would have led to a different development of unit labour costs including domestic interlinkages: lower in the second half of the 1990s and almost identical in the 2000s.

vi. Correctly accounting for interlinkages stemming from intermediate inputs from other sectors, nominal unit labour costs even increase in the period from 1995 to 2007, since productivity in the services sectors is lower than industry's. The overall lower productivity development resulting from the interlinkages with the services sector increases both real and nominal unit labour costs, i.e. irrespective of whether the production value or gross value added is used as the denominator in the calculation of productivity. This explains the surprising result that the inclusion of services sector inputs increases unit labour costs, due to the lower productivity in this sector. Yet, this effect might be overrated because the higher share of part-time workers in the service sector in fact lowers the measured productivity increase in this sector (Albu 2017).

vii. Ultimately, the authors' idea of including the interlinkages between the different sectors leads to a result in which the unit labour costs of industry, including the interlinking effects using the IO-methodology, show no decline at all in the period under consideration (line "Nominal Unit Labour Costs Total Manufacturing Domestic Interlinkages 'Value Added'" in figure 3) and are thus closer to unit labour costs of the total economy (line "Nominal Unit Labour Costs Total Economy 'Value Added'" in figure 3).[13]

Based on this criticism, we think that the approach used by Dustmann et al. (2014) is inadequate and heavily understates true cost developments in the (tradable) manufacturing sector. Figure 2 demonstrates that the approach by Dustmann et al. (2014) induces a misleading picture: The use of "end product" instead of "value added" falsely decreases unit

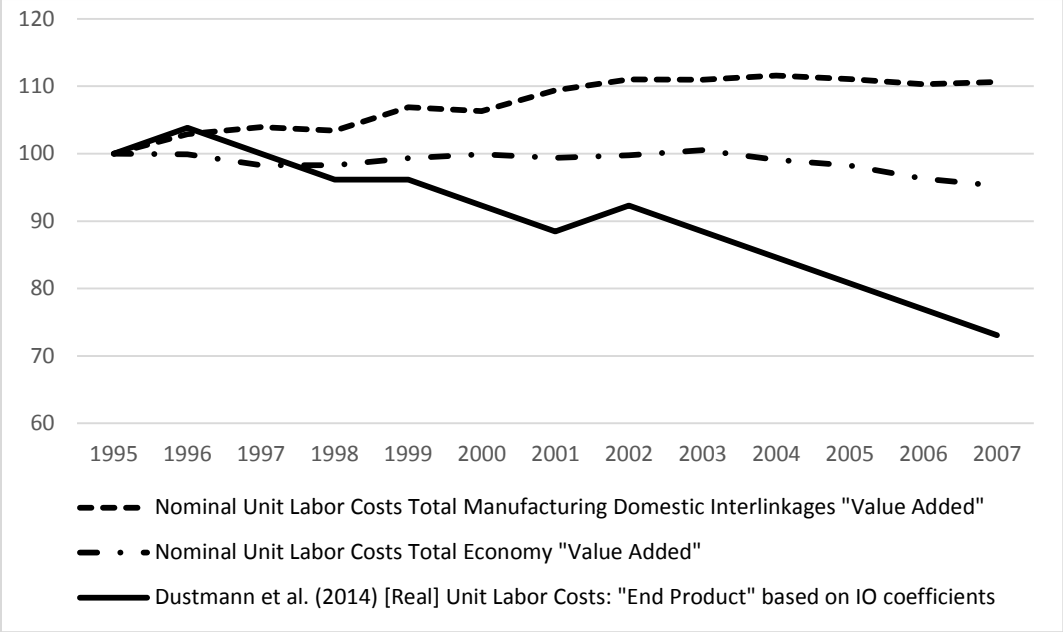
[12] WIOD provides an intercountry-Input-Output Table for the years 1995 to 2011 and 2000 to 2014.

[13] The increase of the nominal unit labour costs for the total manufacturing industry including domestic interlinkages compared to the base year seems to be overestimated by about 10 %-points in 2007 (as the gap between the development of real and nominal unit labour costs without interlinkages only makes up for about 10 %, as can be seen in figure A4 in appendix). The calculated increase is mainly due to the partial unavailability of price indices for the respective period, especially for the service sectors (see Albu 2018). Discounting the 10 %-points difference from the nominal unit labour costs including interlinkages would a) decrease the gap in figure A5 (appendix) to still about 25 %-points between the nominal unit labour costs with interlinkages and Dustmann et al. (2014) adjusted version of the former and b) change the line "Nominal Unit Labour Costs Total Manufacturing Domestic Interlinkages 'Value Added'" to be closer to unit labour costs of total economy (line "Nominal Unit Labour Costs Total Economy 'Value Added'" in figure 3.

labour costs by about 10 percentage-points on top of the false decline by concentrating on real unit labour costs instead of nominal unit labour costs, adding another 10 percentage-points (see figure A4 in the appendix).

The discussion should have demonstrated that manufacturing unit labour costs are not a good indicator for the competitiveness of the German export sector. But the wrongly calculated 25 percentage-points downward correction in Dustmann et al. (2014) exacerbates this deficiency.

Figure 3: ***Different measures and concepts of unit labour costs***



Notes*: for further details see Albu (2018).*
Source*: Dustmann et al. (2014); Federal Statistical Office; National Accounts, Input-Output-Rechnung, Fachserie 18 Reihe 2, Input-Output-Tables (IOT) at basic prices of domestic production for Germany for the years 1995 to 2013 inclusive; IOT for the year 2010 corresponds to the revised version; own calculations; 1995=100.*

While a correct calculation of the cost effect has a long lag because of the delay in data provision and is difficult due to measurement of productivity and price indices in the service sector, we suggest relying on total economy unit labour costs as a better indicator for national cost competitiveness; this would then have to be corrected by exchange rate changes and compared to unit labour costs developments of trading competitors. We suggest relying on total economy unit labour costs, firstly because imports and exports of services account for a large share of total foreign trade in some EU-countries, and secondly because it makes sense to include the cost effect resulting from the interdependence of inputs with the service sector. This is in line with a recent empirical study by the Deutsche Bundesbank according to which price indicators based on broad-based price or cost indicators like total economy unit labour costs perform better than those based on manufacturing unit labour costs:

> “All of the conventional indicators of price competitiveness have their own specific advantages and drawbacks. However, from a conceptual perspective, there is some evidence to suggest that indicators based on broadly defined price and cost indices may be capable of modelling price competitiveness more appropriately than more narrowly defined indices, since the latter capture price and cost developments only in some subsectors of the domestic economy. For example, indicators based on unit labour costs in manufacturing, which were once in widespread use, cover only one part of relative cost developments. This is not necessarily representative of overall cost developments in the German economy and can therefore easily lead to distortions and misinterpretations. Price and cost indices that focus on macroeconomic variables avoid this disadvantage.” (Deutsche Bundesbank 2016b: 13).

Given these arguments, the following sections will mainly concentrate on total economy unit labour costs developments.

4. Wages, unit labour costs, and price competitiveness since 1980

Already long before the introduction of the euro, wage increases in Germany tended to be moderate in comparison to other industrialized countries, even in relation to productivity changes measured by unit labour costs. Figure 4 portrays unit labour cost developments of Germany and selected countries from 1980 onwards. This long-run presentation should not be misconstrued as a correct reflection of price competitiveness developments.

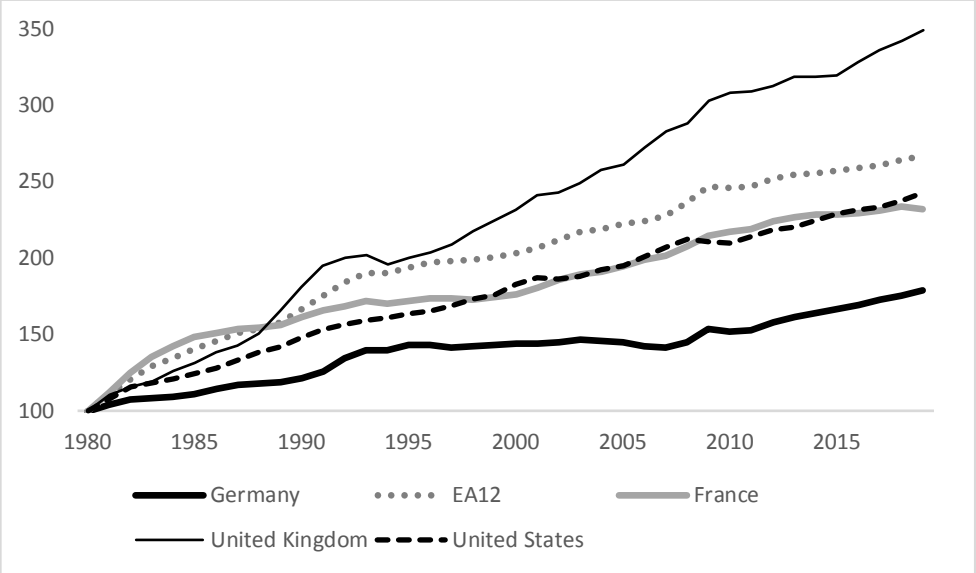
First, unit labour costs indicators are only one component of price competitiveness, as has been explained above. Second, the construction of competition indicators is not a "zero line" for competition neutrality. For developed economies, a phase in which a country's current account balance is close to balance is the best way to determine this. The Center for European Policy Studies (CEPS) also emphasizes the importance of choosing the right starting point. The year 2003 would be adequate according to CEPS (Gros 2016: 5). We would prefer 2001, as the German current account was almost balanced and current account imbalances among euro area countries were small. The chosen starting year in the following figures therefore indicates developments from then on only, without judging this year to be an adequate starting point.

As can be seen in figure 4, unit labour costs increased in Germany from 1980 up to the mid-1990s before stagnating up to 2007, but the increase was lower than in France, the UK, the US, and the average in the 12 countries that later formed the euro area (EA 12).

Underlying reasons were the system of collective wage and salary bargaining in combination with special labour market institutions (Behrens 2018), and a German central bank that acted inflation-averse thanks to historic fears of hyperinflation. As a result, unit labour costs have improved since 1980 compared to other countries, putting exchange rate effects to one side.

But improving costs competitiveness measured by unit labour costs brought repeated nominal appreciations of the German Mark, especially during the period from 1980 until the mid-1990s. As can be seen in figure 5, Germany's nominal effective exchange rate[14] appreciated repeatedly against a basket of relevant trading partners, counteracting the moderate labour costs developments.

Figure 4: Nominal unit labour costs (ULC) in Germany and selected countries since 1980, 1980=100



***Notes**: EA 12 comprises of Austria (AT), Belgium (BE), Finland (FI), France (FR), Germany (DE), Ireland (IE), Italy (IT), Luxembourg (LU), Netherlands (NL), Portugal (PT), Spain (ES) and Greece*
***Source**: AMECO, Nominal unit labour costs, total economy, accessed on May 2018.*

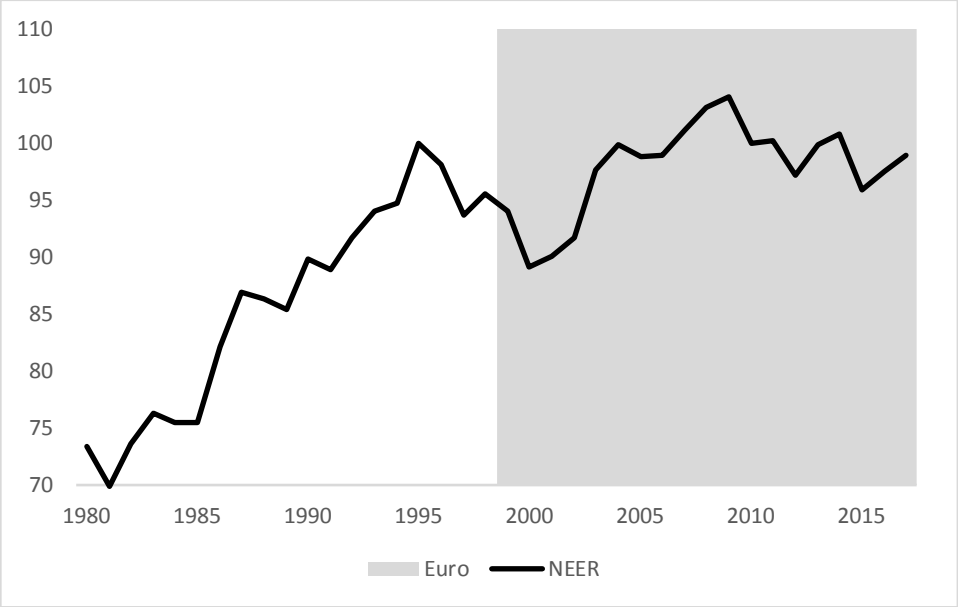
Highlighting the final effect of price and costs developments in relation to exchange rate developments on price competitiveness, figure 6 additionally presents the real effective exchange rate.[15] An increase indicates worsening price competitiveness, a decrease an improvement. As the figure shows, the price competitiveness of German exporters only improved until the mid-1980s and worsened markedly from then on until the mid-1990s, bottoming out in 1995 and indicating increasing competitiveness problems for German exporters. The figure shows that the main reason for the change during the period 1990 to 1999 arose from exchange rate developments that were not mitigated by counteracting relative price developments during that period, as NEER and REER move in tandem.

Behind these developments is a combination of effects related to German unification: The appreciation of the exchange rate coupled with price developments that no longer offset

[14] The nominal effective exchange rate (NEER) measures the value of a currency against a weighted basket of foreign currencies from countries that are relevant trading partners. An increase in the NEER indicates an appreciation of the local currency against the currencies of trading partners.
[15] REER data from IMF IFS based on unit labour costs is only available from the mid-1990s onwards. The figure therefore shows REER based on CPI data for the period starting in 1980. The OECD indicator for relative unit labour costs with a similar, yet slightly different calculation, starts in 1970 and shows a similar behaviour of price competitiveness. Similarly, the strongest real appreciation happens from 1980 to the mid-1990s.

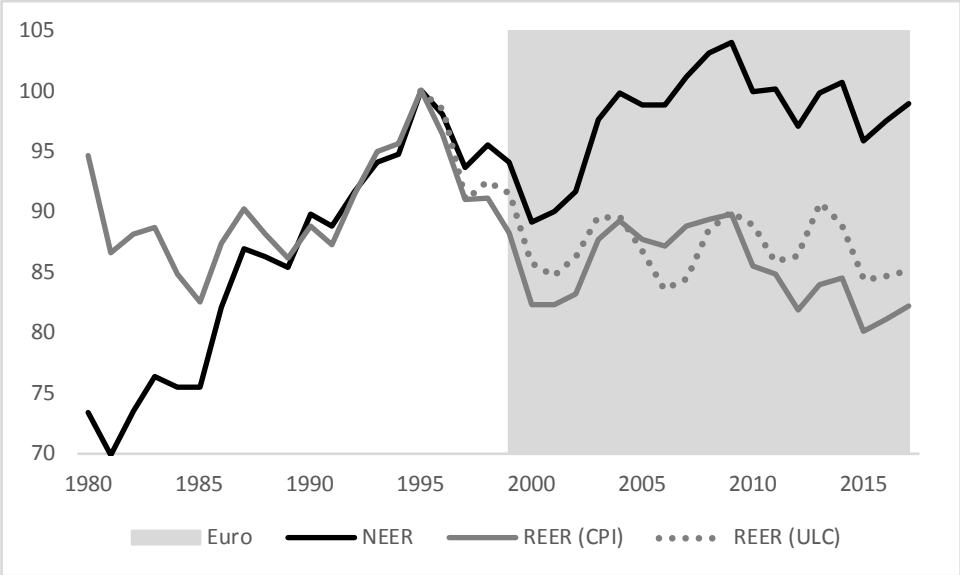
exchange rate movements. The next chapter will elaborate on those effects and explain that non-wage-labour costs also increased after unification, adding to increasing problems of price competitiveness for German exporters.

Figure 5: Germany's nominal effective exchange rate (NEER) since 1980



***Notes**: Nominal effective exchange rate; increase implies an appreciation. Euro developments linked to former German Mark series. Weighting of German trade partners includes not only manufactured goods, but tourism, and commodities, see Bayoumi et al. (2005).*
***Source**: IMF IFS, own presentation, data access May 2018.*

Figure 6: Germany's nominal (NEER) and real effective exchange rates (REER) since 1980



***Notes**: Nominal and real effective exchange rate; increase implies an appreciation. Weighting of bilateral exchange rates also includes third country competition. Nominal exchange rates are corrected for relative consumer price developments in case of REER (CPI) or relative unit labour costs developments for REER (ULC). Euro developments linked to former German Mark series.*
***Source**: IMF IFS, own presentation, data access May 2018.*

After the mid-1990s, price competitiveness measured by REER improved up to the early 2000s, slightly worsening thereafter with the temporarily strong nominal appreciation of the euro. From then onwards, price competitiveness has fluctuated. The ups and downs depend on the correction used, relative cost developments (REER based on unit labour costs), or relative CPI developments.[16]

As this section has tried to show, the deterioration in price competitiveness was especially pronounced in the early 1990s, spiking in 1995, due to the appreciation of the Deutsche Mark after German unification combined with no-longer-counteracting wage developments. The next section will explain the policy decisions regarding the treatment of unification costs that contributed to this strong loss in price competitiveness.

5. Effects of German unification on price competitiveness

Unification in Germany interrupted the process of increasing price competitiveness, owing to the combination of two effects: First, the German Mark appreciated against several European currencies in the wake of the 1992/3 crisis in the European Monetary System (EMS), the precursor of the European Monetary Union (see figure 5). The EMS was a system of fixed exchange rates between selected European countries. German unification had indirectly provoked an EMS crisis, as the resulting demand boom in Germany prompted interest rate hikes by the Bundesbank to fight potential inflation expectations. This attracted net capital inflows and, as a result, produced upward pressure on the Mark. Other European countries were in a less favourable economic position but had to follow German interest rate hikes in order to keep their currencies in the system. As this dampened their economies even further, speculative attacks provoked several currency realignments and Sterling left the system entirely. Consequently, German companies were confronted with a strong appreciation of the German Mark against European trading partners' currencies.

Second, figure 4 shows a stronger increase in unit labour costs between 1991 and 1993 compared to the previous period. This implied that wage developments, unlike before, were increasing at similar rates as in trade partner countries. As they no longer offset exchange rate appreciations, not only did the nominal effective exchange rate appreciate, but also the real effective exchange rate (REER) rose up to 1995, as figure 6 shows. The increase in unit labour costs was due to higher wage increases and the financing of unification costs in the form of rising social security contributions, owing to jumps in unemployment and massive recourse to early retirement schemes. Instead of financing this cost via taxation, affecting not only employees and employers but also public servants and the self-employed, the government decided to rely on increasing social security contributions. This wholly inadequate way of financing unification costs pushed up non-wage labour costs (see Meinhardt/Zwiener 2005). At the same time, trade unions tried to align wage levels in East

[16] While wage and price developments are highly correlated, mainly oil price effects are relevant for differences between REER developments based on ULC versus CPI.

Germany with those in West Germany. The combination of the nominal appreciation of the German Mark (figure 5), and no-longer counteracting wage developments, brought about a soaring real effective exchange rate (figure 6).

As East German output and employment declined after unification, unemployment increased even further and the debate about excessive labour costs and the disadvantages of producing in Germany intensified in the mid-1990s. Given generally high unemployment rates in Europe, the OECD intensified the call for structural labour market reforms that would encourage deregulation and increase flexibility (see e.g. OECD 1993: xiv-xv). This, together with rising non-wage labour costs, intensified the debate about necessary labour market reforms required to lower unemployment in Germany. But the OECD employment database for labour market policies and institutions indicates several reforms that had already started in the 1980s and intensified during the mid-1990s (Bassanini/Duval 2006; Bothfeld 2007; Ebbinghaus/Eichhorst 2006; Deutsche Bundesbank 2005: 25). In addition, and starting from the mid-1990s, cuts in public expenditure were implemented in order to fight high indirect unification costs, mainly provoked by high unemployment. To enhance employment prospects, tax incentives for companies were combined with lower social security contributions.

The labour market reforms dampened the bargaining power of labour unions, as Dustmann et al. (2014) rightly mention. They also mention access to low-wage neighbouring East European countries as an additional pressure on labour (an element also mentioned in Möller 2012: 14). Lower trade union density as well as the declining membership of companies in employers' associations led to an increase in escape clauses in collective wage and salary agreements. The authors' appraisal that the greater number of firm-level deviations from industry-wide agreements signalled the flexibility of the German system is arguably rather evidence of this system's erosion (see Bispinck/Schulten 2003, Brandt/Schulten 2008). What we want to stress is the political pressure on those institutions, the labour market reforms, the high unemployment figures, and the spending cuts that provoked this "flexibility".

6. Effects of the Hartz reforms

Many in science, politics and the media consider the focus on neoliberal supply-side policies implemented in Germany in the last decade, culminating in the Agenda 2010, to be a model of economic success to this day (FAZ 2012; Blum et al. 2008; Klinger et al. 2013, Möller 2012). The reforms of the labour market and the welfare state in Germany as well as the long-term stagnation of real wages and restrictive fiscal policy were put forward as propitious and partially imposed on the crisis countries in Europe.

In the last decade, Germany's supply-side policies have focused primarily on reducing costs for companies - wages, social security contributions and taxes - with the aim of giving them an incentive to create more jobs. The labour market reforms had the explicit goal of

reducing wages, especially for low-wage earners, and indeed expanding the German low-wage sector. In addition, the reforms of unemployment insurance, health insurance and pensions aimed also at reducing non-wage labour costs. As Dustmann et al. show in their figures for indexed wage growth, this was "successfully" achieved by 2004: wages for the lowest 15th percentile started to decline in absolute terms, and not only for the non-tradable sector but also for tradable services and manufacturing (Dustmann et al. 2014: 170-2). Similarly, Möller shows as regards wages developments by skill level that wages for the low-skilled largely started to go down from 2004 onwards (Möller 2012: 15).

Given their effect on (low) wage developments, we find it surprising that Dustmann et al. (2014) judge these reforms to be less relevant for shrinking unit labour costs and German price competitiveness. *Au contraire*, we see them as a key factor in dampening unit labour costs from 2004 onwards.

Against this background of economic and especially labour market developments in Germany between 2001 and 2007 in particular, the explanations for lower wage rises and the widening wage spread of Dustmann et al. (2014) seem too one-sided because they focus too much on institutional factors and largely ignore the politically enforced wage pressure at that time. One can see from their own data that the wage spread significantly increased via the Hartz legislation after 2004.

While the authors put emphasis on the widening wage spread as one important element for the economic turn-around, they do not discuss the effect on competitiveness. The same improvement in competitiveness could be achieved simply by generally low nominal wage increases without changes in wage differentials within different sectors. And, while the report discusses the “flexibility” of labour market institutions, two important “flexibility” elements of the German model of industrial relations are not even mentioned: working time accounts and short-time work, the two decisive labour market policy instruments for avoiding a decline in employment during the major recession of 2008/2009 (Möller 2010, Herzog-Stein et al. 2018) when growth slumped by more than 5%.

7. Macroeconomic effects of unit labour cost developments in a monetary union

The choice of the period for economic analysis can heavily influence the results. In this regard, the selection of the period 1995 to 2007 by Dustmann et al. (2014) is surprising, as more recent data is available. The choice is remarkable in two ways: First, the period in question is one with notably low increases in or even stagnation of total unit labour costs (see figure 4). Second, the period begins at the very end of a long phase of appreciation in the D-Mark with a subsequent five-year devaluation period (see figure 5). The latter certainly had a considerable influence on export success during that time. Nevertheless, employment subject to social security contributions in Germany fell from 28.1 million to 26.5 million persons, i.e. by more than 5 %. At the same time, the number of mini-jobbers increased

significantly. This period was still marked to a considerable extent by mastering problems associated with German unification and the start of EMU and can rightly be considered an example of economic failure. In this respect, attributing "economic superstar" status, which, strictly speaking, is only deserved in later years, is wide-of-the-mark.

In the following period until 2017, employment subject to social security contributions rose to 32.2 million, i.e. by over 20%, and the number of mini-jobbers fell. During this period, wages and unit labour costs increased significantly (Albu et al. 2018). Consequently, the period after the financial crisis and worldwide recession is the one where higher wage increases had been in line with greater employment creation and stronger economic prosperity.

The comparison between these two periods in Germany illustrates that real wage increases below productivity gains support the price competitiveness of exports, but must be balanced against the negative effect of lower domestic demand. For large economies like Germany, higher export growth cannot offset this negative effect, as Bhaduri/Marglin (1990) show theoretically. Stockhammer et al. (2011) provide empirical simulations for Germany, showing that the demand effect of wages outweighs the cost effect. Similarly, Horn et al. (2017) and Herzog-Stein et al. (2013) provide detailed discussions on the higher relevance of wage developments for demand in Germany compared to the cost effect. Gros (2016) points to the weight of domestic demand for divergences in competitiveness and the low impact of competitiveness on export development[17]. Even so, the negative growth impact of lower wages on demand is not even mentioned in Dustmann et al. (2014).

Policies to dampen wages were purely focused on reducing costs, concentrating exclusively on the supply side but overlooking the demand side. If a company or the corporate sector of an entire country reduces its costs through lower wages, taxes and social security contributions, it still needs enough effective demand to make the cost reduction economically effective. Wages, social security contributions and taxes are costs that are a burden on companies but at the same time income and source of private and public demand for their products.

The weakness in German domestic demand undoubtedly dampened the development of imports and thus contributed significantly to Germany's rising current account surplus (Storm/Naasdepad 2015). Within a monetary union, high real net exports and high nominal current account surpluses are dysfunctional (Horn et al. 2017). They have a destabilising

[17] „The evidence so far thus suggests that the divergences in competitiveness up to 2007 were not due mainly to a German policy of wage restraint and low productivity in the periphery. The key driver seems to have been relatively strong domestic demand growth in the periphery (compared to Germany) which led to tight labour markets and thus, high wage and price increases. … An implicit element in the conventional narrative is that competitiveness is a key driver of trade performance. But the evidence for this proposition is also surprisingly weak, whether one takes time series or cross-section data“ Gros (2016, p. 10).

effect, as the crisis in the euro area has shown. National unit labour cost increases which systematically deviate upwards or downwards from the ECB's inflation target over a longer period create imbalances within a monetary union. The subsequent adjustment processes come with considerable frictions, not least because the exchange rate is no longer available as an instrument.

More critically, this cannot be a sensible strategy for all euro area countries, as it would require the rest of the world to concede rising current account deficits in perpetuity with the euro area and a nominal euro exchange rate that does not appreciate against trading partners. The current debate about the world trade order indicates that this might not be a sensible long-run strategy. Nevertheless, the authors seem to recommend other euro area countries should follow the German example of increasing price competitiveness by decreasing unit labour costs, even though they seem to doubt that other countries' labour market institutions would allow for such developments (see Dustmann et al. 2014: 185). "Without the possibility to depreciate national currencies, the only way for countries like France, Italy, and Spain to gain competitiveness relative to other countries of the Eurozone is to reduce unit labour costs – that is, by increasing productivity relative to real wages. Whether these countries will succeed in this endeavour remains an open question." (Dustmann et al. 2014: 185).

8. Conclusions

Dustmann et al. (2014) see the specific advantages of German labour market institutions primarily in reducing labour costs and widening wage differentials. Without analysing the causes of low growth and high unemployment, they assume that Germany's competitiveness had not been strong enough since the mid-1990s and needed to be remedied. They praise German labour market institutions for restoring competitiveness, even more than shows up in standard calculations of unit labour costs. They develop a new approach for measuring competitiveness of German manufacturing exports, according to which "true" unit labour costs decreased by 25% between 1995 and 2007.

Yet, the new competitive indicator for the manufacturing sector from Dustmann et al. (2014) does not stand up to closer scrutiny. With the help of IO analysis, we show that this indicator is methodologically extremely problematic and clearly exaggerates Germany's competitive strength. We recommend instead using total economy unit labour costs as a competitive indicator, as this takes the effects of low wages and productivity in the German service sector into account in a methodologically sound way and is available on a timely basis. In addition, we criticize the publication's focus on absolute unit labour costs, as relative unit labour costs developments of trading partners coupled with exchange rate developments are relevant for price competitiveness.

Nevertheless, it must be noted that companies with pricing-to-market strategies do not pass on wage cost advantages completely to export prices, which means that competitive

advantages can result in higher corporate profits. They do not necessarily have to result in higher export volumes. Strong global economic growth, globalization, devaluation of the euro, and the high quality and appropriate supply of the German export industry were all factors probably more important for Germany's export success than improvements in price competitiveness due to the partial decline in real wages. It is therefore surprising that Dustmann et al (2014) do not provide more evidence for their assumption of a strong positive effect from wage restraint upon exports and, implicitly, GDP growth.

Besides criticizing the approach to unit labour costs of manufacturing exporters of Dustmann et al. (2014), we consider the macroeconomic effects of wage developments in the last decade as problematic for German GDP growth and employment, as well as for stability in the euro area. Depressed wage increases in Germany inevitably entailed considerable follow-up costs within a currency union, which is ignored in their analysis.

With Germany's excessive fixation on greater competitiveness, domestic demand has been neglected with negative effects on growth and employment. Although real wage cuts increased exports, the effect was significantly lower than assumed by Dustmann et al. (2014). At the same time, this reduced consumption (and residential property investments) and ultimately even growth. It increased the current account surplus with higher exports and lower imports via demand. Within a monetary union, unemployment was thus exported abroad and an unstable situation created, the solution of which has come with high costs for all parties involved as post-2009 development have demonstrated. In the context of Germany's high current account surpluses - EUR 255 billion in 2017 - international institutions such as the IMF (2017) insist that it should increase wages in order to relieve the burden on other European countries and stabilise EMU.

Nevertheless, the work of Dustmann et al. does have some merits. On the one hand, they have shown to what extent the wage spread in Germany has widened, especially since 2004, when policy deliberately created a large low-wage sector with a considerable number of resultant problems. They have also refuted Sinn's thesis of Germany as a “bazaar economy”.

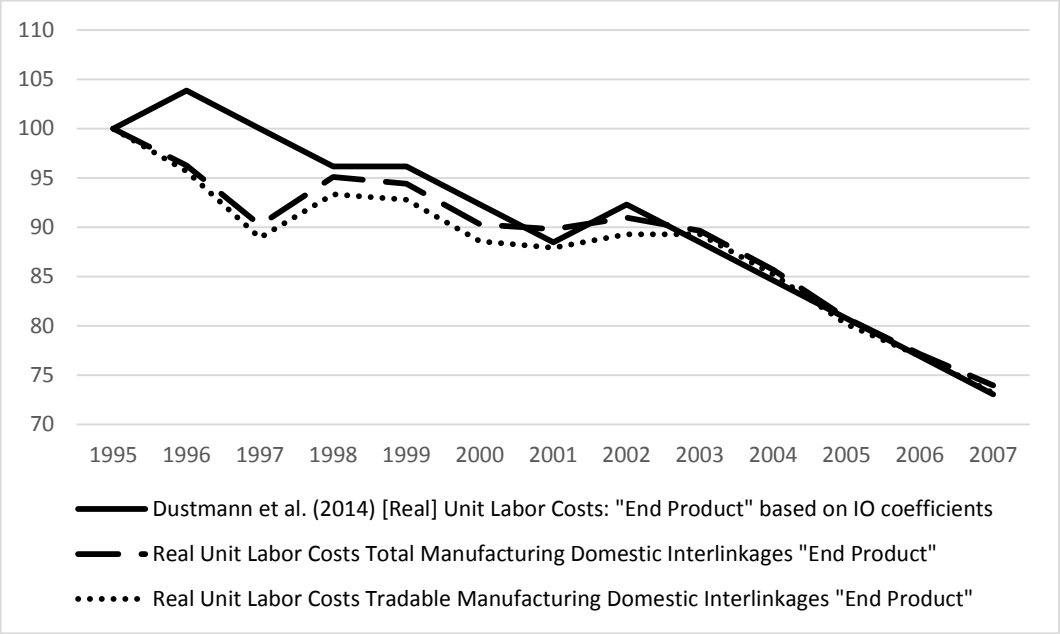
The authors do not, however, even try to prove their thesis. They simply claim that real wage cuts have benefited Germany's economy. Yet, economic development post-2007 and comparison with other EMU countries suggest the opposite conclusion: Real wage cuts were detrimental to GDP growth in Germany and did not benefit employment creation. They have also increased the imbalances within the monetary union. And there is a growing recognition in the international debate that rising income inequality is not an engine of but an obstacle to growth (Cingano 2014, Ostry et al. 2014).

Appendix

Figure A1 shows the difference between a methodological inconsistent curve, i.e. *Dustmann et al. (2014) [Real] Unit Labour Costs: "End Product" based on Input-Output coefficients* and SIAB panel wage cost data, and a methodologically correct curve, i.e. *Real Unit Labour Costs Tradable Manufacturing Domestic Interlinkages "End Product"*. The aim of this figure is first to show that a correct calculation of domestic inputs (leaving all other particularities aside) would change the development of unit labour costs mainly during the period of the second half of the 1990s. Second, as the dotted and dashes lines are quite similar, the figure also tries to exemplify that unit labour costs for the entire manufacturing industry do not differ in a relevant way from those of the exporting industry ("Tradable Manufacturing"), if measured by export shares above 25%.

It is important to note that the correct incorporation of domestic interlinkages combined with the correction for the other peculiarities (real instead of nominal values, end product instead of value added) leads to rather important changes in developments of unit labour costs (see below, especially A5).

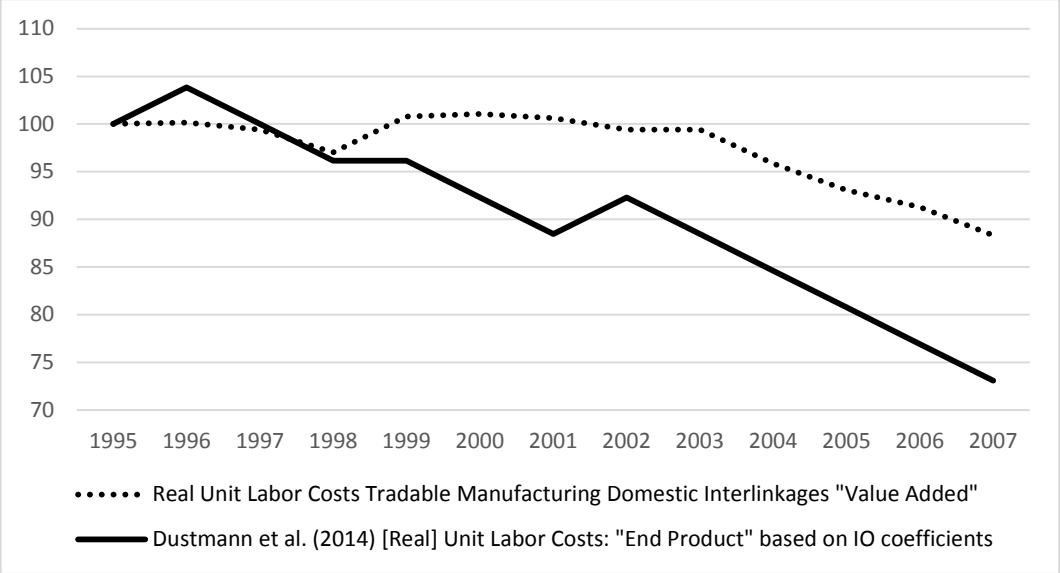
Figure A1: Real manufacturing unit labour costs for the end product



***Notes**: for further details see Albu (2018).*
***Source**: Federal Statistical Office; National Accounts, Input-Output-Rechnung, Fachserie 18 Reihe 2, Input-Output-Tables (IOT) at basic prices of domestic production for Germany for the years 1995 to 2007 inclusive; IOT for the year 2010 corresponds to the revised version; own calculations; 1995=100.*

Calculating unit labour costs for the *end product* instead of for *value added* makes a huge difference (of about 20 percentage-points in 2007). This can be seen in figure A2.

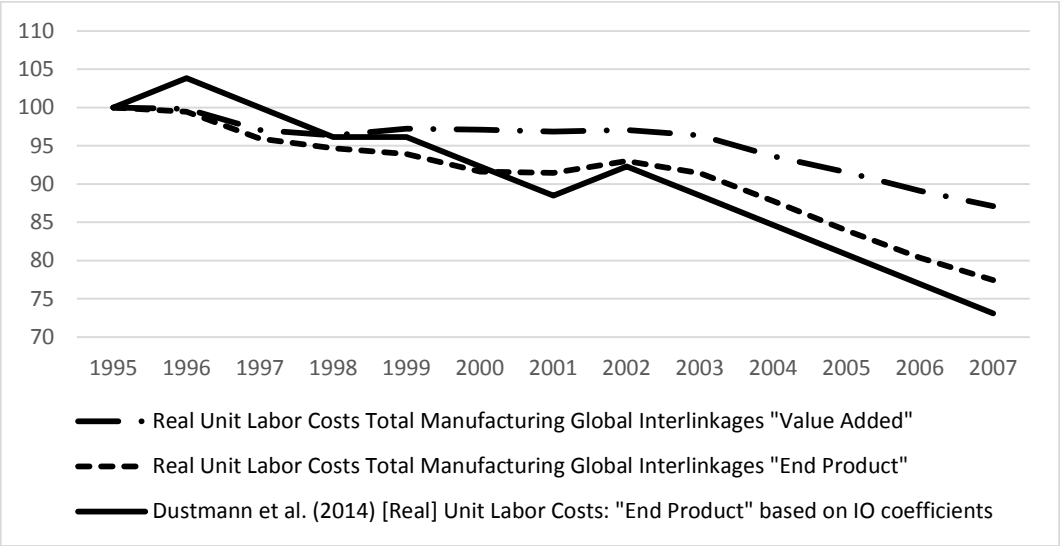
Figure A2: Manufacturing unit labour costs for the end product vs. for value added



***Notes**: for further details see Dustmann et al. (2014).*
***Source**: Dustmann et al. 2014 Appendix B Table A2; Federal Statistical Office; National Accounts, Input-Output-Rechnung, Fachserie 18 Reihe 2, Input-Output-Tables (IOT) at basic prices of domestic production for Germany for the years 1995 to 2007 inclusive; IOT for the year 2010 corresponds to the revised version; own calculations; 1995=100.*

Accounting for sectoral inputs by using the inverted IO-coefficients based on Destatis for domestic production (as in Dustmann et al. 2014), instead of IO-coefficients that account for imported inputs from global tables, changes the development of unit labour costs (see figure A3). In contrast to figure A1, figure A3 shows the changed development for domestic *and* foreign inputs ("*Global interlinkages*").

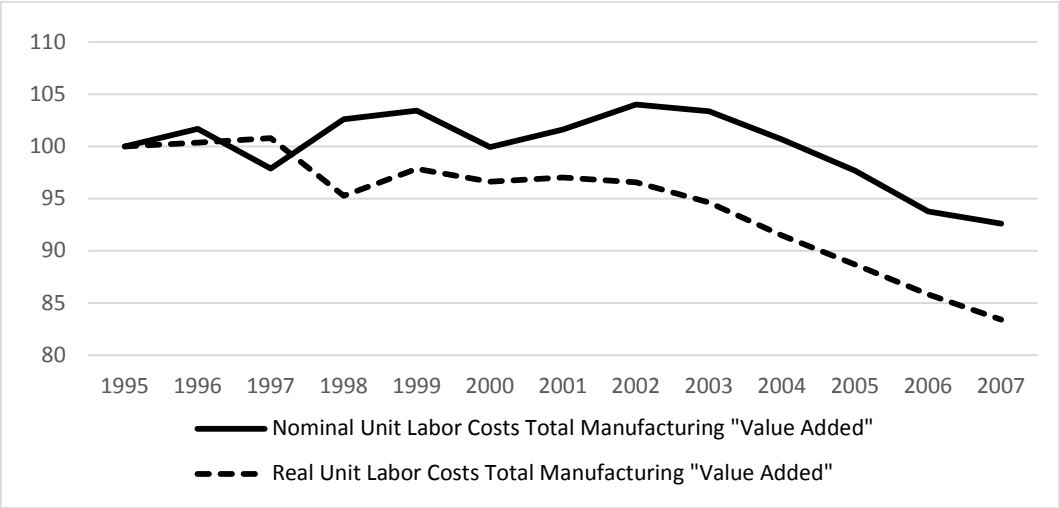
Figure A3: Manufacturing unit labour costs based on correct IO-coefficients



***Notes**: for further details see Albu (2018).*
***Source**: Dustmann et al. 2014 Appendix B Table A2; Intercountry Input-Output Tables of World Input-Output Database Release 2013 for the years 1995 to 2007; own calculations; 1995=100.*

Calculating *nominal* instead of *real* unit labour costs makes a huge difference (of about 10 percentage-points in 2007). This can be seen in figure A4.

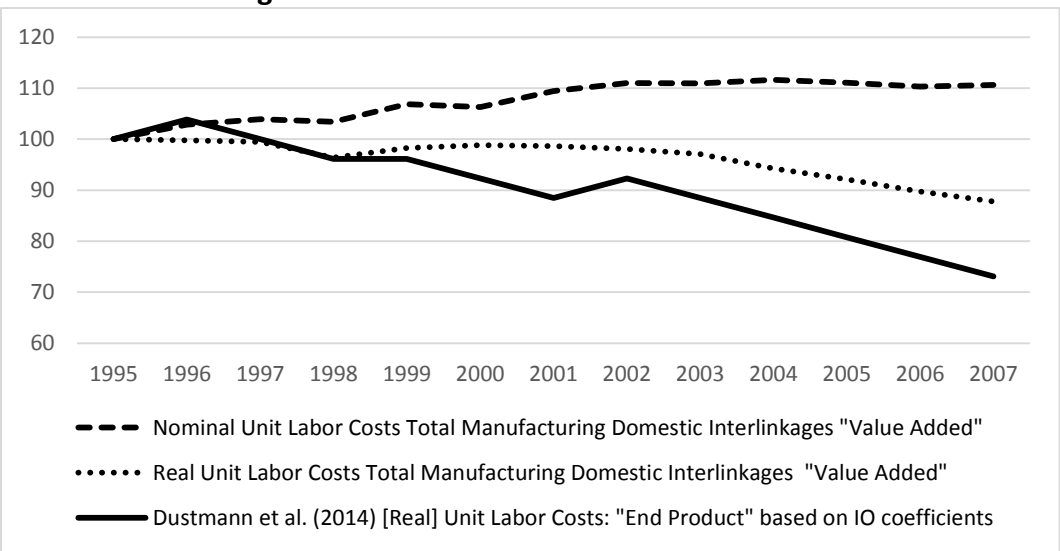
Figure A4: Nominal versus real manufacturing unit labour costs for value added



***Notes**: for further details see Albu (2018).*
***Source**: Federal Statistical Office; National Accounts, Input-Output-Rechnung, Fachserie 18 Reihe 2, Input-Output-Tables (IOT) at basic prices of domestic production for Germany for the years 1995 to 2007 inclusive; IOT for the year 2010 corresponds to the revised version; own calculations; 1995=100.*

Calculating *nominal* instead of *real* unit labour costs for *value added* instead of for the *end product PLUS* correctly including *domestic interlinkages* (domestic inputs from other sectors) leads to even increasing unit labour costs for the manufacturing sector (see figure A5).

Figure A5: Nominal versus real manufacturing unit labour costs for value added including domestic interlinkages



***Notes**: for further details see Albu (2018).*
***Source**: Dustmann et al. (2014); Federal Statistical Office; National Accounts, Input-Output-Rechnung, Fachserie 18 Reihe 2, Input-Output-Tables (IOT) at basic prices of domestic production for Germany for the years 1995 to 2007 inclusive; IOT for the year 2010 corresponds to the revised version; own calculations; 1995=100.*

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