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## Executive summary

**This paper links** the major divergences between the three largest euro-area countries in terms of unit labour costs and current accounts, to the broader debate on labour income shares. We show that Germany, like the United States and Japan, has experienced a significant decline in the share of national income that goes to labour. At the same time, labour shares in France and Italy have increased since the beginning of monetary union, breaking a trend that had persisted for several decades. The capital intensity of production has increased much more significantly in France and Italy, while in Germany the capital-to-GDP ratio has stagnated and the net public capital stock has fallen. Our data suggests that capital and labour have been complements.

**To address divergences** within the euro area, Germany will need to increase its capital

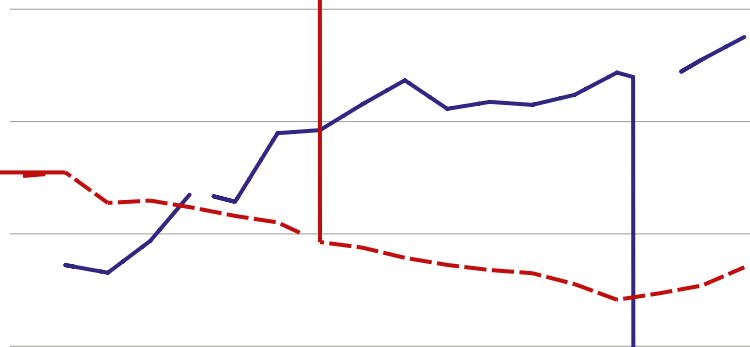


# 1. Introduction

There are two broad views of adjustment in Europe's economic and monetary union. The first is that the divergence of competitiveness in the euro area is the fault of the peripheral countries, which were guilty of

The divergences between the three euro-area countries have gone hand-in-hand with dramatically different performances. Germany has more than halved its unemployment rate since the advent of the euro, while France and Italy are now where they were when the euro was introduced, with unemployment at roughly 10 percent and 11.5 percent respectively (Eurostat, 2016). All European countries have lost global trade shares (in part because of the rise of China), but significant differences can be observed. Italy saw its foreign trade share<sup>3</sup> decrease by 39 percent between 1998 and 2015, while France's almost halved and Germany's decreased by only 20 percent. The contribution to output by manufacturing and other industrial sectors more generally has decreased substantially in France and Italy, while it has remained constant in Germany.

Figure 2: Current account balances (% of GDP)



How can the divergences between the three economies be explained? We show that there has been a significant divergence in labour income shares, i.e. the percentage of national income accruing to labour (see Box 2 for an explanation of how the labour share is calculated). Germany's labour share closely tracks the global decline in labour shares. In contrast, France and Italy have defied the global trends since the beginning of monetary union and their labour income shares have even increased.

Different economic explanations have been proposed for these global developments. But to the best of our knowledge, very few papers have linked these developments to the debate on adjustment in Europe's monetary union<sup>4</sup>. Our evidence suggests that a relative scarcity of capital in Germany is the counterpart to the fall in the German labour share, and that capital and labour are complements and not substitutes in the major euro-area economies, a finding that is overwhelmingly corroborated by the empirical literature<sup>5</sup>. We also highlight different labour market institutions as explanatory factors for the divergence.

3 This number reflects a country's share of exports of goods in total world exports. Source: AMECO (ECFIN).

4 Felipe and Kumar (2011) is an exception.

5 As reviewed by Lawrence (2015), though contrary to Karabarbounis and Neiman (2015) and to Piketty and Zucman (2014).

## 2. Developments in productivity and compensation



Figure 3: Productivity and compensation using the euro-area GVA deflator

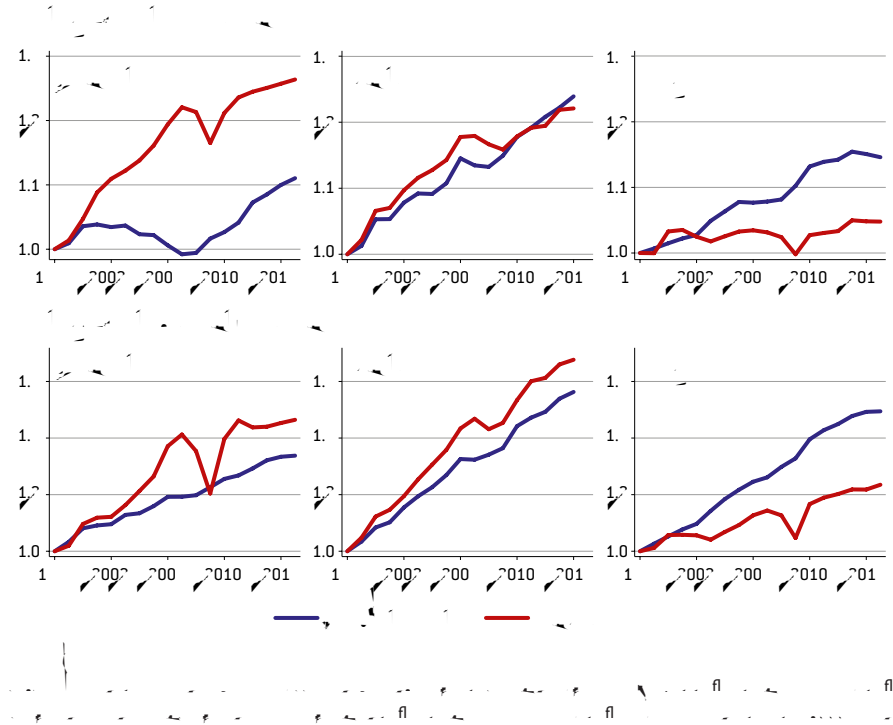
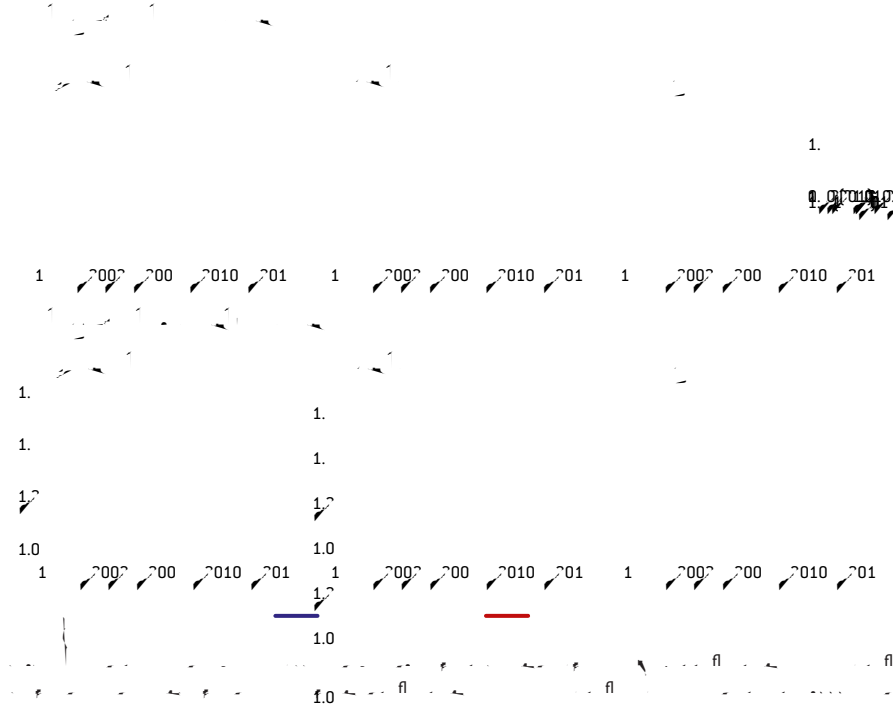


Figure 4: Productivity and compensation using national GVA deflators



Measured in national prices, labour compensation in France has rushed ahead of productivity since the Great Recession. In Italy, after an initial increase in productivity, compensation has risen relatively more since about 2002. In Germany, productivity gains were only partially passed on through compensation after 2002, giving rise to a widening gap. The main reason why the gap looks smaller when looking at national deflators is that wages are a central driver for prices of domestically-produced goods. As a consequence, a country can run sub-

stantially higher in inflation and wage rates than its euro-area neighbours, resulting in competi





comparable to the decline in the US, the UK and in Japan. The manufacturing sector paints a fairly similar picture, although with different labour share levels. The decline in the labour share is particularly dramatic in the US manufacturing sector<sup>15</sup>. In the US, Japan and Germany, productivity has grown well ahead of the growth of compensation (see Appendix A). Only in the UK does the trend seem to have been different, with compensation growing more quickly and falling only recently.

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## Box 2: Calculation of the labour share

The labour share reflects the share of total income – for which gross value added (GVA) is usually used, i.e. output minus intermediate inputs – that accrues to labour as a factor of production. Estimating requires assumptions to be made because employee compensation is the only unambiguous part of labour remuneration. The income of the self-employed is typically a mix of capital and labour income, which are not reported separately. In line with the literature, we assume that the hourly compensation of the self-employed is equal to that of employees<sup>16</sup>. We perform the calculation based on this assumption on the industry level and add up to arrive at total labour compensation. Its share in GVA is the labour share.

To put the calculation somewhat into perspective, however, Elsby (2013) show that this way of calculating the labour income of the self-employed overstates the fall in the US headline measure of the labour share and explains its decline by about one third.

It is also important to note that the labour share is about factor incomes: the share of income going to labour as an input to production. That does not necessarily reflect all income accruing to workers as they themselves can be owners of capital.

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Figure 7: Labour shares in major advanced countries, business sector



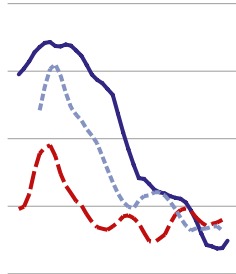
Figure 8 puts the discussion into a long-term perspective. It shows that fluctuations in the labour share are nothing unusual. Nevertheless, there is a clear downward trend visible

<sup>15</sup> For more details on the data see Table B.1 in Appendix B, where the difference Aen-GBend visible



in the labour share of the business sector. The overall labour share might hide sector-specific changes. A clear example is the US, where the overall share has fallen since 2000 but is not at an all-time low, whereas it is at an all-time low for the business and industrial sectors<sup>17</sup>. In particular, in the industrial sector the labour share has been falling since about 2000, similar to that of Germany.

Figure 8: Labour shares since 1970 in Germany, Japan, the UK and the US



The long-term trends in Italy and France are comparable, but monetary union seems to constitute a break. Figure 9 shows that also in France and Italy, the labour shares have fallen, but since the beginning of the 2000s, the trend in both countries seems to have reversed. Germany has seen its labour share fall dramatically in the industry sector in particular, while in France and Italy it has increased.

Figure 9: Labour shares since 1970 in Germany, France and Italy



<sup>17</sup> Karabarbounis and Neiman (2014), Lawrence (2015) and OECD (2012) show that the falls in labour shares result from within-industry changes rather than compositional changes in the structure of the economy.

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## 5. Explaining falling labour shares

ough the falling labour share around the world is well documented, there is no consensus on the reasons for its fall. Karabarbounis and Neiman (2015) link the global decline of the labour share to the global decline in the relative price of investment goods, and argue that this can explain about half of the fall. Their argument hinges on an estimation of the elasticity of substitution of labour and capital exceeding unity – in other words, that labour and capital are substitutes and production has shifted towards capital, which is the relatively cheaper input. Similarly, Piketty and Zucmann (2013) argue that the elasticity of substitution between capital and labour is greater than one. They find that capital-output ratios have increased substantially while the return to capital has fallen. However, the product of the two has increased, leading to a rising capital share. But Piketty and Zucmann (2013) suffers from methodological problems, as argued in detail by Rognlie (2014, 2015). In particular, Piketty and Zucmann

Lawrence (2015) argues that the best way to explain the falling labour share in the US is labour-augmenting technical change, meaning that technological change increases the effective supply of labour because it increases the effectiveness of labour. An example would be a smartphone app that increases the efficiency of a worker. When labour increases more strongly than capital, the labour share would fall. Labour could increase more strongly because of its greater efficiency, for example thanks to modern technology.

at greater efficiency would not be measurable in simple counts of the number of people employed.

While our data are not an econometric test of whether capital and labour are substitutes or complements, they do raise significant questions on the validity of the hypothesis of Piketty and Zucmann. Our data also raise significant policy questions in terms of euro-area adjustment.

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## 6. Conclusions

Our main new finding is that the decline in the labour share in Germany has been comparable with developments in peer industrial economies, in particular the US and Japan. In contrast, the labour shares in France and Italy have been increasing since the beginning of monetary union. Monetary union seems to constitute a structural break in the French and Italian data in that the previous decline in the labour share was halted.

We see three complementary forces behind this pattern of diverging labour shares and unit labour costs that is at the core of the divergences in the euro area. The first concerns the capital intensity of production, which increased much more strongly in France and Italy than in Germany. This result is consistent with capital and labour being complements rather than substitutes.

Second is the introduction of monetary union itself. As a result, monetary union eliminated risk differentiation across euro-area countries and as a result decreased the price of capital substantially in Italy and to some extent in France. Both countries gradually increased their current account deficits and became net capital importers. As a consequence, their capital stocks increased more strongly relative to Germany and their wage shares increased.

A third factor could be institutional factors affecting labour input and labour compensation. According to a measure used by Visser (2015), trade union power in Germany fell while it remained rather stable in France and Italy<sup>19</sup>. Another difference is that French wage bargaining is partially driven by the minimum wage (Avouyi-Dovi, 2011). In Italy, centralised wage bargaining in effect does not take into account geographical differences, possibly to the disadvantage of less-productive regions. Terzi (2016) concludes that this is the root of the discrepancy between wages and productivity in Italy. The number of strike days is another interesting measure: the number of days not worked because of strikes per 1,000 workers was

19 While wage bargaining is generally fairly centralised, regional differences are possible in Germany and the bargaining takes place predominantly at the sector level. As a result, sector-level agreements are usually applied unless company-level agreements lead to higher wage increases. Trades union participation has decreased substantially in all three countries in the past few decades, but the proportion of employees covered by collective bargaining agreements actually went down only in Germany (Visser, 2015). Specifically, trades union participation refers to the 'union density rate', which is net union membership as a proportion of wage and salary earners in employment. The proportion of employees covered by collective bargaining agreements refers to the proportion of all wage and salary earners with rights of bargaining, adjusted for some sectors excluded from right to bargain (the 'adjusted coverage rate'). In France and Italy virtually all employees are covered by collective bargaining agreements, irrespective of whether a particular individual is a union member (see for example Fabiani and Sabbatini, 2009)

79 in France in 2013, while it was less than 10 in Germany<sup>20</sup>. Moreover, in Germany, all social partners agreed to substantial wage moderation in the 2000s<sup>21</sup>.

In addition, the Hartz labour market reforms in the early 2000s led to increases in the German labour force by increasing the pressure to take up work. An increase in the labour force would, all else being equal, lead to a falling labour share because it would reduce wages unless offset by a corresponding increase of capital. This effect does not take into account labour augmenting technical change, which might have been an additional factor increasing the labour supply.

## Policy implications

Our results are preliminary and will require further analysis. They suggest a two-fold strategy is needed to adjust the divergences in monetary union. First, to increase the labour share in Germany, Germany will need to increase its amount of capital.

Figure 11 shows that net public capital has been falling and the total net capital stock has not increased as a percentage of GDP. Germany urgently needs to define an investment strategy that will increase public investment.

In terms of private investment, it is well documented that German companies have reduced investment and increased savings, becoming net capital exporters (Figure A4). Anecdotal evidence confirms that German companies agree that the domestic capital stock is getting old, thereby adding less to the productivity of workers. One of the central policy questions is therefore how conditions for increasing private corporate investment can be improved.

### Figure 11: Capital stock as a share of GDP, Germany



Second, France and Italy will need to raise their labour market supplies by adjusting labour market institutions that effectively exclude parts of the working age population from active participation because of rigidities and insider protection. This is partly a question of labour market legislation and partly a question of the institutional structure of labour markets.

Our data indicates a genuine policy problem. At the core of the problem are different approaches to dealing with the impact of technological change and globalisation on domestic labour markets, and the effects of monetary union on capital allocation. Outside of a

20 Source: Dares, French Ministry of Labour and Employment.

21 For example, in an arrangement that started in 1998 under Chancellor Gerhard Schröder, the social partners

monetary union, those different approaches would have led to vastly different performances in terms of growth and productivity, but the nominal exchange rate would have corrected the macroeconomic disequilibria. Inside the monetary union, the different approaches have led to a large and relatively persistent divergence that manifests itself in high structural unemployment in France and Italy and large current-account surpluses in Germany. Addressing this divergence remains the core challenge for euro-area policymakers.



## References

Avouyi-Dovi, S., D. Fougère and E. Gautier (2011) 'Wage Rigidity, Collective Bargaining and the Minimum Wage: evidence from French Agreement Data', IZA DP No. 5835

# Appendix A

Figure A1: ULC-based real effective exchange rates relative to EA19

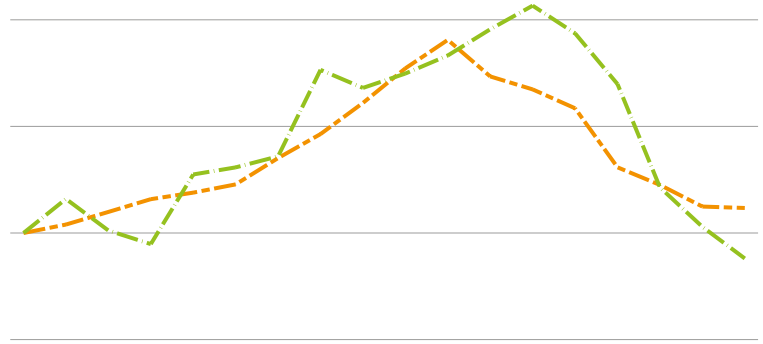


Figure A2: GDP deflator-based real effective exchange rates relative to EA19



Figure A3: Productivity and compensation using euro-area GVA de ator

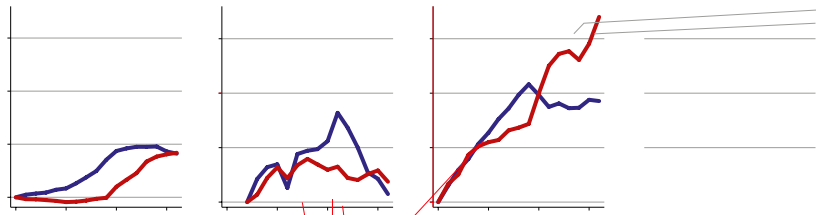


Figure A4: Net lending by sector (in percent of GDP), Germany

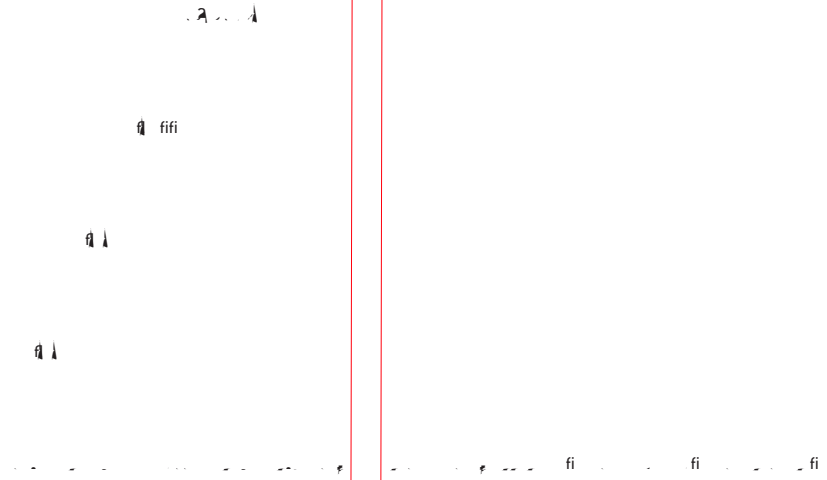


Figure A5: Labour shares in major advanced countries, manufacturing

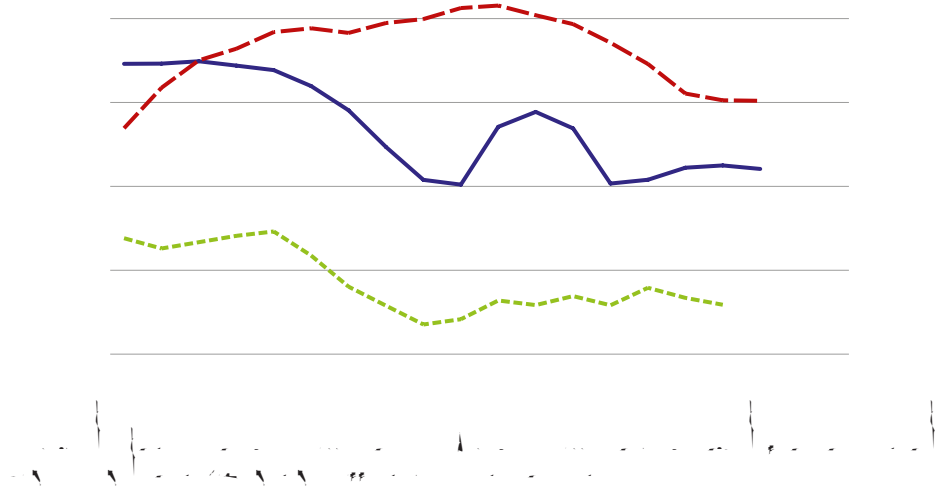


Figure A6: Productivity and compensation







# Appendix B

Table B1 provides information on sources we used to compute labour shares and measures of compensation and labour productivity.

**Table B1: Sources**

Source	Years and countries