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THE ROLE OF NOMINAL WAGES IN TRADE AND CURRENT ACCOUNT SURPLUSES

An econometric analysis for Germany [1]

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1 Translated by Alan Ross

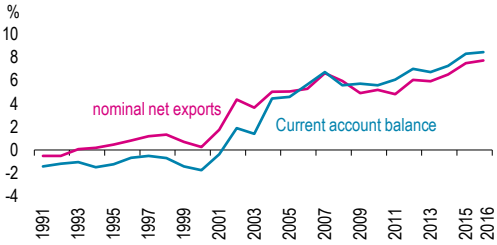
AT A GLANCE

- Although a macroeconomically-oriented wage policy in Germany between 2001 and 2015 would have significantly curbed the growth in real net exports, it would have done little to contain Germany's nominal trade and current account surpluses.
- While export volumes would have been lower, higher export prices would have led to increased export revenues. As a result, the nominal current account surpluses would not have been significantly smaller.
- On the other hand, a macroeconomically-oriented wage policy would have fuelled stronger domestic growth, as well as having a significant positive impact on income distribution (i.e. a higher wage share). It would also have strengthened the public finances, thereby increasing the leeway for the government to introduce fiscal stimuli.
- A macroeconomically-oriented wage policy supported by appropriate fiscal policy measures that make the most of the fiscal leeway created by higher wage increases would induce a stronger decline in the nominal trade and current account surpluses than wage policy on its own. The lower surpluses would principally come about thanks to the increase in imports resulting from stronger domestic growth.
- However, the government would need to introduce much stronger fiscal stimuli in order to bring down the current account surplus in line with the EU ceiling of 6% of GDP.

Video statement by Gustav Horn

On wage trends and the current account surplus
https://youtu.be/XoalLFv5DCg

Current account balance and nominal net exports



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CURRENT ACCOUNT SURPLUSES CANNOT BE EXPLAINED SOLELY BY PRICE COMPETITIVENESS

Germany is frequently criticised for its excessively high current account surpluses. The rules established under the EU's macroeconomic imbalance procedure define a ceiling for current account surpluses of 6% of gross domestic product (GDP) and stipulate that the three-year average for a country's current account surplus should not exceed this ceiling (European Commission 2016, p. 40). However, Germany has been running surpluses in excess of this figure for years. Its most recent three-year average is 8% of GDP, while the 2016 figure was even higher, at 8.5%.

Germany's high surpluses are often blamed on wage trends. According to this argument, its labour and unit labour costs have not risen sufficiently since the introduction of the euro. This "wage dumping" is said to have boosted German exports thanks to improved price competitiveness, whilst at the same time curbing private household demand for imports, thereby causing a sharp rise in the trade and current account surpluses. Wages in Germany did indeed go through a period of particularly weak growth after the turn of the millennium and only began to grow more strongly after the financial crisis of 2008/2009.

Prior to European Monetary Union (EMU), comparatively low wage and price increases in Germany repeatedly led to periods of rising current account surpluses followed by a shock nominal appreciation of the Deutschmark. These appreciations would cancel out – and even temporarily reverse – German exporters' initial competitive advantage and lead to a significant reduction in the current account surplus. However, the advent of EMU put paid to this mechanism, because in a single currency area, different wage and price trends in the individual member states do not trigger nominal exchange rate adjustments.

Over the years, the low wage and price increases in Germany amounted to a devaluation in real terms against the other eurozone countries and led to a continuous improvement in the German economy's price competitiveness relative to its fellow eurozone members. In recent years, this has been exacerbated by the pronounced weakness of the euro which has boosted Germany's price competitiveness compared to non-eurozone countries via the exchange rate channel.

The view that greater price competitiveness thanks to low wage increases is a key driver of Germany's balance of trade surpluses is frequently accompanied by the belief that an effective means of bringing these surpluses down would therefore be to reduce price competitiveness through higher wage increases (see e.g. Flassbeck and Lapavitsas 2013).

However, this view is overly simplistic. It is true that a rise in domestic prices relative to prices abroad should lead to a reduction in export volumes and an increase in import volumes. But this does not automatically mean that the current account surplus will decline as a result. This is because the balance of trade that is part of the current account balance relates to *nominal* exports and imports of goods – and nominal values are always the product of *quantity* and *price*. In other words, changes in the balance of trade are determined by both quantity and price movements in foreign trade.

This report will investigate the role played by *wages* in quantity and price movements in Germany's foreign trade. In particular, it will consider whether, all else being equal, Germany's high trade and current account surpluses could have been prevented by higher wage increases and consequently a significant curbing of the improvement in Germany's price competitiveness following the introduction of the euro. The report explicitly ignores the part played by exchange rate fluctuations in Germany's foreign trade imbalances, since its aim is to show the impact that alternative wage trends would have had in the case of the given exchange rate developments.

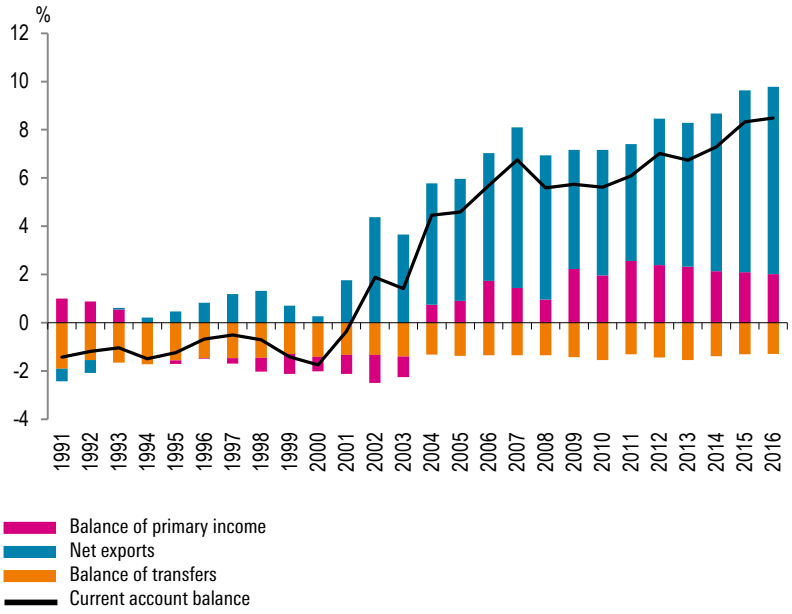
THE STRUCTURE OF GERMANY'S CURRENT ACCOUNT BALANCE

Germany's current account surplus is largely attributable to its positive net exports, i.e. the difference between exports and imports of goods and services. The current account balance is essentially the balance of an economy's total income and expenditure in its dealings with the rest of the world. In addition to the net exports, this also includes the balance of income from labour and capital (the "balance of primary income") and the balance of transfers.[2] **Figure 1** breaks Germany's current account balance down into these different components.

Figure 1 clearly shows that the bulk of the current account surplus can be attributed to Germany's positive nominal net exports which amounted to 7.7% of GDP in 2016. Admittedly, the positive capital income balance – which has a major influence on the bal-ance of primary income – also plays an important role, accounting for between a quarter and a third of the current account surplus. However, the capital income surpluses, which are primarily a reflection of past balance of trade surpluses[3], are almost entirely offset by the transfer income deficits. Any attempt to bring the current account surplus down will therefore inevitably involve reducing the trade surplus.

Figure 1

Structure of Germany´s current account balance as a % of GDP



Sources: Deutsche Bundesbank; Destatis; IMK calculations.

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AN ANALYSIS OF GERMANY'S FOREIGN TRADE

Which factors influence quantities and prices in foreign trade?

It is generally assumed that export and import *volumes* are determined by economic activity variables that reflect foreign and domestic demand and by relative export/import prices that reflect the price competitiveness of domestic/foreign exporters.

German exports are affected by economic activity abroad, while imports are affected by domestic demand. Both of these variables are driven by a variety of different factors. The regional trading partner structure and exporters' product portfolios are key drivers of export growth.[4] During the 1990s, Germany's close trade ties with Eastern European countries allowed it to benefit from the strong demand in these countries for the capital goods needed to modernise their capital stock during the transformation of their economies. During the 2000s, Germany benefited similarly from the growth of Asia's emerging economies, especially China. Finally, in recent years German exports to the United States have been boosted by the more expansionary nature of macroeconomic policy in the US compared with Europe.

Both exports and imports are being driven by the growing specialisation associated with globalisation and by international interdependencies of intermediate goods and services.

Germany's imports are largely determined by domestic demand which is in turn influenced by the German government's economic policy – e.g. the direction of its fiscal policy – and by wage trends. Since wages are both cost and income variables, they affect both domestic price trends and demand for consumer goods in particular.

Several authors have recently highlighted the fact that differences in domestic and foreign growth rates play an important role in generating trade

2 These transfers comprise international private or public transfers such as remittances made by foreign workers living in Germany to their countries of origin or payments made by the government to the EU or for development assistance purposes.

3 The primary income surplus comprises net interest and dividend income, i.e. the returns generated by Germany's high net foreign assets which it has accumulated as a result of its past current account surpluses (Klär et al. 2013). In 2011 (the last year for which internationally comparable figures are available), Germany's net foreign assets were the third highest in the world (in dollars) after Japan and China (Lane and Milesi-Ferretti 2007).

4 See Horn and Stephan (2005), who use regionally disaggregated export demand functions to show that the extent to which Germany's exports are determined by economic activity abroad, price competitiveness and the increasingly global division of labour varies from one market to another.

and current account imbalances. Particularly in Germany's case, it is claimed that low levels of imports are chiefly responsible for the foreign trade surplus (European Commission 2010, Feigl and Zuckerstätter 2012, Gaulier and Vicard 2012, Wyplosz 2013, Storm and Naastepad 2014, Schulten 2015 and Horn and Lindner 2016).

The second key driver of foreign trade volumes is a country's price competitiveness. A rise in domestic price levels compared to price levels abroad makes exports more expensive, causing a decline in export demand. On the import side, a rise in domestic price levels makes foreign goods relatively cheaper, leading to an increase in import volumes. A fall in export volumes accompanied by a rise in import volumes causes real net exports to decline. If domestic price levels fall, the mechanism operates the other way round, prompting an increase in real net exports.

Many authors view the mechanism whereby changes in price competitiveness produce changes in export and import volumes not only as the main driver of current account imbalances (see e.g. Trichet 2009, Joebges et al. 2010, Flassbeck and Lapavitsas 2013, Sinn 2014) but also as the key to reducing them.

However, this interpretation is overly simplistic. The current account is based on *nominal* values which are the product of *quantities* and *prices*. What this means is that changes in domestic price levels affect the balance of trade in two different respects. On the one hand, a change in relative prices causes an adjustment in export and import volumes; on the other hand, it has a direct impact on export prices. Consequently, in a scenario where a rise in domestic price levels is followed by a rise in export prices, the export volume will fall (quantity effect), but the higher export prices will for their part have the effect of increasing the export value (price effect).

Infobox 1

Why are high current account surpluses a problem?

One might ask why a high current account surplus is a problem in the first place. A country can only run a surplus if the rest of the world is running a corresponding deficit. In the absence of assets, it is only possible to run a deficit if lenders are prepared to finance it. In particular those eurozone members that have been in crisis since 2010 had previously run up what were in some cases massive current account deficits, financed through foreign debt. When the banking and financial crisis that started in the United States prompted a global credit crunch, there was a delayed impact on many European countries that suddenly found themselves with no-one to finance their current account deficits (Lindner 2013). All of a sudden, these countries were in danger of defaulting on their debts, which only served to exacerbate the crisis.

Apart from the eurozone crisis countries, it is mainly the deficits run up by the US since the 1990s that have made it possible for the rest of the world – including Germany – to run a surplus. Even the United States need to borrow in order to run a deficit. It is therefore hardly surprising that even under the Obama administration the US was highly critical of Germany's continual surpluses. The tougher trade policy announced by the incoming Trump administration is explicitly designed to reduce the US trade deficit with countries like Germany (FAZ 2017).

However, high current account surpluses are a problem not only for the deficit countries, but also for the surplus countries. Firstly, the surplus countries become highly dependent on developments in the global economy that they have very little power to influence. Thus, the dramatic economic downturn experienced by Germany during the 2008 economic crisis can largely be attributed to a steep decline in exports which had become increasingly important to the country's economy during the preceding years.

Secondly, by increasing the net amount that they are owed by the rest of the world, surplus countries also increase their exposure to the risk of default on the part of their debtors.[1] The German banking crisis in 2008 was mainly caused by US mortgage holders defaulting on debt held by German banks (Lindner 2013). The banking crisis threatened the financing of the German economy and was only resolved when the government arranged debt-financed bailouts for the banks. During the eurozone crisis, the German government took over the liabilities of German banks with respect to Greece and other crisis countries in order to protect the financial system against potential losses (Klär et al. 2013). The coordinated reduction of current account imbalances is therefore in the interests of both the creditor and the debtor countries.

1 Formally speaking, net financial assets are determined by the sum of the current account balance and the capital account balance. However, since the capital account balance in Germany is extremely small, it is not given further consideration in this report.

Since the quantity and price effects pull in opposite directions, it is impossible to know in advance whether *nominal* exports will go up or down. This depends on the relative strength of the two effects: if the quantity effect is stronger than the price effect, the export value will go down when prices go up. However, if the price effect is stronger than the quantity effect, the export value will increase.[5] How the export value responds thus depends on whether export demand is price elastic or price inelastic.

This in turn affects the response of the net exports. Since the net exports are equivalent to the *difference* between the export value and the import value, it is impossible to predict whether an increase in domes-tic price levels will cause it to rise or fall. This will depend on how strongly export and import demand respond to a change in relative prices. Not enough attention has been paid to this aspect in previous attempts to explain trade and current account imbalances. However, it is addressed in detail in the econometric analysis and simulations presented below.

Labour costs and unit labour costs are regarded as key drivers of price competitiveness, as it is assumed that changes in these costs will result in strong corresponding changes in domestic price levels and export prices. This is based – albeit put simply – on the assumption that there is a virtually one-to-one relationship between changes in unit labour costs and changes in price competitiveness.

However, aggregate unit labour costs – i.e. labour compensation per unit of output – are just one among many cost components. In addition to unit labour costs, the price per unit sold also includes costs associated with taxation and imported intermediate inputs[6], as well as the profit per unit of output. Consequently, it cannot be assumed that a reduction/increase in unit labour costs will result in a one-to-one reduction/increase in domestic price levels and export prices.[7]

The quantitative impact of all these variables on Germany's foreign trade was calculated using econometric methods (see **Infobox 2**). The next section discusses the equations for exports and imports of goods and the corresponding prices. The equations for exports and imports of services and the corresponding prices are described in the documentation of the IMK's Model of the German Economy (Rietzler 2012).[8]

Simulations using the IMK model will subsequently be employed to investigate the role played by nominal wages in Germany's nominal net exports trend. Basing the simulations on this model ensures that the complex feedback effects and interactions in the German economy are taken into account.

5 This can be expressed in terms of elasticity, which describes the percentage change caused in one variable by a 1% change in another variable. The price elasticity of export demand describes how strongly export volumes respond to a 1% change in export prices. If the price elasticity is smaller than 1, the response of the nominal variables will be dominated by the price effect; a 1% rise in export prices will cause export volumes to decrease by less than 1%, leading to a rise in nominal exports.

6 This only applies to the final demand deflator. When evaluating price competitiveness, it is standard practice to consider the trends for the GDP deflator and its components (unit labour costs, profits per unit of output and net indirect taxes). However, a number of problems are associated with this approach. GDP measures the value added of production, i.e. the difference between production and intermediate inputs. But businesses do not sell value added, they sell products. In macroeconomic terms, this is equivalent to final demand or, put another way, total sales. As well as labour costs, taxation and profits, the prices that products are sold for – which macroeconomics describes as the final demand deflator – obviously also reflect the cost of imported intermediate inputs.

7 In fact, it cannot even be assumed that a change in unit labour costs will automatically cause domestic price levels to change in the same direction. Feigl and Zuckerstätter (2012), for instance, show that between 2000 and 2007, inflation in Germany (as measured by the GDP deflator) rose by 6.7% even though unit labour costs fell over the same period. This trend was largely driven by growth in corporate profits which accounted for a 6.8% rise in inflation. Unit labour costs, on the other hand, actually had a dampening effect on inflation, accounting for a deflationary impact of -1.5%. In other words, during this period, companies used the reduction in unit labour costs to boost their profits and not, as is typically claimed, to reduce their prices. This finding is corroborated for Germany and other eurozone members by Gaulier and Vicard (2012) in a Banque de France publication.

8 The version of the model described in this publication was the February 2011 version.

Modelling foreign trade in the IMK Model of the German Economy

The IMK Model of the German Economy is a structural, macroeconometric model for Germany used for short-term forecasting and economic simulations. Therefore, much attention was paid to the specification of the behavioural equations to ensure that they, as well as possessing a sound theoretical (specifically Keynesian) basis, also fit the data well.[1]

The behavioural equations are specified as error correction models (ECMs). This has two key advantages: ECMs can be used to test for cointegration and estimate cointegration relationships (Banerjee et al. 1998) and the error correction term (cointegration relationship) can be interpreted as an economically meaningful long-term relationship (i.e. a theoretically substantiated behaviour hypothesis). ECMs thus readily lend themselves to economic interpretation.[2]

The next section discusses the equations for German exports and imports of goods and the corresponding foreign trade prices. In order to keep things manageable, only the error correction terms are shown in detail. The constant term, centred seasonal dummies and, where relevant, impulse dummies that capture individual outliers are subsumed under the term "deterministics". The term "short-run dynamics" covers delayed changes in the response variables and both simultaneous and delayed changes in the explanatory variables. ε_t represents the error term. The estimations are based on seasonally unadjusted quarterly data. The estimation periods are 1980 Q1-2016 Q2 for foreign trade volumes, 1986 Q1-2016 Q2 for export prices and 1991 Q1-2016 Q2 for import prices. All time series are transformed into logarithms, so that the estimated coefficients can be interpreted as elasticities.

All the estimated equations are very well aligned with the data. The residuals are almost normally distributed and are free from autocorrelation up to lag 4. The only exception is the equation for goods imports, where there is second- and third-order autocorrelation in the residuals, although this is still within acceptable parameters.[3] The CUSUM tests show no signs of parameter instability (**Table 1**).

Table 1

Test statistics for the estimated equations

	Equation for				
	Exports	Imports	Export prices	Import prices without PTM	Import prices with PTM
Adjusted R^2	0.79	0.83	0.86	0.87	0.89
Durbin-Watson statistic	2.03	1.96	1.91	2.16	2.15
LM test on 1st-order correlation	[0.37]	[0.77]	[0.69]	[0.31]	[0.32]
LM test on 4th-order correlation	[0.49]	[0.02]	[0.87]	[0.72]	[0.77]
RESET test	[0.92]	[0.61]	[0.40]	[0.73]	[0.82]
Test for normality in residuals (Jarque-Bera)	[0.63]	[0.66]	[0.70]	[0.41]	[0.71]
CUSUM/CUSUM^2	stable	stable	stable	stable	stable

For residual and specification tests p-values are given in brackets.

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1 Unlike some other models – e.g. the IMF's Multimod (Laxton et al. 1998) and the European Commission's Quest II (Roeger and in't Veld 1997) – the coefficients are never calibrated in the IMK model.

2 An error correction equation has two components – the error correction mechanism and the part that models short-run dynamics. The error correction mechanism comprises the cointegration relationship, which reflects the long-term economic equilibrium, and the "loading coefficient". The error correction mechanism ensures that deviations from the long-term equilibrium (understood as a steady state), also referred to as "errors", are already corrected to some extent in the following period. The loading coefficient describes how quickly this adjustment occurs.

3 The second- and third-order autocorrelation is within the confidence bands – these are two standard deviations wide in either direction. At the 5% significance level, autocorrelation within these confidence bands is not significantly different from zero.

Export and import equations

Four equations were estimated in order to investigate the role of the different influences on the balance of trade: two equations describing the volume of exported and imported goods and two equations describing the corresponding export and import prices.

The equations for exports and imports of goods are standard export and import demand functions. They are dependent on economic activity variables that reflect foreign and domestic demand and on relative export/import prices that reflect the price competitiveness of domestic/foreign exporters (Sawyer and Sprinkle 1999).

Let us begin by considering export *volumes*. Exports of goods (*EXG*) are determined both by world trade (*world trade*) and the relative export price (*PEXrel*), measured as the ratio of the German export goods deflator to the global export deflator. Since the latter is expressed in US dollars, it is converted into euros using the nominal external value of the euro against the US dollar.

$$\Delta \ln EXG_t =$$

$$\underset{(-6.7)}{-0.26}\Big[\ln EXG_{t-1} - \underset{(-30.1)}{1.1}\ln world\ trade_{t-1} + \underset{(5.0)}{0.51}\ln PEXrel_{t-1}\Big]$$

$$+ deterministics + short\text{-}run\ dynamics + \varepsilon_{1,t}$$

The cointegration relationship is highly significant (t-values in brackets), meaning that there is a stable long-term relationship between exports, world trade and the price competitiveness indicator. In the event of deviations from the long-term equilibrium[9] (referred to as "errors"), the error correction mechanism ensures that they are corrected by around 25% per quarter. This means that after one year 70% of the deviation is corrected, after two years 90% of the deviation is readjusted.

Germany's exports of goods respond very strongly to external demand. Accordingly, a 1% increase in world trade translates into an equivalent increase in German exports.[10] This finding has already been reported in earlier studies (Clostermann 1996 and 1998, Bundesbank 1998). A 1% rise in the relative export price causes German goods exports to fall by at least 0.5%. In other words, the response of German goods exports is rather price-inelastic[11] and somewhat lower than in the other studies cited above.[12]

The response of export *volumes* to price rises is clearly negative. For *nominal* exports, however, the picture is very different: Since, in the case described above, the price elasticity of export demand is lower than one, an increase in relative export prices leads to an increase in export earnings. Specifically, while a 1% rise in export prices causes a 0.5% drop in the export volume, the total export value nonetheless increases by 0.5%.

We will now turn our attention to import *volumes* (*IMG*). These are determined by domestic activity variables and the relative import price (*PIMrel*), measured as the ratio of the import goods deflator to Germany's total sales deflator. The GDP components with high import content were used as the activity variables.[13] In the above case, these are private consumption (*consumption*), investment in machinery and equipment (*investment*) and exported goods (*EXG*). S91Q1 is a step dummy that corrects for the effect of German reunification.

Private consumption is problematic, in that on its own it is not significant in the cointegration relationship. This can be attributed to the fact that, during the estimation period used in the study, consumption in Germany experienced only weak growth, whereas imports of consumer goods more or less moved in lockstep with overall imports of goods and therefore grew much more strongly. To account for this situation, private consumption was multiplied by a linear trend in the cointegration term.

$$\Delta \ln IMG_t =$$

$$\underset{(-8.6)}{-0.66}\Big[\ln IMG_{t-1} - \underset{(-6.7)}{0.001}(\ln consumption_{t-1} * Trend)$$

$$\underset{(-8.2)}{-0.44}\ln EXG_{t-1} - \underset{(-8.0)}{0.35}\ln investment_{t-1} + \underset{(2.8)}{0.15}\ln PIMrel_{t-1}$$

$$\underset{(-3.5)}{-0.06}S91Q1\Big] + deterministics + short-run\ dynamics + \varepsilon_{2,t}$$

The estimated coefficient for the consumption variable in the import demand function cannot be interpreted directly. Instead, a simulation is needed to establish the extent to which private consumption influences import demand. This reveals that a 1% increase in private consumption causes a 0.2% increase in demand for imported goods. This is a

9 The term "equilibrium" refers to a new steady state rather than market clearing.

10 The description of the estimated equations focuses on the elasticities in the long-term relationships. This is a partial analysis approach, since only one specific part of the model – i.e. a single equation – is considered. Potential feedback effects and interactions with other variables in the model are not taken into account here. These relationships are accounted for in the simulations with the overall model.

11 The estimated elasticities are valid for small changes in the activity and price variables. Volumes would be expected to respond differently to very large and sudden changes.

12 It is important to remember that the other studies use a different estimation period running from the middle/end of the 1970s to the middle/end of the 1990s. This limits the comparability of the findings.

13 Stephan (2005) provides an in-depth discussion of suitable activity variables in import demand functions.

plausible finding, since the long-run elasticity of imports in relation to private consumption corresponds to the latter's import content.

The findings are similar for the other two activity variables. A 1% increase in investment in machinery and equipment results in a 0.35% rise in imports, while a 1% increase in exported goods leads to a 0.44% rise in imports. In both cases, the long-run elasticity more or less corresponds to the import content of the relevant activity variables. Overall, imports to Germany are more dependent on the import demand of businesses than on that of households.

The finding that demand for imported goods is (highly) price-inelastic has been reported in several studies about Germany.[14] In our estimation, a 1% increase in the relative import price leads to a fall in real imports of just 0.15% and a corresponding 0.85% increase in nominal imports. As with exports, the positive price effect for imports outweighs the negative quantity effect, causing the overall nominal value to rise.

The cointegration relationship is highly significant, while the speed of adjustment following a deviation from the long-term equilibrium is substantially faster than for the export equation. Two thirds of the "errors" have already been corrected after just one quarter, meaning that the correction is fully completed in about one year.

Export price and import price equations

Strategic price setting was modelled for foreign trade prices. It is assumed that exporters base their asking prices not only on their own costs but also on the prices of the foreign suppliers who compete with them in the same market. We refer to this behaviour as pricing to market (PTM).[15] It is assumed that PTM is relevant to both German and foreign exporters and should therefore be taken into account in the modelling of both the export price and import price equations.

The German export goods deflator (*PEX*) is determined by unit labour costs in Germany (*ULC*) – which reflect exporters' production costs – and by import prices (*PIM*). The latter can be interpreted as costs for imported intermediate inputs or, in accordance with the PTM principle, as the price of foreign competitors' products that influences how German exporters price their own products.

$$\Delta \ln PEX_t =$$

$$-\underset{(-5.2)}{0.20}\left[\ln PEX_{t-1} - \underset{(-20.8)}{0.32}\ln ULC_{t-1} - \underset{(-10.9)}{0.44}\ln PIM_{t-1}\right]$$

$$+ determinis\,tics + short\text{-}run\ dynamics + \varepsilon_{3,t}$$

A stable and highly significant cointegration relationship exists between the export goods deflator, unit labour costs and import prices (t-values in brackets).

In our estimation, a 1% increase in unit labour costs in Germany only causes export prices to rise by approximately 0.3%. This demonstrates that changes in unit labour costs are not reflected one-to-one in prices – their effect is in fact much weaker.

Import prices, on the other hand, have a strong influence on export prices: a 1% increase in import prices causes export prices to rise by more than 0.4%. One key reason for the relatively high long-run elasticity of export prices in relation to import prices is that in addition to Germany being very dependent on raw material and energy imports, its exports contain a growing proportion of intermediate inputs imported from abroad. The speed of adjustment is relatively slow – deviations from the long-term equilibrium are corrected by 20% a quarter, meaning that 60% of the "error" is corrected after one year. After two years, 80% of the deviation is readjusted.

We will now move on to consider *import prices*. A stable cointegration relationship exists between the import goods deflator (*PIM*), the costs of foreign producers – measured as the global export deflator[16] (*PEX* ^{global}) –, the oil price (*oil price*) and a linear trend used in empirical studies to account for changes in the composition of the basket of goods (Clostermann 1996, p. 11).

$$\Delta \ln PIM_t =$$

$$-\underset{(-4.5)}{0.19}\left[\ln PIM_{t-1} - \underset{(-6.2)}{0.40}\ln PEX^{global}_{t-1} - \underset{(-3.6)}{0.05}\ln oil\ price_{t-1}\right.$$

$$\left. + \underset{(7.5)}{0.003}Trend\right] + deterministics + short\text{-}run\ dynamics + \varepsilon_{4,t}$$

14 For an overview of various studies, see Stephan (2005), Tables 4.1 and 4.2, p. 22f.

15 Pricing to market actually describes incomplete exchange rate pass-through in the prices of tradable goods (Krugman 1986). PTM can be an expression of strategic pricing behaviour when suppliers operate in segmented markets characterised by imperfect competition. Where imperfect competition exists, the price that a company charges to sell its goods is higher than its marginal costs. In other words, the selling price includes a mark-up which – in a segmented markets scenario – the company can vary depending on how strong the competition is in each market. The mark-up affords companies some room for manoeuvre when setting prices. Exchange rate fluctuations and changes in production costs can be (temporarily) absorbed by adjusting the level of the mark-up rather than having to pass them on to the customer as price rises.

16 Since the global export deflator and oil price are both expressed in US dollars, they are converted into euros using the nominal external value of the euro against the US dollar.

In this estimation, a 1% increase in the production costs of foreign exporters translates into a 0.4% rise in import prices, while a 1% rise in oil prices causes import prices to go up by 0.05%. The speed of adjustment is also rather slow for import prices – deviations from the long-term equilibrium are corrected by just under 20% a quarter.

For the import price equation, it was necessary to take a decision about whether to add an additional variable for price levels in Germany to this established cointegration relationship, in order to represent the price levels of domestic competitors' products in accordance with the PTM principle. Econometric analysis has shown that of all the price indexes investigated – total sales deflator, GDP deflator, private consumption deflator, consumer prices, producer prices and unit labour costs – only unit labour costs have a significant impact on import prices.

Using German unit labour costs as a proxy for the price levels of domestic competitors makes hardly any difference to the estimated coefficients of the other explanatory variables. In the "with PTM" scenario, a 1% increase in unit labour costs in Germany makes it possible for foreign exporters to raise their selling prices by at least 0.3%.

$$\Delta \ln PIM_t = \underset{(-5.3)}{-0.22}\left[\ln PIM_{t-1} - \underset{(-6.2)}{0.38}\ln PEX^{global}_{t-1} - \underset{(-4.3)}{0.08}\ln oil\ price_{t-1} - \underset{(-2.7)}{0.32}\ln ULC_{t-1} + \underset{(7.8)}{0.004}Trend\right] + deterministics + short\text{-}run\ dynamics + \varepsilon_{5,t}$$

It might appear that there is little evidence to support the claim that foreign exporters engage in pricing to market based on what is happening in the German market, since the cointegration relationship exists even without the domestic price term.

However, it is perfectly plausible to suppose that the exceptionally weak growth in German unit labour costs in the decade before the financial and economic crisis was closely monitored by foreign exporters, particularly in the eurozone, and that they took this trend into account when setting their own prices.

Both versions of the equation are used below to analyse the effect of including PTM in the import price equation on the simulation of real and nominal imports. It can be seen that although PTM makes almost no difference to the simulation outcome for real imports, it does affect nominal imports and thus also influences the response of the net exports.

In summary, the estimated equations reveal that real exports/imports of goods are determined by both external/domestic demand and by relative export/import prices. Consequently, foreign trade volumes cannot be explained by price variables or demand variables on their own.

It is also evident that unit labour costs have only a limited impact on export prices. It would therefore be wrong to suggest that changes in export prices are exclusively determined by changes in unit labour costs.

Finally, the price elasticities of export and import demand are both smaller than one, meaning that the price effect dominates the response of the nominal variables in both cases. Since the balance of trade is equivalent to the difference between nominal exports and imports, it is impossible to know in advance how changes in wages and unit labour costs will affect the nominal balance of trade. This is something that needs to be determined by a simulation.

THE IMPACTS OF WAGE AND FISCAL STIMULI ON FOREIGN TRADE

In order to investigate the impact that stronger nominal wage growth in Germany would have had on the country's nominal net exports, we carried out four simulations of the macroeconomic effects of different wage paths using the IMK model. A particular wage path was specified for each simulation – in other words, nominal wages are exogenous.

In Scenarios 1 and 2 nominal wages are always 1% higher than the actual wage levels. The difference between these two simulations concerns the import price equation – it is modelled with PTM in Scenario 1 and without PTM in Scenario 2. The first two simulations are largely technical in nature. They serve to illustrate the channels through which the impacts of nominal wage changes operate in the model and the mechanisms through which nominal net exports are influenced. Scenario 2 looks at the effect on the net exports of including PTM in the import price equation.[17]

Scenarios 3 and 4 analyse how a specific alternative economic policy – a macroeconomically-oriented wage policy – would have affected the net exports. The same wage path is specified for both scenarios, with wages rising in line with long-term productivity growth and the ECB's inflation target. In Scenario 3, the results of the simulation indicate that the government would record a budget surplus. Scenario 4 investigates the impact on net exports if the government subsequently spent most of this surplus.

The simulation period is 2001 Q1 to 2015 Q4. **Figures 2-4** illustrate the responses of the key foreign trade variables to the wage increases. **Table 2** shows the impact of the wage increases on a range of different model variables. The figures refer to the percentage change compared to the baseline scenario

17 Scenarios 3 and 4 both use the import price equation that includes PTM.

(where there is no additional wage increase) at the end of the simulation period in 2015. By this point in time, the variables have largely completed their adjustments.

Impacts of a 1% nominal wage increase (Scenarios 1 and 2)

The starting point for the alternative wage path is 2001, since Germany did not have a significant current account surplus at this time.[18] The first two scenarios model a constant 1% increase in (per capita) nominal gross wages. In other words, in Scenarios 1 and 2, from 2001 onwards wages are always 1% higher than the actual wage levels for the period 2001-2015.

When interpreting the results, it is important to remember that the scenarios are always compared against a baseline simulation. Accordingly, when a particular value in the scenario goes up or down, the movement is always relative to this baseline. The baseline is a simulation of the status quo. We did not intervene in this simulation, i.e. we did not specify the growth rate of nominal wages. Since the baseline's simulated values for the endogenous variables „reproduce" (more or less accurately) their actual values using the model, we therefore sometimes refer to the baseline values as "actuals" in the remainder of this report.[19]

The first impact of the increase in nominal wages is a higher level of private consumption than in the baseline simulation due to the growth in real disposable income. This in turn stimulates imports of goods. At the same time, the higher unit labour costs cause prices to go up, which has a dampening effect on the relevant quantities. This is particularly true of real investment in machinery and equipment, which remains only slightly above the baseline in the long run, and of real exports – i.e. export volumes –, which decline compared to the baseline as a result of the higher prices. Taken by themselves, both of these effects dampen demand for imported goods. Overall, however, they are outweighed by the stimulating effect of private consumption, meaning that real imports increase.

Higher wages thus have a clear impact on real exports and imports. Export volumes fall and import volumes rise relative to the baseline, leading to a decline in real net exports in comparison with the baseline (**Figure 2**, **Table 2**: **columns 1 and 2**). However, this decline is only small.

At the end of the simulation period in 2015, real net exports in Scenarios 1 and 2 are approximately 4 billion euros lower than in the baseline. This is equivalent to a decline of just 2.6% (**Table 2**). One of the key reasons for this phenomenon is the high import content of German exports. Taken in isolation, a reduction in the export volume immediately causes a reduction in the import volume.

As has already been explained, both the quantity and the price trends for imports and exports affect the nominal trade balance. This is why the picture for nominal net exports is different to that of real net exports.

In the case of nominal exports, the rise in prices more than offsets the lower volume, causing export earnings to increase relative to the baseline simulation (**Figure 2**, **Table 2**: **columns 1 and 2**).

Nominal imports also rise, but only weakly. There are two reasons for this. Firstly, import volumes respond only weakly because they are subject to two opposing effects that largely cancel each other out. The income effect produced by the wage increase leads to a rise in private consumption that stimulates demand for imports. At the same time, however, the rise in prices dampens some key determinants of import demand (real investment) and even causes others to decrease (real exports). Secondly, as would be expected, import prices respond far less strongly than export prices.

It is here that we can observe the effect that modelling PTM as part of the import price equation has on the simulation results. If PTM is modelled (Scenario 1), the increase in wages causes import prices to rise and this in turn leads to an increase in export prices. If PTM is not modelled (Scenario 2), this channel is excluded. This is why the impact of higher wages on foreign trade prices is greater in Scenario 1 than in Scenario 2 (**Figure 2**, **Table 2**: **columns 1 and 2**).

The fact that there is only weak growth in nominal imports, whereas nominal exports actually increase relative to the baseline means that, during the first few years, nominal net exports in Scenario 1 show little change compared to the baseline simulation. It is only later, once the price adjustment has been completed, that it begins to decline relative to the baseline. The total effect at the end of the simulation period is extremely small. In Scenario 1, nominal net exports for 2015 are just 1.4 billion euros below the baseline. This is equivalent to a 0.5% reduction in the current account surplus.

The increase in nominal imports is substantially smaller in Scenario 2 than in Scenario 1. This actually leads to a slight increase in nominal net exports versus the baseline during the first few years. In this

18 For the importance of selecting the right starting point, see Herzog-Stein et al. (2016), pp. 12-13.

19 The baseline is the outcome of a simulation of the entire model. Actual values are used for the exogenous variables. The values for all the other variables are generated endogenously by the model simulation. The quality of the model's equations determines how accurately the baseline's simulated values for the endogenous variables match the actual values. If all of the estimated equations fitted the data perfectly, the actual values for the endogenous variables would be identical to the values in the baseline simulation. The goodness of fit of the estimated equations in the IMK model was thoroughly tested. The results demonstrated that the values generated for the endogenous variables are indeed a very close match for the actual values.

instance, there is no decline in net exports by the end of the simulation period.

The simulation of a 1% rise in nominal wages was primarily intended to illustrate the channels through which the impacts operate. Even so, it shows that wage increases of the simulated magnitude are not enough to produce a reduction in nominal net exports. The dominance of the price effect as far as nominal exports are concerned mean that net exports remain at a similar level for a considerable time, leaving the current account imbalances unaltered. But what would have happened if wages had followed a different, macroeconomically-oriented economic rationale since 2001?

Table 2

Macroeconometric simulations of wage and fiscal policy measures for 2001 to 2015
Change vs. baseline (%) in 2015

	Impacts of a 1% wage increase		Macroeconomic wage policy[1]	
			not budget neutral	budget neutral[2]
	with pricing to market (PTM)	without PTM	with PTM	with PTM
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Results				
Real gross domestic product	0,1	0,2	1,7	3,7
Employment	0,1	0,1	1,3	3,0
Gross wages (per capita)	1,0	1,0	14,5	14,5
Total gross profits	-0,1	0,1	-1,0	8,5
Wage share[3]	0,4	0,3	4,5	2,4
Unit labour costs	1,0	1,0	14,0	13,7
Private consumption price index	0,3	0,3	3,6	3,5
Export price index	0,5	0,3	6,3	6,2
Import price index	0,3	0,0	3,7	3,7
Transfers to private households	0,8	0,8	11,6	17,4
Real private consumption	0,4	0,5	5,4	8,4
Real government consumption	0,1	0,1	1,1	3,9
Real gross fixed capital formation	0,1	0,1	0,7	3,1
of which real public investment	0,1	0,1	1,1	38,6
Real exports	-0,2	-0,2	-3,0	-2,9
Real imports	0,1	0,2	1,4	2,8
Real net exports	-2,6	-2,6	-32,9	-42,6
Nominal gross domestic product	0,6	0,7	8,7	11,1
Nominal exports	0,2	0,2	3,2	3,1
Nominal imports	0,4	0,2	5,1	6,6
Nominal net exports	-0,7	-0,1	-7,9	-17,1
Nominal government revenue	0,8	0,8	11,4	14,2
Nominal government expenditure	0,7	0,7	10,3	14,3
for information purposes only				
Government's fiscal balance (nominal, change in bn EUR, surplus: +)	1,1	1,7	17,6	3,2
Real net exports (change in bn EUR)	-4,4	-4,4	-56,0	-72,1
Nominal net exports (change in bn EUR)	-1,4	-0,2	-16,4	-35,2
Current account balance (nominal, estimated change as % vs. actual value for 2015)[4]	-0,5	-0,1	-6,4	-14,0

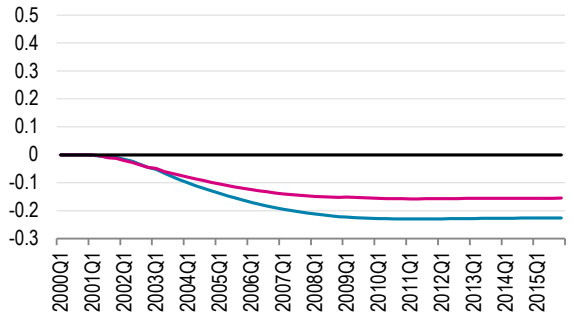
1 Annual wage growth of 2.65 %.
2 In order to approximate budget neutrality, the appropriate increases were made in equal proportions to public investment, government consumption and transfer payments, in order to provide a stimulus.
3 Unadjusted.
4 The current account balance does not form part of the model. Since the lower external surpluses in the preceding years have the effect of reducing the primary income account surplus, the reduction in the current account surplus for 2015 is underestimated.

Source: Simulations using the IMK macroeconometric model.

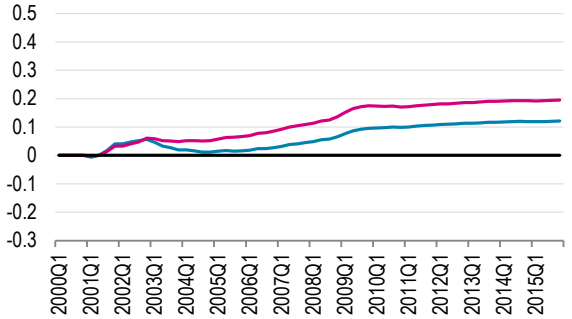
IMK

Impacts of a 1% wage increase on foreign trade
Change vs. baseline (%), seasonally adjusted

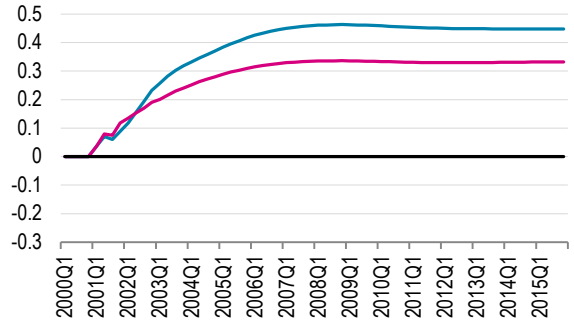
Real exports



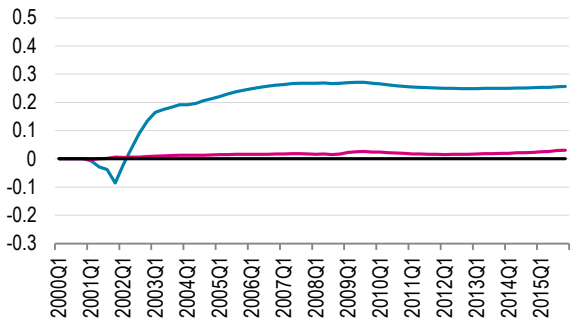
Real imports



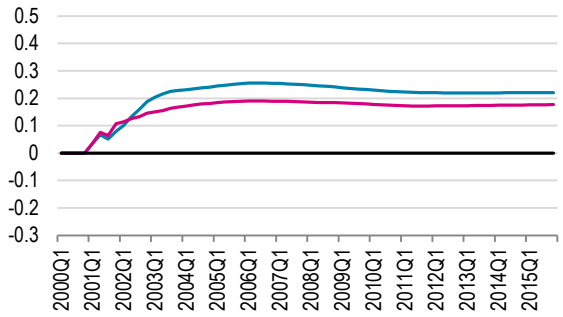
Export prices



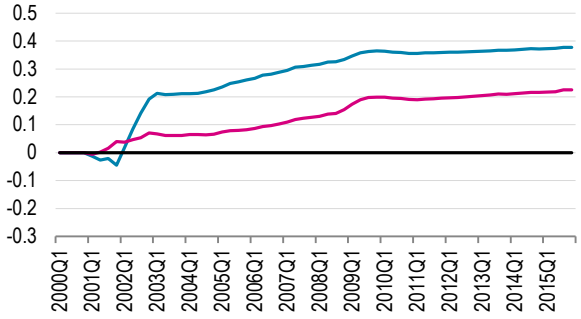
Import prices



Nominal exports

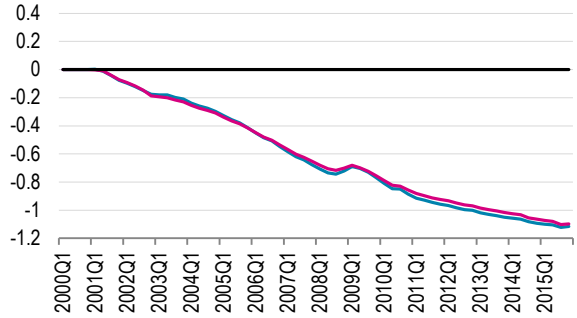


Nominal imports



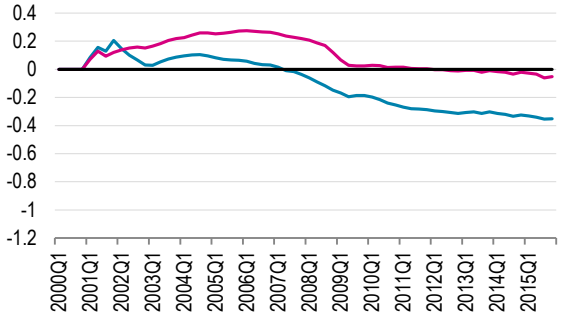
Real net exports[1]

Absolute change vs. baseline, bn EUR, seasonally adjusted



Nominal net exports[1]

Absolute change vs. baseline, bn EUR, seasonally adjusted



Scenario 1 Scenario 2

1 Quarterly figures. The figures in the main text and in Table 2 are annual figures calculated as the sum of the four quarterly figures for each year.

Source: Simulation using the IMK model.

Impacts of a macroeconomically-oriented wage policy (Scenario 3)

Once more, the starting point for this alternative wage path (Scenario 3) is 2001. This was just after the introduction of European Monetary Union, at a time when Germany's current account was more or less balanced again following a few years of modest deficits. The alternative approach to wage formation in this scenario is based on the concept of a macroeconomically-oriented wage policy.[20] In this approach, wage increases across the whole economy should as a rule make full use of the distributional space arising from trend productivity growth and the inflation target of the European Central Bank (ECB) (Horn and Logeay 2004, Herr and Horn 2012).

The simulation assumes medium-term annual productivity growth of 0.7% per employee, which corresponds to the actual average for the simulation period.[21] If the ECB inflation target of just under 2% is added, this would place the annual wage increase across the whole economy in the region of 2.65%.

Wage increases of this order do not have an adverse impact on the ECB's inflation target in terms of labour costs, nor do they alter price competitiveness within the eurozone.[22] If (per capita) nominal gross wages in Germany had risen by 2.65% per annum between 2001 and 2015 under a macroeconomically-oriented wage policy, the per capita wage at the end of this period would have been approximately 15% higher than the actual value (**Table 2**).

Admittedly, the resulting price increases – price levels would have been 3.6% higher at the end of the 15-year period – would have meant that part of this nominal wage increase would have been lost in real terms. Even so, real wages would have risen on average by an additional 0.7% per annum. These higher wage increases would have boosted real private consumption by an additional 5.4%. There would also have been small gains in economic growth and employment (**Table 2**). The limited impact of higher wages on prices means that real wages rise significantly while nominal profits decline slightly, resulting in a higher wage share. Nevertheless, nominal profits would still be only 1% lower than the baseline.

The impacts of higher wages on price competitiveness and foreign trade are of particular interest to this study. According to the simulation, unit labour costs in 2015 would have been 14% higher than the actual values. However, this increase would only have been partially reflected in export prices, which would have been just 6.3% above the baseline at the end of the 15-year period.

The resulting decline in price competitiveness would have translated into somewhat weaker growth in real exports, which would have been 3% lower than the baseline in 2015. However, this also means that even if wages had gone up by 2.65% per year across the whole economy, real exports would still have more than doubled during the simulation period. In the case of nominal exports, the rise in prices once again more than offsets the fall in quantity, with the result that nominal exports increase by 3.2% more than the baseline.

At first glance, the fact that import prices rise by 3.7% relative to the baseline simulation may appear rather surprising. Since PTM is modelled in this scenario, foreign businesses take advantage of the scope provided by the somewhat higher price levels in Germany to introduce modest price increases of their own. As a result, relative import prices remain fairly constant and do not stimulate demand for imports. However, the stronger growth experienced by the domestic economy outweighs the negative impacts of lower export volumes on imports. Consequently, real imports end up 1.4% higher than the baseline, while the simulated increase in wages causes nominal imports to grow by an additional 5.1% (**Table 2**).

If wages had gone up by 2.65% a year across the whole economy, the nominal trade surplus for 2015 would have been 16.4 billion euros lower than in the baseline, while the current account surplus for the same year would have been 6.4% lower. However, **Figure 3** shows that the reduction in nominal net exports occurs very gradually. This is because the export value increases compared to the baseline, while nominal imports grow more slowly than nominal exports for quite a few years. There is thus even a small increase in net exports during this period – it is only from 2010 on that it falls relative to the baseline.

The results of the simulation indicate that although substantially higher wage growth causes a significant reduction in real net exports compared to the baseline (-32.9%), the declines in nominal net exports (-7.9%) and the current account balance (-6.4%) are modest (**Table 2**). Even if wages had grown by considerably more than they actually did, they would not have appreciably curbed the build-up of Germany's enormous current account surpluses.

A macroeconomically-oriented wage policy would have resulted in far more tangible differences in the domestic economy, especially in terms of the distribution of income between labour and capital. Total gross wage income – i.e. the product of gross per capita wages and the number of people in employment – would have been around 16% higher, while gross profits would have experienced a small decline. If wages had risen by 2.65% per annum

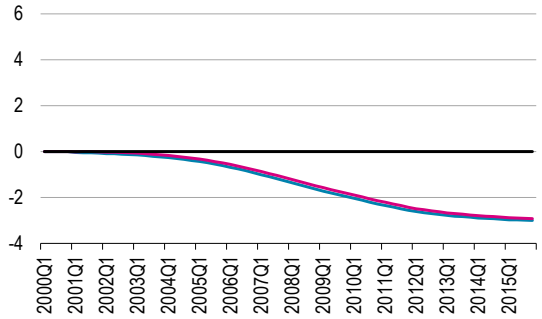
20 For a discussion of wage policy and a description of the employment equation in the IMK model, see IMK (2007), pp. 30-33.

21 Until a few years ago, it was more usual to assume medium-term productivity growth of around one percent (Joebges et al. 2009, Herzog-Stein et al. 2013). The annual wage increases simulated here are therefore correspondingly lower.

22 Assuming that the other eurozone countries also adhere to a macroeconomically-oriented wage policy.

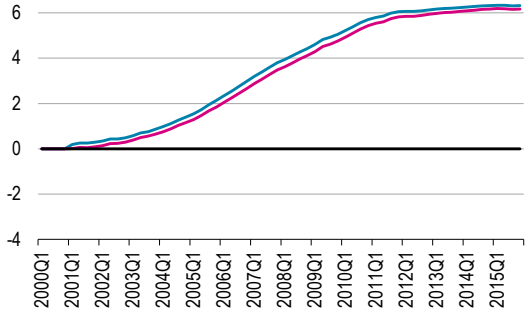
Impacts of a macroeconomically-oriented wage policy on foreign trade
Change vs. baseline (%), seasonally adjusted

Real exports

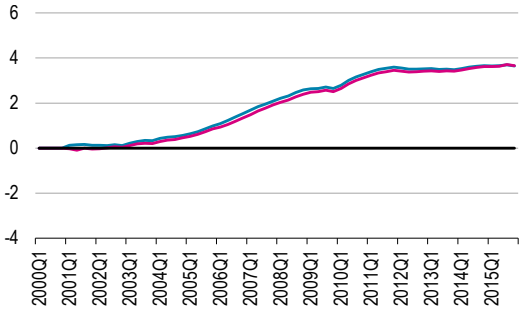


Real imports

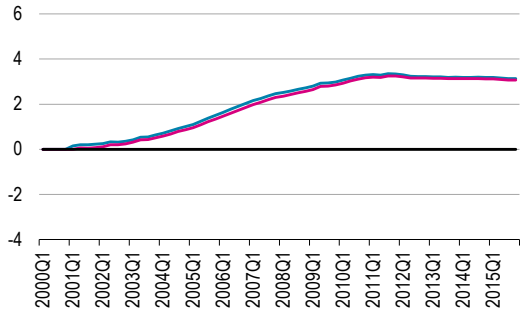
Export prices



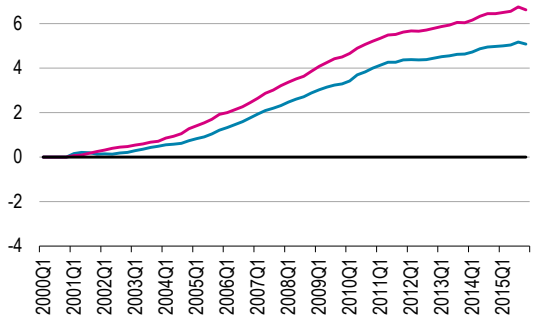
Import prices



Nominal exports

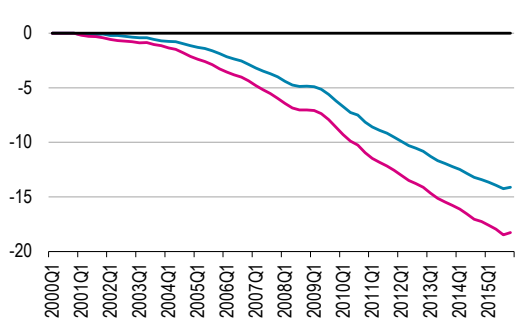


Nominal imports



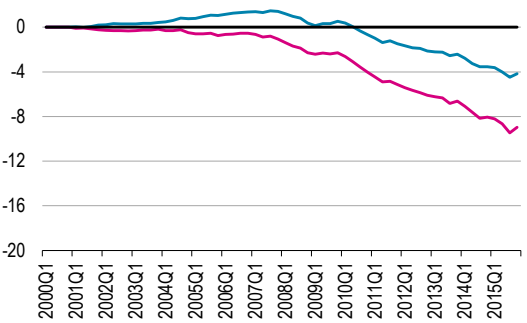
Real net exports[1]

Absolute change vs. baseline, bn EUR, seasonally adjusted



Nominal net exports[1]

Absolute change vs. baseline, bn EUR, seasonally adjusted



Budget neutral Not budget neutral

1 Quarterly figures. The figures in the main text and in Table 2 are annual figures calculated as the sum of the four quarterly figures for each year.

Source: Simulation using the IMK model.

across the whole economy, the (unadjusted) wage share would have risen significantly.

As far as employment and economic growth are concerned, Germany would have benefited from a macroeconomically-oriented wage policy. Although real exports would not have grown quite as strongly, overall economic growth in Germany would have been far more balanced, with stronger domestic growth making up for the slightly weaker export trend.

The stronger wage growth has interesting consequences for the public finances – higher wages would also have led to higher government revenues from payroll taxes, indirect taxation and social security contributions. The only part of this additional revenue spent in Scenario 3 was the part stipulated by the relevant institutional rules. Public sector pay rose and pension expenditure was belatedly brought into line with the wage increases. The government's fiscal balance would thus have been 17.6 billion euros higher in 2015 (**Table 2**, **Figure 4**).

Impacts of additional support from an expansionary fiscal policy (Scenario 4)

The findings of the first three model simulations make sobering reading. Even if nominal wages had risen by almost 15% above the status quo over a 15-year period, Germany's current account surplus in 2015 would have been just 6% lower. However, the fact that the state would have "profited" from this stronger wage growth would have given it greater leeway for fiscal policy action. In other words, the state could have used the additional revenues at its disposal in Scenario 3 to introduce targeted fiscal measures to stimulate imports without hurting exports.

In Scenario 4, the macroeconomically-oriented wage policy is actively supported by a more expansionary fiscal policy where the additional leeway provided by the improved budgetary position in Scenario 3 is primarily used to implement expansionary measures. Accordingly, from 2001 on, most of the additional government revenue generated in Scenario 3 is spent on exogenous stimuli designed to gradually increase public investment, government consumption and transfer payments to private households in equal proportions.

Since public investment and government consumption are components of the national product, the majority of fiscal policy measures have a direct impact on GDP. They induce demand and income effects which, as well as stimulating growth and employment and boosting imports, also generate additional government revenue that can potentially be used to further increase public spending.

For instance, a sustained increase in central government operating expenditure and spending on transport infrastructure and pensions would stimulate economic growth and result in higher government revenue. Since more funding than had originally been budgeted for would be available to regional and local government, they too could increase their spending, providing a further boost to growth. In Scenario 4, the increase in public spending is much greater than the initial stimulus, while nominal GDP is around 11% (almost 350 bn euros) higher than the baseline at the end of the simulation period (**Table 2**, **Figure 4**).

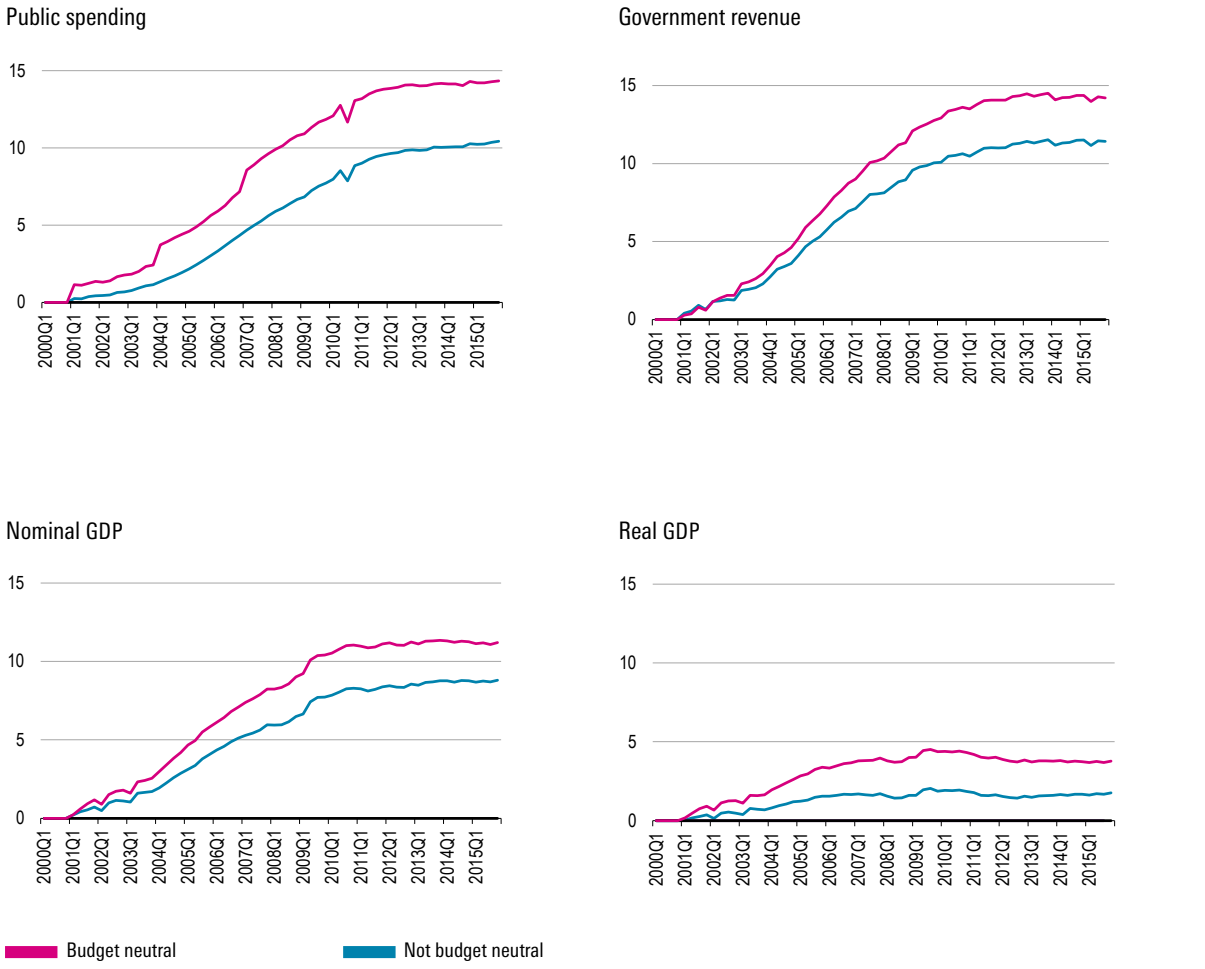
A fiscal policy geared towards long-term infrastructure improvement would deliver numerous benefits without increasing government debt. The fact that it would operate over a long period of time would allow it to provide a sustained stimulus to economic growth and create significantly more jobs, especially in the private sector. Just taking advantage of the fiscal policy leeway created by the alternative wage policy would have delivered an additional 3.7% boost to growth and a 3% rise in employment thanks to the combined effect of higher wages and an expansionary fiscal policy. Furthermore, in spite of the higher wage bill, corporate profits would still have risen by an additional 8.5%.

At the same time, this fiscal policy approach would have made a significant contribution to bringing the current account surpluses down by reducing net exports. Nominal net exports would have fallen by approximately 35 billion euros compared to the baseline.[23] This constitutes a further reduction of almost 20 billion euros compared to Scenario 3, where no fiscal policy support is provided. Consequently, the current account surplus for 2015 would have been 14% lower. Even so, this would still not have been enough to bring the current account surplus down to the EU limit of 6% of GDP. To achieve this, it would be necessary to reduce the surplus by somewhere between 20 to 30 %.

Why does Scenario 4 produce a larger reduction in the current account surplus than Scenario 3? The first reason is that while the fiscal policy measures have no impact on real exports, they do affect real imports. This causes real net exports to decline by more than 40% over time (**Table 2**). Secondly, since the fiscal policy measures do not affect foreign trade prices, there is no change in the export value. The import value does rise, however, because real imports go up while import prices remain stable. Over the long run, nominal net exports decline by more than 17%.

23 The impacts of largely budget-neutral wage rises across the whole economy on the nominal net exports have been investigated in other IMK publications. Using a similar wage simulation and a slightly stronger wage stimulus, Joebges et al. (2009, p. 17ff) also found that net exports would decline by approximately €35 bn. At first glance, the €55.6 bn decline in net exports reported in Herzog-Stein et al. (2013, p. 15 ff, Scenario 2) suggests a much stronger effect. However, once that study's significantly stronger simulated wage stimulus of 18.9% is taken into account, it becomes apparent that the effect is in fact very similar. If the percentage of imported intermediate inputs in export goods continues to rise, then the influence of wage increases on nominal net exports can be expected to decline even further in the future.

Impacts of a macroeconomically-oriented wage policy on economic growth and the budget
Change vs. baseline (%), seasonally adjusted



Source: Simulation using the IMK model.

IMK

A PATH TOWARDS MORE BALANCED FOREIGN TRADE

The model simulations show that if Germany had adopted a macroeconomically-oriented wage policy between 2001 and 2015, even though the growth in real net exports would have been substantially weaker, this would not have been enough to significantly curb Germany's trade and current account surpluses. Why should this be the case?

The higher nominal wages in the model generate a rise in disposable income, as well as causing domestic prices and foreign trade prices, particularly export prices, to go up as a result of rising unit labour costs. The trends for real values are only influenced by the quantity effect of a relative price change, whereas the nominal value trends are influenced by both the quantity effect and the price effect of price changes.

Higher wages produce a clear quantity effect: real exports fall and real imports rise, leading to a decline in real net exports relative to the baseline. The response of nominal net exports, on the other hand, depends on whether the price effect is stronger than the quantity effect or vice versa. In the IMK model, the price elasticity of export demand is smaller than one. This means that the price effect outweighs the quantity effect, causing nominal exports to increase when prices go up. In the model simulation with a macroeconomically-oriented wage policy, nominal imports grow less strongly than nominal exports for a number of years. As a result, nominal net exports actually increase slightly at first. It is only after several years that net exports start to decline relative to the baseline.

Does this mean that a macroeconomically-oriented wage policy would not have made any difference? Not in the least. It would have been the right choice and would have made a major difference by delivering stronger domestic growth and having a tangible, positive impact on the distribution of income between capital and labour – the wage share would have been significantly higher than in the baseline. In addition, higher growth and employment would have boosted government tax revenue. A macroeconomically-oriented wage policy would therefore have widened the budgetary leeway for fiscal stimuli. The higher wage increases seen in Germany since the financial crisis compared to the years before it demonstrate that this is a realistic notion – they have made a major contribution to the improvement in the public finances.

If, as in Scenario 4, fiscal policy measures are introduced that stimulate imports without hurting exports, then in addition to a significant fall in real net exports there is also a modest dampening effect on nominal net exports and thus on the current account balance. What is the reason for this?

Net exports decline by more in Scenario 4 than in Scenario 3 because the fiscal policy measures cause household and government consumption to rise, stimulating real imports. However, since the fiscal stimulus does not directly affect prices, there is no change in real exports or the export value compared to Scenario 3. The value of imports, on the other hand, does rise because real imports go up while import prices remain stable. This is why nominal net exports respond faster and more strongly in Scenario 4 than in Scenario 3.

In summary, it has been shown that a macroeconomically-oriented wage policy would have enlarged the fiscal leeway to introduce fiscal stimuli. A macroeconomically-oriented wage policy supported by fiscal policy measures that made use of the fiscal leeway resulting from higher wage increases would have been able to induce a stronger decline in the balance of trade surplus than wage policy on its own.

If Germany had adopted this combination of a macroeconomically-oriented wage policy supported by fiscal stimuli during the period 2001-2015, its trade and current account surpluses would not have grown as strongly. Even so, this would still not have been enough to bring the current account surplus below the EU ceiling of 6% of GDP. To achieve this, it would have been necessary to adopt a far more expansionary fiscal policy.

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