The Role of Cost and Price Competitiveness in the Eurozone*

Lucio Baccaro
University of Geneva
Email: lucio.baccaro@unige.ch

Tobias Tober
University of Geneva
Email: tobias.tober@unige.ch

Abstract

The main political economy explanation for the Eurocrisis is the so-called labor market view. In short, the labor market view claims that differences in wage bargaining systems account for the diverging current account balances in the Eurozone: While coordinated labor markets like those of Germany and other core euro countries are both willing and capable to engage in nominal wage restraint, uncoordinated labor markets like those of Southern Europe are not. We amend the labor market view in two important theoretical respects. First, we spell out how differences in labor market institutions translate into differences in unit labor costs, prices, real exchanges rates, and ultimately current account balances. Second, we reconcile the labor market view with an alternative explanation for the Eurocrisis, which sees cross-border flows of financial assets as its root cause. Our empirical analysis consists of two parts. First, we show descriptively that Germany has seen a significant boost in cost competitiveness based on wage moderation since the introduction of the euro, both vis-à-vis coordinated as well vis-à-vis uncoordinated EMU members. Second, our regression analysis reveals that cost and price competitiveness has had a large positive effect on German bilateral exports within the Eurozone. At the same time, we cannot replicate the same finding for other coordinated economies. Finally, we find that Italian bilateral exports are strongly price-sensitive, suggesting that Italy suffers from an over-appreciated real exchange rate.

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1 Introduction

This paper focuses on what we refer to as the 'labor market view' of the Eurocrisis. At its core, this view considers labor market differences between member countries of the Eurozone (EZ), specifically the coexistence of very different wage setting institutions, as the root cause of the crisis (e.g., Carlin and Soskice 2014; Hancké 2013; Höpner and Lutter 2017; Johnston, Hancké, and Pant 2014; Johnston and Regan 2016; Scharpf 2011). In countries like Germany and other 'Northern' countries, so the argument goes, wage setters are highly sensitive to the competitiveness needs of export-oriented firms and engage in nominal wage restraint. In Southern European countries, instead, the preferences of wage setters in non-exposed sectors, unconstrained by international competition, prevail. The result is higher wage inflation in 'peripheral' countries and lower wage inflation in 'core' countries. These trends lead to a divergence in unit labor costs (ULCs), i.e., nominal wages divided by labor productivity (labor productivity is assumed to be exogenously determined). ULCs decline in relative terms in core countries, and increase in peripheral countries. Since changes in ULCs are a key determinant of price inflation, this divergence translates into different inflation dynamics, with lower price growth in core and higher growth in peripheral countries.

In a system of adjustable nominal exchange rates, like the European Monetary System (EMS) prevailing before the introduction of the single currency, these imbalances could be eliminated by readjusting the exchange rate parities (Höpner and Spielau 2016). However, the option of nominal exchange rate readjustment is ruled out by membership in a single currency. Thus, wage and price divergences directly translate into real exchange rate disparities: Depreciation (an increase in cost competitiveness) in core countries and appreciation (a decrease in cost competitiveness) in peripheral countries. These real exchange rate movements, in turn, generate the persistent current account surpluses in the North and deficits in the South which prevailed in the EZ before the crisis.

The labor market view is to a large extent comparative political economy's (CPE)

distinct contribution to explaining the Eurocrisis: Other—purely economic—perspectives tend to downplay the role of labor market institutions (e.g., Baldwin and Giavazzi 2015). Unit labor costs divergences are argued not to account for much when it comes to explaining current account imbalances (Storm and Naastepad 2015*a*,*b*). Even within political economy, the labor market view has been criticized for providing at best a partial explanation of the Eurocrisis, one that ignores the role of the large cross border financial flows that the euro set in motion. It has been argued that the labor market view gets the direction of causality in reverse: Far from being the prime cause of the crisis, competitiveness imbalances are really the consequence of capital movements from the center to the periphery. These capital flows boosted investment in housing and led to price inflation (e.g., Perez 2017; Schelkle 2017).

Faced with these critiques, the first goal of this paper is theoretical development: We aim to show that the labor market view does not just have a convincing explanation of the current account side of the crisis, but also a plausible (in fact more plausible, we would argue) explanation of the capital account side, specifically of cross-border banking flows and demand imbalances. The second goal is empirical and has to do with the role that price and cost differences play in the EZ.

Interestingly and somewhat paradoxically, the CPE literature delivers two messages that are difficult to reconcile with one another with regard to the role of cost and price differences. On the one hand, it argues that national wage bargaining institutions generate different dynamics of costs and prices across countries. On the other hand, it argues that cost and price differences (controlling for productivity) are not an important determinant of current account imbalances. In particular, German exports are traditionally seen as not being particularly responsive to cost- and price-movements, since they are concentrated in high value-added niches in which cost reductions and price competition play a limited role (Hall and Soskice 2001; Hope and Soskice 2016; Horn et al. 2017; Streeck and Schmitter 1991).

To analyze the role of costs and prices, we first engage in a comprehensive descriptive

analysis of wage, labor productivity, and ULC cost trends in 11 EZ countries between 1991 and 2013. We then engage, to our knowledge for the first time, in an econometric analyses of the role that relative ULCs and relative prices play in determining the growth of bilateral exports and imports in the EZ. We examine bilateral trade flows (exports and imports) as a function of relative ULCs and relative prices, focusing in particular on Germany and Italy, but extending the analysis to other core countries such as Austria and the Netherlands.

We come to two sets of conclusions. First, there is heterogeneity in the core camp: Wage moderation is clearly visible in Germany, but not elsewhere. Wage moderation, not superior productivity growth, is at the root of the German gains in ULC competitiveness. While German relative wage moderation is mostly in the non-exposed sector when compared with the non-exposed sector of other countries (as argued by Hancké 2013; Johnston, Hancké, and Pant 2014), some relative moderation is present in the German manufacturing sector as well. Second, relative ULC and relative prices do matter for export performance, but not in all countries to the same extent. We find that bilateral ULCs are a significant predictor of bilateral exports in Germany, but not in Austria or the Netherlands. Thus, while our results corroborate the labor market view, they also nuance it. In particular, we do not find that our conclusion about the role of relative ULCs generalize beyond Germany to other 'coordinated' economies.

The remainder of the paper is organized as follows. Section 2 elaborates the theoretical framework. Section 3 presents the descriptive and inferential evidence. Section 4 discusses the results. Finally, Section 5 concludes.

2 Bargaining Institutions, Wage Inflation, and the Balance of Payments

The relationship between wage bargaining and wage growth is one of the most researched topics in political economy. Under the assumption that wages are not determined solely

by the forces of supply and demand, but also by institutions, a vast literature argues that more centralized or coordinated bargaining structures lead to lower wage inflation than decentralized or uncoordinated bargaining structures (Baccaro and Simoni 2010; Calmfors and Driffill 1988; Soskice 1990; Soskice and Iversen 2000).

When bargaining is centralized or coordinated, so the argument goes, wage setters internalize the externalities of wage bargaining (e.g., high inflation may discourage investment or lead to a more restrictive monetary policy by the central bank) and spontaneously moderate their wage demand, thus leading either to lower wage inflation directly or (in a system in which the inflation rate is pinned down by independent, inflation-targeting central banks) to lower unemployment for a given inflation rate (Hall and Franzese 1998; Soskice and Iversen 2000). Another stream of the literature holds that this result is contingent on the type and composition of actors which engage in wage bargaining. If centralized or coordinated bargaining is led by wage setters in protected sectors, there is a tendency towards a generalized wage push. If vice versa, it is directed by firms and unions exposed to international competition, the competitiveness needs of these actors will prevail and wage inflation will be lower (Crouch 1990; Garrett 1998; Johnston and Regan 2016). Wage inflation, in turn, is systematically related to price inflation because in oligopolistic labor and product markets prices are formed as a mark-up on unit costs.[1] With regard to the Eurocrisis, a literature inspired by Varieties of Capitalism (VoC) (Hall and Soskice 2001) holds that differences in bargaining structures between coordinated and uncoordinated systems produce systematic differences in domestic inflation. In the former, i.e., in Central European countries such as Germany, Austria, Belgium, and the Netherlands, as well as in Nordic countries like Finland, wages and prices are systematically lower than in the latter, i.e., in Mediterranean countries (Hancké and Soskice 2003; Hancké and Rhodes 2005; Jones, Kelemen, and Meunier 2016).

[1]This is a key assumption of both orthodox (New Keynesian) and heterodox models. See Carlin and Soskice (2014); Storm and Naastepad (2012).

2.1 Bargaining Regimes and the Current Account

In a common currency area like the EZ, the distinction between coordinated and uncoordinated wage bargaining systems with different inflation outcomes is likely to lead to systematic current account imbalances. In fact, the EZ is characterized by two key features: a single nominal exchange rate for all member countries and a single nominal interest rate set by the ECB. When these two features are combined with different inflation rates determined by national-level institutions, the consequence is that real exchange and interest rates will vary systematically across member countries.[2]

This will generate two opposite impulses: a country with bargaining institutions moderating wage and price inflation will experience real exchange rate depreciation relative to other members of the currency area, and as a result its net exports will tend to grow (assuming export and import volumes are sensitive to the price change), thus imparting an expansionary stimulus to the economy. Simultaneously, real interest rates will be higher than in countries with higher inflation, and this will depress the interest-sensitive components of aggregate demand. These two channels are also likely to affect the sectoral composition of GDP (see Kohl and Spielau 2017): the combination of higher real interest rates and lower real exchange rate will tend to penalize domestic sectors, like construction, whose demand is interest sensitive, and will conversely help the exporting sector, to the extent that this benefits from a competitive real exchange rate. Vice versa for the combination of low real interest rates and high real exchange rate. It is likely that increase demand for the products of particular sectors will have a knock-on effect on workers in contiguous sectors as well through the wage channel. For example, increased (reduced) demand for medium-to-low skilled workers in construction will positively (negatively) affect the wages and purchasing power of similarly skilled workers

[2]The real interest rate is the difference between the nominal interest rate and the inflation rate, and is lower (higher) the higher (lower) the inflation rate. The real exchange rate is the ratio of domestic and foreign prices multiplied by the nominal exchange rate (quantity of foreign currency per unit of domestic currency) and appreciates (depreciates) when, keeping foreign prices constant, there is domestic inflation. An appreciation (depreciation) of the real exchange rates implies that the country in question loses (gains) competitiveness with respect to trade partners.

elsewhere.

It should be noted that while the real exchange rate disparity is a necessary consequence of countries sharing the same currency while experiencing different inflation rates, the real interest rate disparity is not. Rather, it is a contingent feature of the particular way international financial markets have responded to the introduction of the euro in the first ten years of life of the new currency, and specifically of their treating the sovereign bonds issued by core and peripheral countries as if they had essentially the same risk profile. This is demonstrated by the generalized decline of interest rates spreads relative to German bonds. Only after the start of the EZ crisis, did financial markets start differentiating, strongly, among issuing countries (Schelkle 2017; Sinn 2014; Sgherri and Zoli 2009). When they did, they precipitated the peripheral countries into a spiral of self-fulfilling prophecy (Grauwe 2013).

Nominal interest rate convergence was a consequence of financial markets failing to properly assess the different risks profiles of countries, aided and abetted in this failure by rating agencies (Schelkle 2017). There is a negative relationship between the price of a bond and its yield, i.e., the interest rate. Strong demand for bonds will increase their price and reduce their return. Financial markets that had been minimally forward-looking, let alone efficient, should have realized that the accumulation of current account imbalances in peripheral countries increased country risks: risks of default, risks of redenomination and exchange rate devaluation, and price those risks accordingly. They should have requested higher nominal interest rates on these bonds. Instead they did not do so. Implicitly they assumed that all bonds, including those of peripheral countries, were covered by a bailout guarantee. The decision of the ECB to treat all sovereign bonds as if they were collateral of the same quality for the purposes of discounting, probably played a role in stimulating demand for peripheral bonds and reducing their interest rates (Schelkle 2017, 145-146).

"Counterparties, meaning borrowing banks providing the collateral, could use the government bonds from different countries as perfect substitutes because their national

central banks accepted them as collateral (…). This gave banks an incentive to diversify their portfolios in terms of nationality of government bonds" (Schelkle 2017, 147). Had banks, including the Central Bank, discriminated among country bonds, nominal interest rates would have been higher in high inflation countries and lower in low-inflation countries, real interest rates would have adjusted accordingly, and the kind of real estate bubbles seen in Spain and Ireland would have been less likely. In other words, one channel of the Eurocrisis, the real interest rate one, would have been closed off (Sinn 2014).

The rules of the Growth and Stability Pact, limiting the public deficit of 3% of GDP and public debt of 60% were useless to prevent the building of imbalances. Crucial for the sustainability of the public budget is the difference between the real interest rate (nominal interest rate minus inflation) and the real growth rate (see Carlin and Soskice 2014, 518-519):

$$i - \pi - g,$$

where i is the nominal interest rate, π is the inflation rate, and g is the real growth rate of output. Keeping i constant, higher inflation and GDP growth reduce the public debt (with no need for primary budget surpluses). The formula above suggests that the kind of inflationary growth experienced by—for instance—Spain and Ireland before the crisis contributed to strengthening their fiscal outlook, giving the impression that these countries were much more economically stable than they really were. Unsurprisingly, both countries looked like paragons of fiscal prudence until 2007 (Armingeon and Baccaro 2012).

2.2 The Capital Account

The current account imbalances generated compensatory capital account imbalances through the operation of the financial system and particularly of interbank loans. This is an important point, which the literature has marked as crucial to understand the Eu-

rocrisis. Some authors, including the authors of the self-professed 'consensus view' of the crisis (Baldwin and Giavazzi 2015), have argued that the current account imbalances are really the consequence of capital account imbalances rather than vice versa (see also Storm 2017). Political economists like Schelkle (2017) and Perez (2017) have echoed this view. Thus, it is helpful to look at the matter in some detail (the reconstruction below is based on Cesaratto 2017).

A current account deficit implies the transfer of reserves from the banking system of the deficit country to the banking system of the surplus country (the same applies to capital flight from one country to another). The transfer is intermediated by the Eurosystem, consisting of the ECB and the national central banks, and particularly by the Eurosystem's interbank payment platform, known as 'Target 2'. When imports have to be paid to an exporting country, a bank in the importing country sees its reserve account at the national central bank debited while another bank in the exporting country sees its reserve account at the corresponding national bank credited. The transaction cannot be executed directly through an interbank transfer, but goes through the system of central banks and the Target 2 system. The central bank of the importing country registers a Target 2 passivity vis-à-vis the Eurosystem, and the central bank of the exporting country a corresponding Target 2 claim vis-à-vis the Eurosystem. As a result of this transfer, the banking system of the exporting country has excess reserves (currently only 1% is needed as minimum reserve requirement in the EZ; 2% until January 2012)[3], while the banking system of the importing country loses reserves and is looking to replenish them.

In normal circumstances, i.e., if the loan is backed by acceptable collateral, the bank with excess reserves will lend them to the bank with insufficient reserves at a market interest rate (pinned down by the ECB discount rate). The bank of a core country would want to lend to the bank of a peripheral country for at least two reasons. First, the collateral provided by the peripheral bank (in most circumstances a sovereign bond of the importing country) is perfectly acceptable at the ECB discount-window, where all

[3]See `https://www.ecb.europa.eu/explainers/tell-me/html/minimum_reserve_req.en.html`, accessed on July 5, 2017.

bonds are treated equally. Second, the economy in the peripheral country is growing faster than average, thanks to the real interest rate channel discussed above, and non-repayment seems an unlikely event. The transfer of reserves from the exporting country to the importing country generates an equivalent Target 2 movement of the opposite sign which counterbalances the previous movement. In the end, a current account flow from the importing country to the exporting country has generated a corresponding capital account flow in the opposite direction, while Target 2 balances at the end of the period have not changed. Consistent with the stylized reconstruction above, capital flows in the EZ primarily took the form of inter-bank loans (see Perez 2017 and literature cited therein).

The role of capital flows also highlights an important difference between the Eurocrisis and a standard balance of payment crisis (Lavoie 2015). To appreciate the difference, consider the balance of payment accounting identity (see Carlin and Soskice 2014, 352):

$$(TB + NFI) + (NCI - \Delta R) = 0,$$

where TB is the trade balance, NFI is net factor income ($TB + NFI$ is the current account balance), NCI are net capital inflows from abroad, and ΔR is the change in official reserves.

In a standard balance of payment crisis, when a country is no longer able to attract capital from abroad to finance its current account deficit, first it consumes its official reserves, then, when official reserves come to exhaustion, it has no alternative but reducing import volumes by repressing demand. The adjustment often implies giving up on a fixed exchange anchor and devaluing the currency ((Frenkel and Rapetti 2009). In the EZ the change in official reserves is replaced by the Target 2 balances, and these are potentially inexhaustible: there is no requirement that they be balanced at some point (unless a country leaves the EZ, a case for which there are neither clear rules nor precedent) (Cesaratto 2017; Schelkle 2017). In other words, through the Target 2 system

the institutional architecture of the EZ allows for a potentially unlimited accumulation of current account imbalances, and ensures the viability of the two unbalanced growth models (construction/domestic demand-led and export-led) which have prevailed in the run-up to the crisis.

However, while the Target 2 covers current account deficits and capital flight, it provides no cover against possible tensions in the market for sovereign bonds. Not only is the central bank prevented from monetary financing of the countries' fiscal deficits, the mutualization of debt is also prevented by the 'no bail-out' rule. Not surprisingly, it is in the market for sovereign bonds that the crisis manifested. The unwillingness of the ECB to act as a lender of last resort for distressed sovereigns (until August 2012) led to the ballooning of risk premia and arguably generated a crisis of self-fulfilling expectations: because markets expected the sovereign debts of peripheral countries not to be sustainable they imposed higher real interest rates and thus made them unsustainable (Grauwe 2013).

2.3 Do Costs and Prices Matter?

Several steps in the labor market account of the crisis have been empirically corroborated. Early on, Scharpf (2011) provided evidence of a striking contrast in the evolution of ULCs between Germany, where ULCs had declined, and the GIIPS (Greece, Ireland, Italy, Portugal, and Spain), where they had increased, and linked these trajectories to long-standing differences in bargaining institutions. Linked to this argument, Höpner and Lutter (2017) have empirically demonstrated that countries with coordinated bargaining institutions have lower unit labor costs. Hancké (2013), Johnston, Hancké, and Pant (2014), and Johnston and Regan (2016) have argued that the EZ witnesses the uneasy coexistence of coordinated wage bargaining systems, in which the interest of exposed sectors in wage restraint predominate, with uncoordinated wage systems lacking the ability to produce wage restraint. These authors have also linked these institutional differences to differences in trade performance. have generalized this result and provided

empirical evidence that coordinated bargaining institutions are associated with current account surpluses independently of the exchange rate regime.

Nonetheless, the labor market view remains empirically controversial. In particular, there is a lot of uncertainty with regard to the exact role that ULCs play in trade performance. A long tradition in political economy sees the German manufacturing industry as competing on quality, not on cost (Hall and Soskice 2001; Hope and Soskice 2016; Horn et al. 2017; Streeck 1991). In particular, the German institutional system—rigid collective bargaining institutions, high wages, strong employment protection, worker involvement through Work Councils, codetermination, generous investment in vocational training and in social security—provides, it is held, for 'beneficial constraints' which protect German firms from socially disruptive cost competition and force them to innovate (Streeck 1991).

In this context, the recent debate between post-Keynesian economists, Flassbeck and Lapavitsas (2015) on one side, Storm and Naastepad (2015*a*,*b*) on the other, is worth considering in some detail, as it touches upon many key elements of the labor market view. Flassbeck and Lapavitsas (2015) regard wage dynamics as key for understanding the Eurocrisis. Different from the standard view, however, it is Germany's prolonged wage moderation, not the Mediterranean's countries inability to control wage inflation, that they consider the crucial driver of the crisis (see also Bibow 2013; Bofinger 2015). They argue that for the EZ to be viable in the absence of supra-national automatic stabilizers and associated fiscal transfers, nominal wages should grow at a rate equal to the rate of domestic productivity increase plus the nominal inflation target of the central bank (close to but below 2 percent). This 'golden rule' would ensure the invariance of ULCs in a common currency area. According to Flassbeck and Lapavitsas, the German wage bargainers have blatantly violated the golden rule by repeatedly settling for nominal wage increases well-below the rate compatible with ULC invariance. In their view, German wage moderation has had three destabilizing consequences: it has reduced German imports from EZ partners by depressing internal demand in Germany; it has caused real

exchange rate devaluation in Germany and correspondingly real exchange rate appreciation in the EZ partners thus stimulating German exports; it has generated an excess of savings in Germany which have then been used to finance current account deficits in the periphery.

Storm and Naastepad (2015*a*,*b*) have countered these claims by arguing there really is no wage moderation in Germany when wages are correctly computed on a per-hour-worked basis as opposed to per-employee basis. Furthermore, the German gains in competitiveness are due to Germany's outstanding productivity performance as opposed to wage moderation. In any case, they argue, unit labor costs reductions in Germany could not be responsible for the surge in German exports because ULCs only account for 25% of total manufacturing costs and German exports are not very sensitive to ULCs anyway. According to these authors, German institutions do matter, but not because they produce wage moderation; rather because they strengthen the country's non-price competitiveness. The views of Storm and Naastepad are very similar to those of the VoC literature (which they refer to approvingly): for these two authors the strength of the German export sector rests on strong complementarities between the non-liberal institutions of the labor market and of the financial system, rather than on any reliance on wage moderation and a competitive real exchange rate (Storm and Naastepad 2012, Chapter 5).

In the remainder of the paper, we address the issue of whether wage moderation and prices matter as follows. First, we examine the trajectories of nominal wages, labor productivity, and ULCs. Second, we estimate econometrically the impact of ULCs and price differences on the growth of exports and imports. We analyze bilateral exports and imports between EZ countries as determined by bilateral relative ULCs and bilateral relative price levels. We would argue that this kind of bilateral analysis is preferable to analyzing a country's total exports and imports as determined by the country's real effective exchange rate. We focus on two countries: Germany and Italy. Germany is at the core of all accounts of the Eurocrisis; Italy is a country in which there was no housing boom (unlike in Spain) and demand remained subdued before the crisis. Thus, movements

in ULCs are unlikely to have been determined by developments on the demand side in Italy, and more likely to be attributable to the effects of wage bargaining institutions.

3 Empirical Analysis

Our empirical analysis consists of two parts. First, we track the development of ULCs, labor productivity, and wages over time in a descriptive manner. The analysis includes 11 of the 12 first euro adopters[4] and covers the 20 years between 1995 and 2015. The results show that Germany exhibits a peculiar path of low ULCs, both in the total economy as well as in the manufacturing sector. While this path cannot be explained by above-average levels of labor productivity, we find that the German economy saw exceptional levels of wage moderation in the observation period.

Second, we examine whether bilateral exports and imports in the EZ—based on the same set of countries as in the descriptive analysis—are affected by relative gains in competitiveness using statistical inference. We focus on German and Italian bilateral trade between 1999 and 2014. We also present evidence for two additional coordinated market economies, Austria and the Netherlands. Our main finding is that ULCs matter for export performance in Germany but not in other euro countries, including those with coordinated wage bargaining institutions. Additionally, price competitiveness is a significant determinant of both German and Italian exports.

3.1 Descriptive Evidence

Based on data from the OECD Productivity and Unit Labour Cost by Industry Dataset, following figures plot changes in ULCs, labor productivity, and wages over time. The base year is 1999 (= 100), i.e., the year when the euro was adopted in all but one of the 11 countries (Greece joined the euro in 2001). We employ so-called horizon graphs to depict the data. Horizon graphs are a unique device to compare multiple time series in a clear

[4]Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain. Luxembourg is excluded.

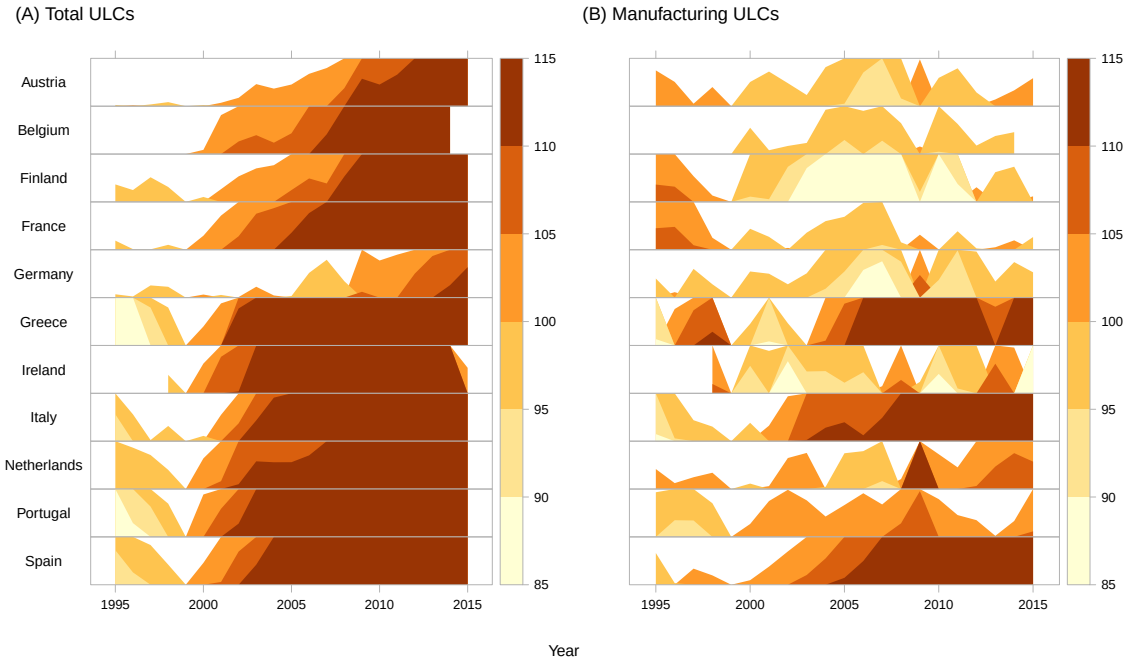
and precise way, and to highlight interesting patterns and extreme values. Differences in magnitude are encoded in differences in color intensity, with darker colors reflecting higher values. Given this use of different hues, horizon graphs invert the space used to display decreases in value, thus freeing up vertical space. Finally, to display the values in even less vertical space, the graphs collapse the color bands (Sarkar and Andrews 2016).

ULCs Figure 1 plots ULCs (defined as nominal labor compensation per hour worked normalized by gross value added per hour worked at constant prices) in 11 euro countries for the total economy (Panel A) and the manufacturing sector (Panel B). Panel A shows that the German trend in ULCs is strikingly different from any of the other countries. To get an intuitive understanding of how horizon graphs are interpreted, we look at the German case in detail. The graph illustrates that between 1995 and 2004 there was very little movement in German ULCs away from the base value of 100. Between 2005 and 2008, there was considerably more change in ULCs and, telling by the hue of this trend, we know that ULCs decreased, peaking at a value of roughly 96 in 2007 and re-approaching 100 thereafter. Following the economic crisis of 2008, the graph highlights a significant increase in ULCs in 2009. The collapsed color bands indicate that the value exceeded 105. After a slight reduction, ULCs started to rise again in 2011 and reached the highest category of the scale (darkest color indicating a value above 110) in 2013-2014. The increase continued in 2015, where the highest ULC value in the observation period was record in Germany (about 113).[5]

Between 1999 and 2007, ULCs increased in every country of the EZ—from a minimum of 4 percent in Austria to a maximum of 36 percent in Ireland—but declined in Germany (4 percent). The loss of competitiveness was particularly pronounced in the GIIPS countries (in 2007: 36 percent in Ireland, 30 percent in Greece, 28 percent in Spain, 23 percent in Italy, 22 percent in Portugal). In the wake of the economic crisis, ULCs grew in Germany as well but Germany was still, and by some measure, the country

[5]It bears emphasizing that German ULCs had been growing relatively fast between 1991 and 1995 (not shown), so the subsequent decline may be partly seen as a correction of previous excesses.

Figure 1: Unit Labor Costs in 11 euro countries, 1995-2015.

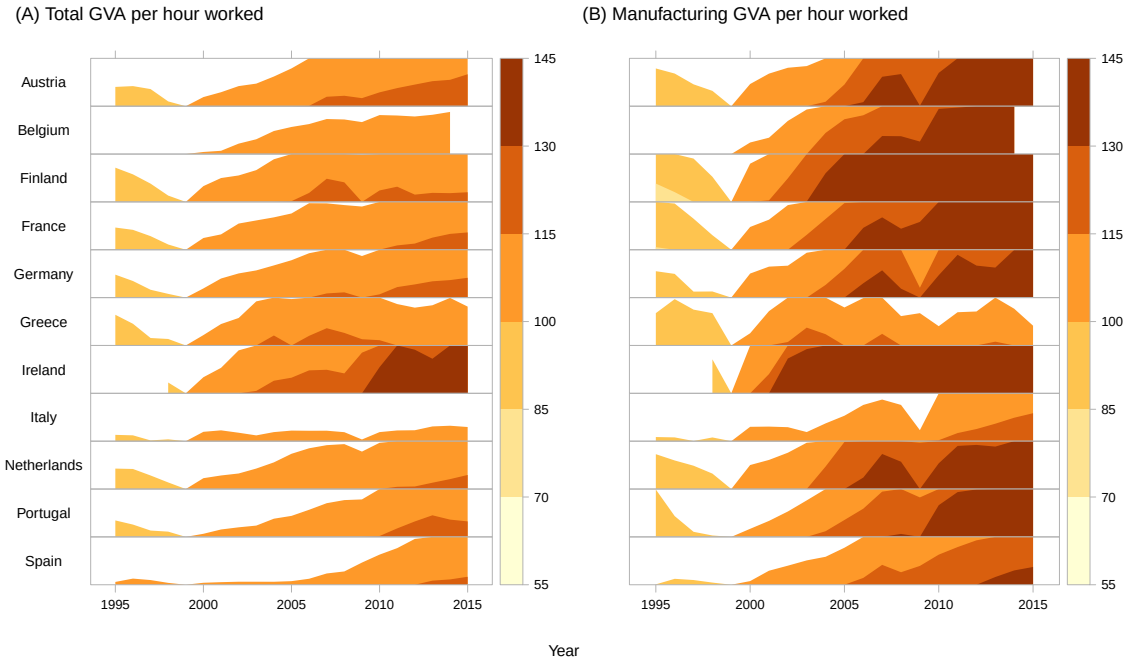


with the slowest overall ULC growth relative to 1999.

Focusing on the manufacturing sector only (Panel B) reveals a more diversified picture. ULC decline was a generalized feature of coordinated market economies (25 percent in Finland, 14 percent in Germany, and 10 percent in Austria). In Italy, Spain, and Greece, on the other hand, there was a sizable erosion of manufacturing competitiveness. In brief, after the introduction of the euro Germany has seen a remarkable increase in cost competitiveness vis-à-vis Northern European partners (mainly in terms of total ULCs) and especially vis-à-vis the GIIPS partners (both in terms of total and manufacturing ULCs).

Labor Productivity It has also been argued that the German competitiveness boost has nothing to do with wage moderation and everything to do with German productivity growth (Storm and Nastepaad 2015). To shed light on this alternative interpretation of the ULC divergence, Figure 2 plots labor productivity (defined as gross value added per hour worked at constant prices) for the same set of countries, again separately for the total economy and for the manufacturing sector. It becomes immediately apparent from

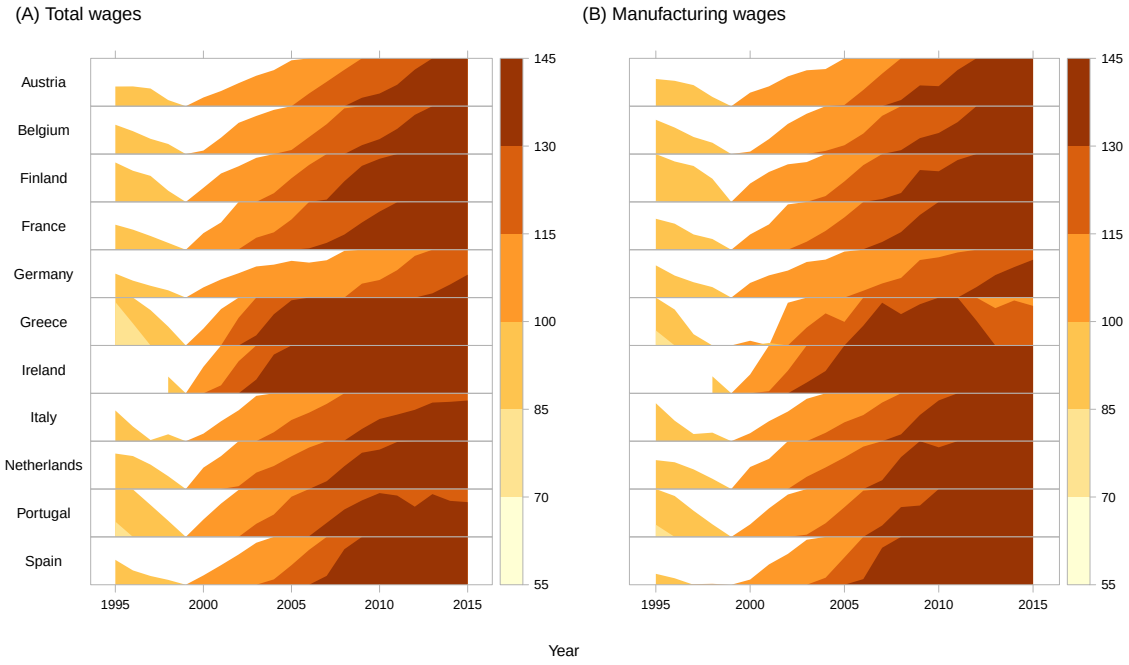
Figure 2: Labor productivity in 11 euro countries, 1995-2015.



the horizon graphs that Germany does not exhibit exceptional levels of labor productivity. As for the total economy, with productivity growth of 16 percent between 1999 and 2007 Germany is in better shape than laggards like Italy and Spain (3 percent each), but does worse than France, Ireland, or even Greece (22, 21, and 20 percent respectively). When it comes to the manufacturing sector, with an increase of 36 percent in 1999-2007 Germany does better than Italy (13 percent) but worse than virtually all other Northern EZ countries, especially Finland (74 percent). In short, the data do not support the thesis that the German competitiveness gains are due to outstanding productivity.

Wages Figure 3 presents data on nominal labor compensation (inclusive of employer's social security contributions) per hour worked for the total economy and for the manufacturing sector. Similar to the general development of ULCs, the picture in Germany looks remarkably different from other countries. Between 1999 and 2007, Germany had the smallest wage increase of all (12 percent). Italian wages rose twice as much in the same period (26 percent). The largest wage increases were registered by Greece and Ireland (56 and 66 percent, respectively). By the end of the observation period, Germany was

Figure 3: Wage rates in 11 euro countries, 1995-2015.



still the country with the lowest wage increase, even though the gap with other countries shrunk somewhat. The same conclusions are reached by focusing on the manufacturing sector. Germany was the country with the lowest wage increase between 1999-2007 (19 percent). By 2015, the rise in German manufacturing wages was still relatively low, second only to crisis-ridden Greece. Manufacturing wages in Italy grew by about the same percentage than total wages (27 percent).

In sum, there was a remarkable boost in ULC competitiveness in Germany vis-à-vis other EZ countries, especially the GIIPS countries. The boost was not due to above-average productivity growth but lower-than-average wage growth—both in terms of total and manufacturing wages.

3.2 Inferential Evidence

Modeling Strategy We are interested to understand to what extent EZ bilateral exports and imports to and from other major euro countries are affected by relative cost competitiveness gains. To this purpose, we estimate standard export and import regres-

sions. Our main estimating equations are as follows:

$$\Delta \ln(exports_{c,p})^* = \alpha_1 + \beta_{exports} \Delta \ln \left(\frac{ulc_c}{ulc_p} \right) + \gamma \Delta \ln(demand_{p-c}) + \Delta \epsilon_{c,p} \,, \qquad (1)$$

$$\Delta \ln(imports_{p,c})^* = \alpha_2 + \beta_{imports} \Delta \ln \left(\frac{ulc_c}{ulc_p} \right) + \phi \Delta \ln(demand_{c-p}) + \Delta \eta_{p,c} \,. \qquad (2)$$

For the export regression, the first difference of the natural logarithm (equivalent to percentage change) of bilateral exports of goods from country c to the partner country p ($p = 1, \ldots, 10$) is regressed against the first difference of the natural logarithm (equivalent to percentage change) of the country's ULCs divided by the ULCs of the partner country p and the first difference of the natural logarithm (equivalent to percentage change) of total imports of the partner country p (excluding imports from country c). The latter term proxies for demand in the partner country. For import regression, the first difference of the natural logarithm of bilateral imports of goods from the partner country p to country c is regressed against the same measure of relative ULCs as before and the first difference of the natural logarithm of total demand in country c excluding imports from the partner country p. It is assumed that shocks to changes in exports and imports ($\epsilon_{c,p}$ and $\eta_{p,c}$, respectively) are random noise and uncorrelated with each other. The analysis is based on annual observations of our set of 11 euro countries and the time frame is 1999-2014. Although the euro starts officially in 2001, by 1999 nominal parities have been irrevocably fixed. Thus, it is possible to ignore nominal exchange rate adjustments and focus exclusively on relative unit labor costs.

We employ first-difference specifications. This modeling strategy is based on the assumption that the data at hand are non-stationary, i.e., mean and variance of individual panels change over time. To test this assumption explicitly, we performed several panel unit-root tests for the data on German and Italian bilateral exports (see column 3 of Tables A1 and A2 of the appendix). The results clearly indicate that unit roots are present. Using first differences, the data are stationary (see column 4 of Tables A1 and A2 of the appendix). This suggests that the data are integrated by order 1, which renders

the first-difference estimator the preferred choice.

The first-difference estimator would be biased in the case of cointegration. Simply put, we speak of cointegration when the linear combination of two or more non-stationary variables is stationary. To test for this, we performed error-correction based panel conintegration tests (Westerlund 2007) on the export models of Germany and Italy (see Tables A3 and A4 of the appendix). The results suggest that the variables are not cointegrated.[6]

Propositions Based on the theoretical discussion above, the following propositions summarize our expectations with regard to Equation 1 (Propositions 1a and 1b) and Equation 2 (Propositions 2a and 2b):

PROPOSITION 1A *We expect* $\beta_{exports} = 0$ *if a country's bilateral exports are not sensitive to ULC differences;* $\beta_{exports} < 0$ *if they are.*

PROPOSITION 1B *We expect* $\gamma > 0$*, i.e., a country's bilateral exports should grow with general import growth in partner countries.*

PROPOSITION 2A *We expect* $\beta_{imports} > 0$*, which implies that a country's bilateral imports from EZ partners increase when a country loses ULC competitiveness.*[7]

PROPOSITION 2B *We expect* $\phi > 0$*, i.e., a country's bilateral imports increase as the country's demand increases.*

Furthermore, we want to examine how relative gains in price competitiveness affect a country's export and import performance. To measure levels of domestic prices we use the gross-domestic-product deflator (GDPD). The GDPD is defined as the ratio of nominal or current-price GDP to real or constant-price GDP multiplied by 100. Using the GDPD has two advantages compared to other price indexes like the consumer price index

[6]We find this also confirmed by the direct estimation of error-correction models (ECMs). In these models, the error-correction term is not distinguishable from zero, indicating that there is no cointegration relationship. For more detail, see Table A5 of the appendix.

[7]This could be because of imports competing with domestic production, and replacing it when relative costs increase.

(CPI). First and foremost, the GDPD reflects the prices of all goods and services *produced domestically*. The CPI, on the other hand, reflects the prices of all goods and services *bought by consumers*. The latter includes also goods and services produced abroad. Since we are both interested in how domestic ULCs translate into domestic prices as well as how the evolution of domestic prices affects bilateral trade performance, the GDPD is our preferred choice. Second, different from the CPI, the GDPD does not rely on a fixed basket of goods and services.

Thus, we substitute following terms in our export and import equations:

$$\theta_{exports}\Delta \ln\left(\frac{gdpd_c}{gdpd_p}\right) \quad \text{and} \quad \theta_{imports}\Delta \ln\left(\frac{gdpd_c}{gdpd_p}\right), \text{ respectively.}$$

In other words, the first difference of the natural logarithm (equivalent to percentage change) of a country's (c) GDPD divided by the GDPD of the partner country p enters the models as a measure of relative price differences. Our expectations about these parameters are:

PROPOSITION 3A *We expect $\theta_{exports} = 0$ if a country's bilateral exports are not sensitive to price differences; $\theta_{exports} < 0$ if they are.*

PROPOSITION 3B *We expect $\theta_{imports} > 0$, which implies that a country's bilateral imports from EZ partners increase when a country loses price competitiveness.*

Data and Methods Data for bilateral exports and imports come from the OECD STAN database on Bilateral Trade in Goods by Industry and End-use (BTDIxE), ISIC Rev. 4. The exports and imports figures are reported as thousand dollars in the database. They have been divided by the dollar-euro exchange rate (from the Ameco database) and expressed as trillion euros. Imports and exports have then been expressed in 1999 constant prices by using export and import price deflators, respectively (also from the Ameco database). Data on unit labor costs are from the OECD Dataset on Productivity and Unit Labour Cost by Industry, ISIC Rev. 4. Data on countries' imports and demand

are from the Ameco database. They are expressed in trillion Euros at 1999 prices using the appropriate country-specific price deflators (for imports and GDP, also from AMECO).

The equations are estimated by ordinary least squares (OLS) with panel corrected standard errors (PCSE). The data are weighted by taking into account that bilateral exports and imports are of different magnitudes depending on the partner. Weights are constructed by dividing trade flows for the sample mean trade flow, such that bilateral exports and, respectively, imports above (below) the mean are weighted more (less).

Model Results Table 1 presents results from our export (Models 1-3) and import equations (Models 4-6) for German bilateral trade between 1999 and 2014. The estimates of the export regressions suggest that for each 1 percent increase of imports in the partner country, $\Delta \ln(demand_{p-c})$, German exports to the country increase by about 0.6 percentage points on average. In other words, there is no equivalent correspondence between imports in EZ countries and German exports (such a 1-to-1 relationship is reported by studies that do not focus on bilateral trade flows, e.g., Horn et al. 2017). This result seems robust across models.

For each percentage point of increase in German ULCs relative to the average bilateral partner, $\Delta \ln(\frac{ulc_c}{ulc_p})$, German exports decline by 0.85 percentage points (Model 1). Interestingly, when ULCs in the total economy are replaced with ULCs in manufacturing, $\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$, the ULC term remains significant but the magnitude is much smaller (Model 2). This is a sign that the effect of ULC is systemic rather than sector-specific: ULC moderation in the service sector is almost as important for export promotion as ULC moderation in manufacturing, possibly because renting and other service-related costs contribute to determine the cost competitiveness of manufacturing exports.

When the ULC term is split in its components, i.e., relative nominal wages and relative labor productivity (see Model A6 of the appendix), the two terms have approximately the same absolute magnitude but opposite signs. An increase in German relative productivity, $\Delta \ln(\frac{gva_c}{gva_p})$, increases bilateral exports by 0.88 percent, while an increase in German

Table 1: Determinants of German Bilateral Trade, 1999-2014 (weighted OLS and PCSE).

	Model 1 $\Delta \ln(exports_{c,p})$	Model 2 $\Delta \ln(exports_{c,p})$	Model 3 $\Delta \ln(exports_{c,p})$	Model 4 $\Delta \ln(imports_{p,c})$	Model 5 $\Delta \ln(imports_{p,c})$	Model 6 $\Delta \ln(imports_{p,c})$
$\Delta \ln(demand_{p-c})$	.630*	.585*	.665*			
	(.077)	(.084)	(.080)			
$\Delta \ln(demand_{c-p})$				1.719*	1.408*	1.871*
				(.332)	(.380)	(.312)
$\Delta \ln(\frac{ulc_c}{ulc_p})$	−.854*			−.318		
	(.288)			(.387)		
$\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$		−.480*			−.360	
		(.154)			(.254)	
$\Delta \ln(\frac{gdpd_c}{gdpd_p})$			−1.224*			−.032
			(.521)			(.590)
α	.003	.010	.002	.007	.012	.008
	(.007)	(.007)	(.008)	(.008)	(.007)	(.009)
Number of observations	150	150	150	150	150	150
Number of countries	10	10	10	10	10	10
R^2	.594	.595	.581	.330	.347	0.323

* $p < .05$

relative nominal wage, $\Delta \ln(\frac{wages_c}{wages_p})$, decreases exports by 0.83 percent. Both terms, controlling for the other, capture a distributional shift: controlling for relative wages, an increase in relative productivity implies an increase in relative profits; vice versa, controlling for productivity, an increase in the relative wage implies an increase in the wage share. In contrast with the argument that the German export success is entirely due to productivity, our results suggest that relative nominal wage moderation is a significant predictor even controlling for productivity.

Furthermore, German exports are strongly sensitive to price differentials (Model 3). For each percentage point of increase in German domestic prices relative to the average bilateral partner, $\Delta \ln(\frac{gdpd_c}{gdpd_p})$, German exports decline by 1.22 percentage points. This price effect is roughly twice the size of the demand effect, $\Delta \ln(demand_{p-c})$, meaning that German exports are significantly more sensitive to domestic prices than to foreign demand. The estimated price elasticity of German bilateral exports in the euro era is also considerably larger than the consensus estimate (-1.06) for the pre-euro period reported by Hooper and Marquez (represented in Dornbusch 1996).

Finally, Models 4-6 show that changes in German demand, $\Delta \ln(demand_{c-p})$, have a large and strongly significant impact on bilateral imports. For each percentage point increase in German demand, imports grow by 1.41-1.87 percentage points on average. In all models, the relative cost and price terms are insignificant and negative as opposed to the expected positive sign. This suggests that German bilateral imports from the EZ are not sensitive to cost and price differences and are not depressed by the recent boost in competitiveness. A much more important determinant of German imports is aggregate demand (for a similar finding, see Horn et al. 2017).

In all models, the (change in the) constant α is insignificant, suggesting there is no common time trend. In additional specifications (not shown) we also controlled for country fixed effects, which would capture country-specific time trends, and found they are also jointly insignificant.

Table 2 repeats the same statistical exercise for Italian bilateral trade between 1999

Table 2: Determinants of Italian Bilateral Trade, 1999-2014 (weighted OLS and PCSE).

	Model 1 $\Delta \ln(exports_{c,p})$	Model 2 $\Delta \ln(exports_{c,p})$	Model 3 $\Delta \ln(exports_{c,p})$	Model 4 $\Delta \ln(imports_{p,c})$	Model 5 $\Delta \ln(imports_{p,c})$	Model 6 $\Delta \ln(imports_{p,c})$
$\Delta \ln(demand_{p-c})$	1.054*	1.048*	1.002*			
	(.085)	(.086)	(.082)			
$\Delta \ln(demand_{c-p})$				1.739*	1.786*	1.806*
				(.412)	(.412)	(.404)
$\Delta \ln(\frac{ulc_c}{ulc_p})$	−.302			.508		
	(.278)			(.284)		
$\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$		−.081			.244	
		(.159)			(.202)	
$\Delta \ln(\frac{gdpd_c}{gdpd_p})$			−1.497*			−.166
			(.497)			(.522)
α	−.027*	−.028*	−.022*	−.004	−.004	.001
	(.007)	(.007)	(.007)	(.009)	(.010)	(.010)
Number of observations	150	150	150	150	150	150
Number of countries	10	10	10	10	10	10
R^2	.648	.644	.676	.350	.342	.329

* $p < .05$

and 2014. The export regressions (Models 1-3) suggest consistently that foreign demand fully translates into Italian exports. For each 1 percent increase of imports in the partner country, Italian exports to the country increase—on average—by about 1 percentage points. Thus, compared to German exports, Italian exports are more sensitive to demand from other EZ countries.

Starkly different from Germany, ULCs are not a significant determinant of Italian exports (Models 1-2). This results holds for both components of the UCL term (see Table A7 of the appendix). While cost competitiveness seems to be a negligible factor, changes in price competitiveness are strongly associated with changes in Italian export performance (Model 3). For each percentage point of increase in Italian domestic prices relative to the average bilateral partner, Italian exports decline by 1.5 percentage points. This suggests that the real appreciation of the Italian (implicit) exchange rate limits exports. The constant in all models is significant and negative, i.e., there is negative trend of Italian exports over time.

Similar to Germany, Italian imports are strongly sensitive to changes in demand (Models 4-6). For each percentage point increase in Italian demand, bilateral imports increase by 1.74-1.81 percentage points on average. In accordance with our expectations, the estimates for total and manufacturing ULCs (Models 4-5) have a positive sign. Yet, the estimated coefficients are not statistically significant (total ULCs are significant at the $p < .10$ level). Relative domestic prices do not seem to exert any impact on Italian imports (Model 6).

A large literature (see above) claims that the importance of ULC moderation for export success is not only a feature of Germany, but of coordinated market economies in general. The results of Table 3 do not corroborate this claim. The table presents results for Austrian (Models 1-3) and Dutch (Models 4-6) bilateral exports. The estimates show that neither cost nor price competitiveness matter for both countries' export performance. This suggest that cost and price sensitivity is not a generalized feature of coordinated market economies but a specific feature of the German economy in the euro era.

Table 3: Determinants of Austrian and Dutch Bilateral Exports, 1999-2014 (weighted OLS and PCSE).

	Model 1 Austria $\Delta \ln(exports_{c,p})$	Model 2 Austria $\Delta \ln(exports_{c,p})$	Model 3 Austria $\Delta \ln(exports_{c,p})$	Model 4 Netherlands $\Delta \ln(exports_{c,p})$	Model 5 Netherlands $\Delta \ln(exports_{c,p})$	Model 6 Netherlands $\Delta \ln(exports_{c,p})$
$\Delta \ln(demand_{p-c})$	.959*	.955*	.952*	.739*	.692*	.777*
	(.143)	(.167)	(.143)	(.179)	(.160)	(.180)
$\Delta \ln(\frac{ulc_c}{ulc_p})$	−.703			−.178		
	(.824)			(.453)		
$\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$		−.194			−.511	
		(.497)			(.271)	
$\Delta \ln(\frac{gdpd_c}{gdpd_p})$			−1.166			−.857
			(1.433)			(.615)
α	−.003	−.003	.001	.027	.029*	.028*
	(.009)	(.010)	(.009)	(.014)	(.013)	(.014)
Number of observations	150	150	150	150	150	150
Number of countries	10	10	10	10	10	10
R^2	.394	.384	.394	.299	.338	.314

* $p < .05$

Finally, to test the robustness of our results, we re-estimated our regression models using a jackknife approach, excluding one trading partner at a time.[8] Our estimates remain substantially unchanged. Therefore, there is no reason to believe that the reported results depend on particular countries.

4 An Amended Labor Market View of the Eurocrisis

In the preceding sections we have made two arguments: one theoretical and the other empirical. From a theoretical point of view, we have tried to show that the labor market view, which we consider CPE's most original contribution to understanding the Euro crisis, does not just explain labor markets developments, the building of a competitiveness gap, and the accumulation of trade and current account imbalances, but can also provide a plausible account of what happens on the capital account side and the role of cross-border financial flows.

From an empirical point of view, we have sought to address a blind spot in the CPE literature. On the one hand, the literature argues that bargaining structures produce different degrees of wage and price inflation (Hancké 2013; Höpner and Lutter 2017; Scharpf 2011). On the other hand, some authors (sometimes from the same VoC perspective) hold that these differences are not a very important determinant of exports and the trade balance Hope and Soskice (2016); Storm and Naastepad (2015*a*,*b*). Rather than assuming away the link between relative ULCs, relative prices, and trade flows (imports and exports), we have tested it econometrically.

Our descriptive evidence suggests wage moderation is not a generalized feature of coordinated collective bargaining systems, but a specific feature of the German economy. The increase in German competitiveness is not due to a rise in productivity, but to wage

[8]Unfortunately, the number of countries is too small to estimate jackknife standard errors, which would summarize the results of the jackknife analysis in a comprehensive manner. We refrained from presenting the individual jackknife regressions because of their large number (10 regressions for each of our models). Results can be obtained from the authors upon request. Following code was used in Stata 14: `jackknife, cluster(`*partner*`): xtpcse` [*variables*] [*weights*].

moderation. Furthermore, wage moderation in Germany is not ensured solely by keeping public sector wages in check, but also by an effort to keep nominal wages low relative to competitors in the manufacturing sector.

The results of the econometric analysis suggest that relative ULCs and relative prices are an important determinant of German exports. The point estimates suggest that an increase of German ULCs by 1% relative to the ULCs of the average member of the EZ decrease export volumes by 0.8% and an increase of German price deflator by the same amount decreases export volumes by 1.2%. Again, sensitivity of exports to ULCs and prices seems a specific German phenomenon and not a feature of coordinated market economies as a whole. In fact, we find no significant coefficients for the ULC and price terms in the regressions for Austria and the Netherlands. The sensitivity of German exports to ULCs may be interpreted in two ways: a reduction of relative costs may increase profits and through this channel improve some non-price aspects of competitiveness (e.g., by enabling more investments in marketing and distribution) or may be used to reduce prices.[9]

Interestingly and contrary to expectations, we find that German exports are not particularly sensitive to the growth of demand in partner countries controlling for costs and prices. In the fact the sensitivity of export volumes to demand is around 0.6 (for each 1% increase in demand in the average partner, German exports increase by 0.6%), i.e., smaller than the sensitivity to relative costs and prices, and smaller than the demand sensitivity of Austrian and Dutch exports (around 0.9 and 0.7 respectively). Differently from German exports, German imports from EZ countries grow instead strongly with the increase in domestic demand: a 1% increase in German demand is associated with an increase in German imports between 1.4 and 1.8%. This suggests that the repression of internal demand in Germany has had negative consequences for the exports of other

[9]When total ULCs and prices are entered simultaneously in the specification (not shown), both terms become indistinguishable from zero. Using manufacturing ULCs instead of total ULCs, manufacturing ULCs remain statistically significant. This suggests that manufacturing ULCs increase profit margins and increase the scope for firms to invest in advertising, marketing, etc., i.e., investment which increases export sales without going through changes in prices.

EZ countries.

Italian exports are, even more than the German, strongly sensitive to price differences (-1.5%) but not sensitive to ULCs (insignificantly different from zero). Thus, Italy's appreciation of the real exchange rate has negatively impacted its exports. In addition, Italian exports are strongly sensitive to the growth of demand in partner countries (coefficient around 1), more than German exports. Thus for Italy the appreciation of the real exchange rate in the Euro means a big burden for exports. Italian imports, more than the German ones, are strongly sensitive to movements in internal demand (1.7-1.8) and insignificantly sensitive to movements in costs and prices. This suggests that an expansion of demand in Italy is likely to lead to a trade imbalance with EZ partners.

Overall, our amended version of the labor market view goes as follows. Wage and price competitiveness do matter for the Euro crisis. More than a generalized outcome of coordinated vs. uncoordinated bargaining systems, wage moderation was a specifically German phenomenon which reduced relative ULCs and relative prices. The resulting gains in competitiveness, both the lower costs and the lower domestic prices, benefited the German export industry, whose exports appear significantly cost- and price-sensitive, but not the corresponding export industries in Austria and the Netherlands. The depression of German aggregate demand resulting from wage moderation also reduced German imports from EZ countries.

Simultaneously, higher inflation in Southern countries and lower inflation in German and other Northern countries set in motion demand effects through the real exchange rate channel. Interest-sensitive demand for housing ballooned in some Southern countries like Spain, thus further contributing to competitiveness losses (Kohl and Spielau 2017). The resulting current account imbalances were for some time financed through cross-country inter-bank loans. When these flows stopped (and reversed), Target 2 balances replaced them.

The account of German exports as cost- and price-sensitive emerging from the above account, while in contrast with VoC-inspired views of the German economy (Hall 2012;

Storm and Naastepad 2012) is in line with a newer account which emphasizes the growing importance of exports for the German growth model and the increased price sensitivity of German exports. In the 1990s and 2000s, these shifts spurred a liberalization offensive by German manufacturing employers seeking to increase their cost and price competitiveness (Baccaro and Benassi 2017; Baccaro and Pontusson 2016; Sorge and Streeck 2016). If it is true that labor costs are of no consequence for the German export industry, then the preferences of German employers are wrong. This is the implausible corollary of VoC-types of arguments: Export-oriented employers should be paying no attention to labor costs—after all, they do not matter for exports—and should be defending with all their might the non-liberal institutions on which their non-price competitiveness depends, rather than being set on trying to liberalize them (Kinderman 2005; Streeck 2009).

While these results may be a matter of scientific dispute in the academic community, actors on the ground seem to have no doubt that a competitive exchange rate such as the one provided by the euro is an important competitive asset for the German export industry. We provide two quotations to highlight this point. The first statement was made by the former president of the Confederation of German Employers' Associations (BDA), which represents roughly 1 million companies: "A return to the Deutsche Mark would be extremely dangerous. The exchange rate risks would be huge for our export-oriented companies. (…) The return to the Deutsche Mark would be politically, socially, and economically a giant misfortune" (Dieter Hundt, former president of the BDA, in an interview on 28 December 2011; own translation).

On the union side as well, the importance of a competitive real exchange rate seems to be beyond any doubt. This is clearly expressed by the current head of the German Trade Union Confederation (DGB) that represents the interests of more than 6 million members: "If we were to return to the D-Mark—as some populists demand—we would lose the title of world export champion immediately because the Deutsche Mark would gain 20 to 30 percent in value and would make our products much more expensive" (Reiner Hoffmann, head of the DGB, in an interview on 20 March 2017; own translation).

5 Concluding Remarks

We conclude with a caveat. While our analysis leads us to conclude that wage moderation and real exchange rate depreciation do matter for the current account, it does not imply that the strategy of 'internal devaluation' promoted by the *troika* is the correct approach to solving the crisis. Sometimes the labor market view and the standard view of the European authorities are conflated in scholarly analysis, as if both implied there is no alternative to wage and price reductions in the crisis countries and provided a legitimation for the policy approach of the *troika* (Perez 2017; Storm and Naastepad 2015*b*).

Our analysis suggests otherwise: German imports from other Eurozone countries are strongly dependent on German demand. A strategy of reflation in Germany—based on real wage growth and expansionary public expenditures—would go a long way towards redressing the current account imbalances in the Eurozone.

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Appendix

Table A1: Panel Unit-Root Test: German Bilateral Exports.

Unit-Root Test	H_0	p-value	Δ p-value
Breitung	Panels contain unit roots.	0.89	0.00
Harris-Tzavalis	Panels contain unit roots.	0.17	0.00
Im-Pesaran-Shin	All panels contain unit roots.	0.03	0.00
Fisher-type ADF	All panels contain unit roots.	0.10	0.00

Table A2: Panel Unit-Root Test: Italian Bilateral Exports.

Unit-root test	H_0	p-value	Δ p-value
Breitung	Panels contain unit roots.	0.08	0.00
Harris-Tzavalis	Panels contain unit roots.	0.24	0.00
Im-Pesaran-Shin	All panels contain unit roots.	0.36	0.00
Fisher-type ADF	All panels contain unit roots.	0.41	0.00

Table A3: Westerlund ECM Panel Cointegration Tests: German Export Models.

Model	statistic	robust p-value
$\Delta \ln(\frac{ulc_c}{ulc_p})$		
	G_τ	0.13
	G_α	0.28
	P_τ	0.94
	P_α	0.94
$\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$		
	G_τ	0.32
	G_α	0.34
	P_τ	0.63
	P_α	0.77
$\Delta \ln(\frac{gdpd_c}{gdpd_p})$		
	G_τ	0.66
	G_α	0.52
	P_τ	0.53
	P_α	0.68

H_0: No cointegration.

Bootstrapped p-values based on 100 replications.

Table A4: Westerlund ECM Panel Cointegration Tests: Italian Export Models.

Model	statistic	robust p-value
$\Delta \ln(\frac{ulc_c}{ulc_p})$		
	G_τ	0.92
	G_α	0.86
	P_τ	0.44
	P_α	0.82
$\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$		
	G_τ	0.94
	G_α	0.84
	P_τ	0.91
	P_α	0.92
$\Delta \ln(\frac{gdpd_c}{gdpd_p})$		
	G_τ	0.11
	G_α	0.65
	P_τ	0.21
	P_α	0.58

H_0: No cointegration.

Bootstrapped p-values based on 100 replications.

Table A5: Error-Correction Terms from ECMs on German and Italian Bilateral Exports.

ECM	EC term	Germany	Italy
$\Delta \ln(\frac{ulc_c}{ulc_p})$			
	$\ln(exports_{c,p})_{t-1}$	$-.009$	$-.016$
		(.016)	(.015)
$\Delta \ln(\frac{man\_ulc_c}{man\_ulc_p})$			
	$\ln(exports_{c,p})_{t-1}$	$-.005$	$-.007$
		(.014)	(.014)
$\Delta \ln(\frac{gdpd_c}{gdpd_p})$			
	$\ln(exports_{c,p})_{t-1}$	$-.006$	$-.015$
		(.018)	(.012)

* $p < .05$

Table A6: Components of ULCs and German Bilateral Exports, 1999-2014 (weighted OLS and PCSE).

	$\Delta \ln(exports_{c,p})$
$\Delta \ln(demand_{p-c})$	.631*
	(.076)
$\Delta \ln(\frac{gva_c}{gva_p})$	.884*
	(.398)
$\Delta \ln(\frac{wages_c}{wages_p})$	−.833*
	(.354)
α_1	.003
	(.007)
Number of observations	150
Number of countries	10
R^2	.593

* $p < .05$

Table A7: Components of ULCs and Italian Bilateral Exports, 1999-2014 (weighted OLS and PCSE).

	$\Delta \ln(exports_{c,p})$
$\Delta \ln(demand_{p-c})$	1.054*
	(.088)
$\Delta \ln(\frac{gva_c}{gva_p})$	.288
	(.451)
$\Delta \ln(\frac{wages_c}{wages_p})$	−.315
	(.322)
α_1	−.027
	(.008)
Number of observations	150
Number of countries	10
R^2	.648

* $p < .05$