Comparative Institutional Advantage in the European Sovereign Debt Crisis

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Abstract

Excessive fiscal spending is commonly cited as a primary cause of the current European sovereign debt crisis. We develop an alternative hypothesis which better accounts for systemic differences towards EMU countries' exposure to market speculation: the rise of competitiveness imbalances which contributed to national imbalances in total borrowing. We outline that one driver of competitiveness divergence is a country's capacity to limit sheltered sector wage growth, relative to wage growth in the manufacturing sector. We posit that corporatist institutions which linked sectoral wage developments together in the surplus countries provided them with a comparative wage advantage vis-à-vis EMU's debtor nations, explaining why the EMU core has emerged relatively unscathed from market speculation during the crisis despite that fact that some of these countries had poor fiscal performances during EMU's early years. Using a panel regression analysis, we demonstrate that rising differentials between public and manufacturing sector wage growth, as well as wage governance institutions which weakly coordinate exposed and sheltered sectors, are significantly correlated with export decline. We also find that weak governance institutions are significantly associated with more prominent export decline inside a monetary union, compared to outside of monetary union.

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Introduction

What systemic factors explain why some sovereigns in Europe's Economic and Monetary Union (EMU) have fallen victim to heavy market speculation amidst the current economic crisis, while others have remained unscathed? Governments' reckless fiscal spending prior to the financial crisis has emerged as the primary scapegoat of the current debt tragedy within E(M)U's peripheral economies. Primary policy prescriptions of the 'troika' (the European Commission, European Central Bank, and the International Monetary Fund) have made national bail-outs conditional on deep public spending cuts. Recent events between Greece and the troika exhibit the typical austerity-politic deadlock between the EMU's debtors and those which have agreed to provide them necessary funds. The political risk of failing to implement the Commission's demands and hence failing to receive successive tranches of funds is all too apparent for the southern economy, despite a contraction in real GDP per capita of nearly 20% since 2007, an unemployment rate of 21% in the first quarter of 2012[1], and the rise of fascist sympathies as voters flock to the neo-Nazi party Golden Dawn. Such austerity conditionality has also been applied to Ireland, Portugal and recently Spain and Cyprus, while other European governments who have not yet knocked on the European Financial Stability Facility's door have become pre-emptive in austerity.

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[1] OECD (2012) 'OECD unemployment rate remains stable at 7.9% in May 2012'. 10 July 2012. http://www.oecd.org/berlin/HUR_NR07e12.pdf

Comparative Institutional Advantage in the European Sovereign Debt Crisis

While many acknowledge the role of the 2008 financial crisis as the catalyst which initiated Europe's debt crisis, recent debate has questioned whether (systemic) roots of the crisis were established before this pivotal event. Amongst Europe's political leaders and policy makers, the fiscal recklessness hypothesis (that the fiscal crises within the EMU periphery were driven by unsustainable public borrowing prior to the financial crisis) has almost become conventional wisdom. We find this development not only puzzling but misleading. Though this hypothesis explains why financial markets doubt Greece and Italy's, capacity to repay its debts, it fails to carry to other EMU cases. Spain and Ireland, with a better fiscal position than Germany for most of the EMU period before the crisis, were subject to more severe market speculation. Belgium, in contrast, with persistent high debt levels, has barely seen a shift in its bond yields over the past three years. Indeed, once Greece is removed from the EMU landscape, fiscal performance, measured either in terms of average net government borrowing or public debt between EMU entry and the start of the crisis, becomes a poor predictor of the variation in current nominal interest rates on long-term government bonds, a common indicator used to gauge a country's default risk. Rather, indicators which are tied to *competitiveness* – real exchange rate developments, export share growth, and the average current account balance between EMU entry and the start of the crisis – fare better in explaining current diversity in bond yields across EMU.

In this paper, we provide an institutional hypothesis to explain variation in EMU member-state exposure to the current crisis. Extending Wihlborg, Willett, and Zhang's (2010) insights on divergences in internal adjustment mechanisms as a source of variation in crisis exposure, we posit that countries with corporatist institutions that tie wage growth in sheltered sectors to sectors exposed to trade have encountered little speculative pressure from

markets, despite their pre-2008 fiscal condition, as these institutions helped them maintain competitiveness, producing positive trade balances and hence reducing the need for significant international borrowing. Countries without functional corporatist institutions which tie wage-setters in sheltered sectors to those in exposed sectors, on the other hand, lost competitiveness vis-à-vis their corporatist neighbors, incurred trade deficits and hence had to rely more heavily on international borrowing. In failing to integrate sectoral and national labor markets alongside monetary policy, the EMU project has created an asymmetric union not only between monetary and fiscal integration, but also between monetary and labor market adjustment. The lack of labor market integration across EMU member-states has forced countries to rely upon national corporatist institutions in order to adjust. In other words, corporatism is a crucial institutional advantage which differentiates EMU's creditors from its debtors.

The next section reviews the (young) debate on the origins of the European debt crisis. After outlining the arguments of the two major camps – those which attribute variation in speculative exposure to fiscal divergence and those which attribute it to competitive divergence – we provide rudimentary bivariate analyses which test the robustness of both hypotheses. These preliminary analyses largely support the competitiveness hypothesis. We depart from the competitiveness hypothesis, however, by offering an institutional account of how differences in labour market organization and governance within EMU's member-states may explain divergences in national inflation and therefore the real exchange rate in the early years of EMU. We then test our hypothesis via a fixed effects panel regression analysis, examining the influence of exposed and sheltered wage differentials, as well as a sectoral wage-governance dummy, on export share growth in 17 OECD economies. We find that countries with high inter-sectoral governance,

minimizing gaps between sheltered sector and manufacturing sector wage growth, also witnessed more prominent growth within their export shares, and that such growth was particularly magnified under EMU. The paper concludes with a discussion on corporatism and Optimal Currency Area (OCA) theory, highlighting the irony that the more 'rigid', centralized, and highly coordinated wage bargaining regimes within EMU have best weathered adjustment in a monetary union.

Making sense of Europe's sovereign debt crisis

Within the (young) debate about the origins of the European debt crisis, two camps have arisen which seek to explain speculative divergence across E(M)U's sovereigns. The fiscal camp (Buiter and Rahbari, 2010; Pisani-Ferry, 2012; Lane, 2012) has identified the Euro crisis as a consequence of fiscal excesses prior to the 2008 financial crisis as well as poor design of EMU which led to the availability of cheap credit and lax monitoring on borrowing. Buiter and Rahbari (2010) are perhaps the most critical of pre-crisis fiscal accounts, arguing that excessive fiscal spending and pro-cyclical behaviour by national authorities prior to 2008 further exacerbated deficit problems within EMU's Southern rim after serious financial bail-outs.

Others have attributed the current fiscal crisis not to the reckless behaviour of governments, but to the low real (and nominal) interest rates in EMU's early years, which provided sovereigns, particularly in EMU's peripheral economies that did not have access to such low rates in the early and mid-1990s, with cheap credit (Lane, 2012). Membership in the Euro-zone provided low exchange rate and interest rate premia. Excessive government borrowing would be addressed in EMU's institutional design through the Stability and

Growth Pact (SGP) and a 'no bailout' clause. However, some doubted whether the SGP possessed the credible threat against over-borrowing of its predecessor since, in contrast to the Maastricht criteria, failure to comply with the SGP would not result in EMU exclusion (Buti and Giudice, 2002; Johnston, 2012). Moreover, as Baskaran and Hessami (2012) and Arghyrou and Kontonikas (2010) argue, relaxation of the SGP's fiscal rules by France and Germany led to soft budget constraints after 2004, and further enabled the high deficit nations to succumb to 'binge' borrowing, as markets discounted for the best case scenario for convergence even when some nations were showing signs of fiscal deterioration.

While the fiscal camp clearly outlines why EMU's poor design may have contributed to overborrowing in countries for whom market premiums for government debt would otherwise be much higher, the competitiveness camp doubts that overborrowing problems rested solely in the public sector. Indeed several among the latter question whether some governments that are current targets of heavy market speculation, such as Spain and Ireland, could be defined as 'fiscally reckless' given their consistent budget surpluses prior to the crash. Examining imbalances between the current accounts of EMU member-states, this camp suggests that the problem can be attributed to divergences in competitiveness and *total* borrowing (including most importantly *private borrowing*) (Wihlborg et al., 2010; Belke and Dreger, 2011; Bibow, 2012; Gros, 2012).

The basic argument can be summarized as follows. Because of the absence of a nominal exchange rate between Euro-zone member-states, competitiveness becomes a function of the real exchange rate, determined by relative inflation rates: countries with lower inflation rates hold a more advantagous real exchange rate than those with higher inflation rates. Under a fixed monetary system, where the majority of trade is intra-regional, wage moderation

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pursued by one group of countries (the North), serves as a 'begger-thy-neighbour' policy vis-à-vis those (the South) that have not pursued such wage moderation (Perez-Caldentey and Vernengo, 2012; Bibow, 2012). Current account balances, however, are zero-sum games under a beggar-thy-neighbor approach; in order for surplus nations to hold a trade surplus vis-à-vis deficit nations[2], the former must lend money to the latter via the capital account. Assuming a balance of payments equilibrium (and a negible balance item), nations with trade deficits must finance these deficits via borrowing from surplus countries, hence realizing a positive capital account balance. Consequently, under EMU, savings in the countries with a trade surplus were invested in capital and consumption projects (most notably in real-estate, which further fueled housing bubbles in Spain and Ireland) in countries with trade deficits, leading to consumption gluts in the latter (Gros, 2012; Giavazzi and Spaventa, 2010; Holinski et al, 2012). Gros (2012) outlines that banking systems and other intermediaries within Europe possessed a heavy home bias, and hence the excess savings in the north was predominantly invested in the Euro-zone itself. While peripheral countries witnessed a consumption (and real-estate) boom, their competitiveness further deteriorated vis-à-vis the core where wage moderation was strictly enforced. Since currency devaluations are impossible in a monetary union, the burden of balance of payments adjustment falls predominantely on labour costs (Holinski et al, 2012; Stockhammer, 2011; Bibow, 2012; Gros, 2012). In other words, the south's failure to adjust its labor costs, and hence its public *and* private borrowing imbalances, vis-à-vis the North preceeding the crisis, prompted markets to attach a higher interest rate premium to sovereign bonds in the periphery once the crisis was in full swing.

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[2] Trade with EMU's Northern economies was quite substantial for the South, although less so for Ireland, in the 2000s. In 2005, imports from Austria, Belgium, Finland, France, Germany and the Netherlands accounted for 40% of Italy's and Spain's total imports, 30% of Greece's and Portugal's imports, and 20% of Ireland's imports (IMF DOTS, 2008).
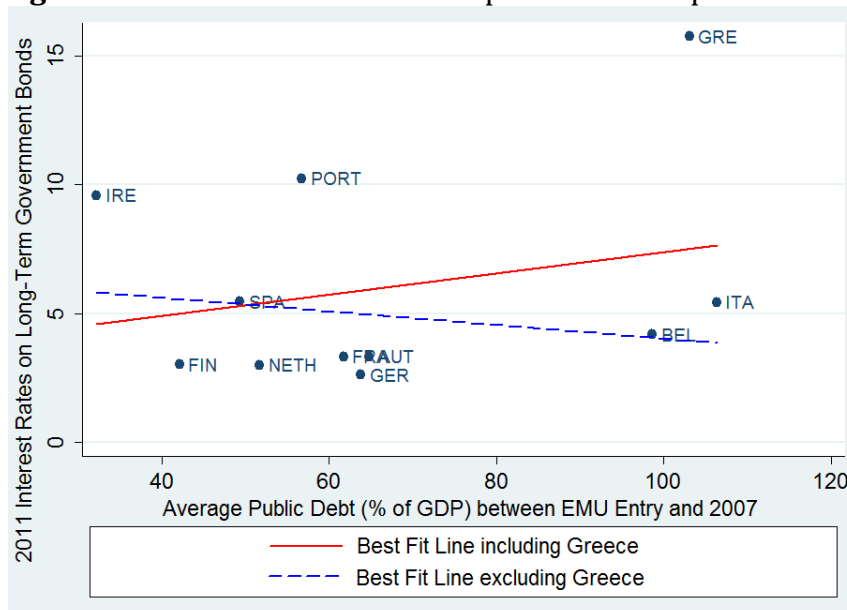
In order to examine whether the fiscal recklessness or the competitive hypothesis holds water, we turn to a basic bivariate analysis which compares variation in EMU member-state exposure to the current crisis. We rely upon simple bivariate analysis for a preliminary comparison of the fiscal and competitiveness hypothesis, rather than a more comprehensive panel analysis, because government bond yields in EMU member-states failed to diverge until 2010. Between 2000 and 2008, the average maximum spread in nominal interest rates on long-term government debt was 0.8% for the EMU12, growing to 2% in 2009, 6.3% in 2010 and 13.1% in 2011 (EU AMECO Database, 2013). The lack of divergence before 2009 presents a small-n problem for panel analysis; at most, we would have three years where bond yields in monetary union exhibited suitable variation to test either hypothesis. Bivariate analysis, though imperfect given the absence of controls, presents a liberal estimate to assess the fiscal and competitive hypothesis; if either exhibits weak correlates, it is unlikely that they would become stronger with the inclusion of more variables. We select 2011 long term nominal interest rates as our (dependent) indicator to proxy market confidence in an EMU member-state's capacity to repay its existing government debt (greater default risk carries a higher interest rate premium). For proxies of fiscal performance, we apply two indicators; average net government borrowing and average government debt, both as percentages of GDP, between EMU entry (1999 for all countries except Greece, whose entry year was 2001) and 2007, the year before the crisis. 2007 provides a convenient cut-off point in avoiding endogeneity problems, as spreads in long term nominal interest rates between EMU member-states were highly contained, ranging from 4.2% in Germany to 4.5% in Greece. Figures 1a and 1b present basic scatter plots between Euro member-states' 2011 long-term government bond yield and their pre-crisis average deficit and debt levels, respectively. Best fit line estimates (including and excluding Greece) and R-squared values are included below.

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Figure 1a: 2011 interest rates and pre-crisis deficit performance

Best fit line (including Greece): y = -0.81x + 4.94 (R2=0.257)
Best fit line (excluding Greece): y = -0.14x + 4.90 (R2 = 0.012)

Figure 1b: 2011 interest rates and pre-crisis debt performance

Best fit line (including Greece): y = 0.04x + 3.23 (R^2=0.063)
Best fit line (excluding Greece): y = -0.03x + 6.67 (R^2 = 0.050)

Several interesting characteristics about the fiscal performances in EMU prior to the crisis are worth noting. Firstly, none of the slope estimates on deficit or debt performance (including or excluding Greece) are significant at a 90% confidence level. While the average fiscal deficit prior to the crisis on its own explains roughly 25.7% of the variation among EMU member-states' 2011
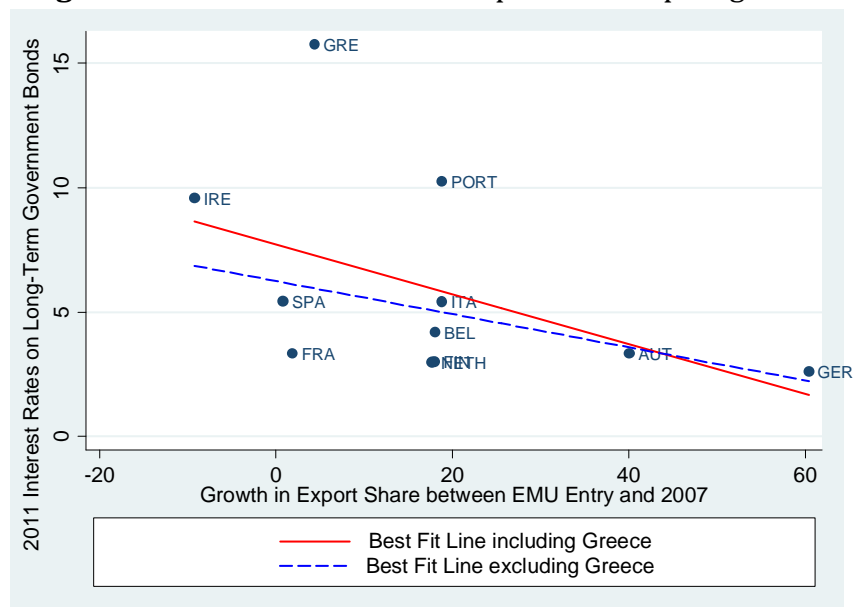
interest rate, this figure is highly dependent upon the inclusion of Greece. If Greece is excluded, prior fiscal performance only explains 1.2% of the variation in 2011 bond yields. An even starker contrast emerges when examining the influence of average pre-crisis debt levels on 2011 bond yields. When Greece is included, prior debt performance has a positive association with 2011 bond yields and explains 6.3% of its variation. When it is excluded, however, prior debt performance has a *negative* association with 2011 bond yields –largely the result of Ireland's and Portugal's relatively low pre-crisis debt levels.

Though Figures 1a and 1b exclude other controls that influence government bond yields, one fact is evident; fiscal performance prior to the crisis does not appear to be a robust systematic explanation for the sovereign debt crisis. While this explanation may work well when examining Greece and Italy, it does not appear to travel very far. Spain and Ireland, both of which had lower debt levels than Germany prior to 2007 and ran consistent surpluses prior to 2007, have become targets for speculators who are uncertain about their capacity to avoid debt restructuring. More surprisingly, Belgium has largely been spared from a significant interest premium despite holding a pre-crisis debt level of nearly 100% of GDP.

Turning to the competitiveness hypotheses, we select three measures to gauge whether variation in pre-crisis competitive performance is associated with variation in 2011 bond exposure to market speculation: growth in export shares between EMU entry and 2007, real-exchange rate appreciations/depreciations between EMU entry and 2007, and average current account balances (as a percentage of GDP) between EMU entry and 2007. Figures 2a, 2b and 2c present similar bivariate analyses which examine the relationship between these two indicators and 2011 long term government

bond yields. The increase in explanatory power of these indicators, even when excluding Greece, is striking.

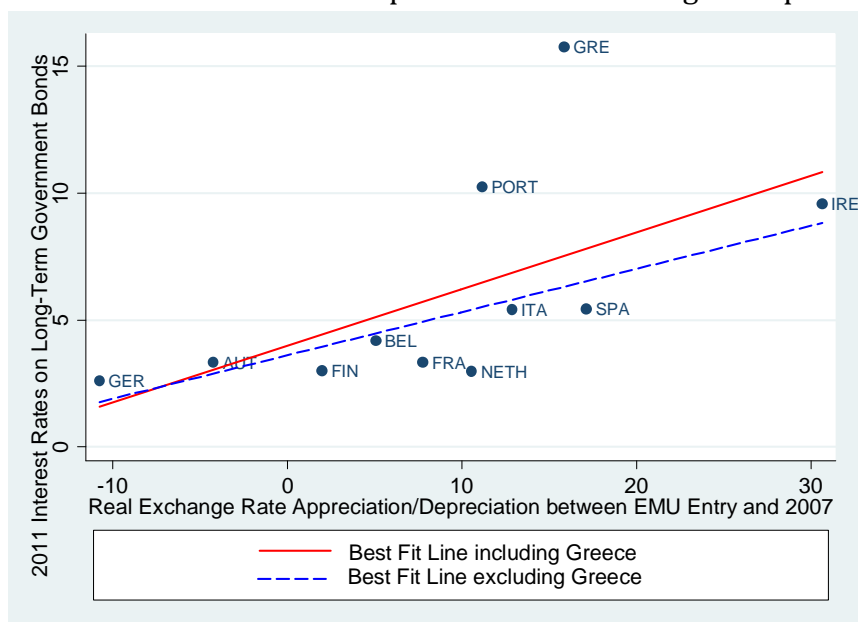**Figure 2a:** 2011 interest rate and pre-crisis export growth

Best fit line (including Greece): y = -0.10x + 7.71 (R2=0.217)
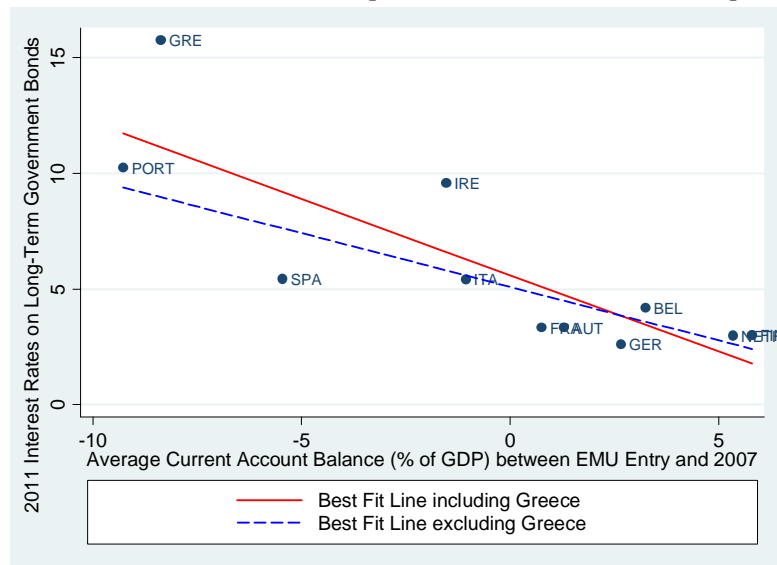*Best fit line (excluding Greece): y = -0.07x + 6.25 (R2 = 0.230)*

Figure 2b: 2011 interest rates and pre-crisis real exchange rate performance

Best fit line (including Greece): y = 0.22x + 3.99 (R2=0.355)
Best fit line (excluding Greece): y = 0.17x + 3.61 (R2 = 0.498)

Figure 2c: 2011 interest rates and pre-crisis current account performance

Best fit line (including Greece): y = -0.66x + 5.59 (R2=0.670)
Best fit line (excluding Greece): y = -0.46x + 5.09 (R2 = 0.628)

Whilst we urge caution in drawing definitive statements about the relationships between the indicators above given the absence of controls, the three competitiveness indicators appear to offer a much better explanation for the variation in 2011 interest premiums within EMU member-states compared to the fiscal indicators. Slope coefficients are significant at a 90% confidence level or higher, regardless of whether Greece is included. Moreover, the exclusion of Greece does not significantly alter the best fit estimates or their R-squared values. Export growth between time of EMU entry and 2007, on its own, explains over 20% of the variation in 2011 interest premiums, again regardless of whether Greece is included. Changes in the real (effective) exchange rate between time of entry and 2007, on their own, account for 35.5% of variation in the data (49.8% when Greece is excluded), while current account balances alone account for over two-thirds of the variation in 2011 interest rates. Rather than merely explaining Greece and Italy, the competitive argument also helps generalize the experiences of Ireland, Spain, and Portugal, which witnessed stagnant export growth, a significant real exchange rate appreciation, larger current account deficits and higher interest premium

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in 2011, as well as that of Germany and Belgium, which witnessed real exchange rate depreciation/stagnation and current account surpluses, much despite their high debt balances.

The competitiveness argument raises an important argument in the debate on the origins of the European debt crisis. It fails, however, to provide specific explanations as to what fostered internal adjustment mechanisms within the EMU core (Austria, Belgium, Finland, France, Germany and the Netherlands) which were largely absent within the EMU periphery (Greece, Ireland, Italy, Portugal and Spain) – even though many within this camp acknowledge that adjustment lies predominantly within the realm of labor-markets (Stockhammer, 2011; Holinski et al., 2012; Belke and Dreger, 2011). This lack of attention to the institutional determinants of divergence in competitiveness across the Euro-Area is puzzling: there are plenty of arguments and data that emphasize the positive influence of corporatist institutions on comparative advantage via wage restraint.

We explore whether corporatist institutions facilitated export performance in the North, and whether these institutions intensified any competitive advantages under monetary union. Our argument rests on the analysis of how wage dynamics between sectors, specifically those exposed to and those sheltered from trade, influence national inflation and hence competitive developments. The EMU core possessed corporatist collective bargaining institutions, which tied wage developments in sheltered sectors to those in the exposed, thus limiting the inflationary potential of the sheltered sector and enhancing national competitiveness. The EMU periphery, on the other hand, lacked these institutional links between the sheltered and exposed sector – consequently wage-setters in the former, not subject to a competitive constraint like those in the latter nor to an institutional constraint as their sheltered sector counter-parts in the EMU core, were able to push for

inflationary wage increases which produced adverse consequences for national inflation and hence relative price competitiveness in EMU.

A Corporatist Comparative Advantage: Explaining the Core's Success and the Periphery's failure

We begin our analysis with several assumptions. First, we assume two sectors in each of the countries: an exposed sector, whose wage setters are under competitive pressure to constrain wage growth given high exposure to trade, and a sheltered sector (which includes the public sector) whose wage setters face a lax competitiveness constraint on wage developments, given the relative absence of multiple competitors. While these two sectors may not embody the entirety of a country's labour force, we assume their combined weight in the economy, both in terms of employment and in terms of output, is significant enough that wage developments would influence national inflation either directly via the influence of wages on price mark-up strategies, or indirectly via the influence of wages on prices via demand expansion/contraction. The real exchange rate, which is a function of a country's nominal exchange rate, e, multiplied by the ratio of the domestic to foreign price level (RER = $e \frac{P_d}{P_f}$), indicates the relative competitiveness of a country vis-à-vis their trading partners (the nominal exchange rate for regions that share a common currency is equivalent to 1, meaning that the real exchange rate between members of a currency union is purely a function of relative prices). If a country is successful in keeping its inflation rate low relative to its trading partners, it realizes a competitive depreciation in the real exchange rate which should improve its trade balance. If a country's national inflation rate exceeds that of its trading partner, the result is, all other

things equal, an appreciation in the real exchange rate which worsens its trade balance.

We assume that wage-setters within the exposed sector face strong incentives to pursue wage moderation (i.e. real wage growth below or at least on par with productivity growth) because their employment status is heavily tied to a competitiveness constraint: if wages in this sector are too high, this will lead to a reduction in employment via one of two employer mark-up strategies. If employers pass wages increases onto prices, their products become more expensive vis-à-vis their trading partners, yielding lower demand from international buyers and to a reduction in production. Likewise, if employers do not translate wage increases into rising prices, they compensate for an increased wage bill by shedding employment. Regardless of which strategy is chosen, the end result is the same – reduced employment – thus providing exposed sector wage-setters the incentive to limit their wage demands. Wage developments within the sheltered sector, in contrast, are not directly influenced by trade, and wage setters in this sector therefore face a considerably less restrictive competitiveness constraint, if they face one at all. Non-market services (i.e. health services, education, public administrators) in particular face a very different wage-setting regime than the exposed sector, given secure employment, and the relative absence of competition because of their near monopoly provision of certain services.

Despite the fact that wage-setters within sheltered sectors do not face similar incentives to enforce wage moderation as those in the exposed, wage developments within the sheltered sector can have a significant influence on a country's trade developments given its weight within national inflation: the aggregate national inflation rate is, in effect, the weighted average of the two separate inflation rates in the exposed and in the sheltered sectors. Re-writing a country's real exchange rate as a composite of sectoral prices (RER =

$e\frac{[\alpha p_{d,e}+\,(1-\alpha)p_{d,s}]}{[\beta p_{f,e}+\,(1-\beta)p_{f,s}]}$, where α/β and $(1-\alpha)/(1-\beta)$ are the weights associated with the exposed and sheltered sector prices in the domestic and foreign inflation rate, respectively), sheltered sector wage growth becomes an important determinant of the real exchange rate via its impact on sheltered sector prices. The presence of a competitiveness constraint limits the mark-up power of employers in the exposed sector, keeping price developments relatively similar across countries. Hence, real exchange rate developments are crucially linked to a country's capacity to limit wage inflationary pressures within the sheltered sector. This places wage-setters in the exposed sector in a precarious position vis-à-vis their counter-parts in the sheltered sector: while the former have high incentives to moderate wages in order to remain (price) competitive, the latter do not but are able to influence the employment status in the former if they price wages high enough to significantly influence national inflation.

Because external competitiveness imposes a hard constraint on the export sector, the exposed sector will set wages taking into account relative wage inflation rates in the main trading partners (if it does not, in this analysis, it simply exacerbates the inflationary pressures arising from the sheltered sector). There are, therefore, four logically possible worlds. The first is the one in which inflation in the sheltered sector is kept under control through legal, political and institutional means. In this world, the aggregate wage inflation rate will not rise, and almost certainly not faster than elsewhere, and relative competitiveness is likely to be reasonably stable or improving. Note that in such a scenario, improving competitiveness can also produce fiscal effects, if these legal or political institutions support governments in managing the public sector wage bill (although as Germany and Belgium's fiscal performance suggest, moderated public sector wage growth is not a sufficient condition for low *aggregate* fiscal balances). The second scenario is one in

which wage inflation in the sheltered sector is relatively high, but this is compensated by a combination of high productivity and moderate wage growth in the exposed sector, proportionate to the relative sizes of both sectors. Aggregate inflation remains modest, and the country's export sector does not price itself out of export markets. The third possible world – a variation on the second, but with very different outcomes – combines a sheltered sector with inflationary wages and an exposed sector, which, hard as it may try, is unable to bridge the relative inflation gap. Aggregate inflation thus increases, the real exchange rate appreciates, and export prices rise, with the concomitant negative effect on competitiveness. The fourth possible scenario, involving inflationary wages in the exposed sector, is, in many ways, an extension of the third. Such inflationary wages in the exposed sector, irrational though they may seem, usually come about because the exposed sector is a trend follower, rather than, as in the second scenario, a trend setter in wages. This is the extremely dangerous constellation where both sectors contribute to wage inflation, which we have seen in some of the Southern European economies over the last decade.

The dualistic nature of wage-setting incentives and wage moderation objectives by sector is not a novel idea and has been highlighted by many (Crouch, 1990; Iversen, 1999; Garrett and Way, 1999; Franzese, 2001; Johnston and Hancké, 2009). Many in this literature have analysed how wage bargaining institutions can bridge these diverging incentives by tying wage-determination in non-tradable sectors to tradable ones (Franzese, 2001; Baccaro and Simoni, 2007; Traxler and Brandl, 2010; Brandl, 2012; Ramskogler, 2013). Among these arguments, Traxler and Brandl (2010) and Brandl (2012) offer perhaps the most empirically sophisticated analyses. They outline how bargaining regimes that constrain the public sector – the key 'sheltered' sector, with strong trade unions and collective bargaining systems

set against a background of employment security – influence national wage outcomes. Collective bargaining systems that transfer significant trend-setting power to employers and unions in the exposed sector, they argue, are particularly effective at limiting wage growth in sheltered sectors. Building on these insightful analyses, we identify how bargaining systems influence wage differentials between exposed and sheltered sectors and how these wage differentials produce divergent competitive performances within EMU. Wage-setting regimes that discipline wages in the sheltered sector should witness a trade surplus advantage, which translates in to a current account surplus. This makes them net creditors, while the others witness current account deficits and hence have had to assume greater public *and private* borrowing in order to finance them. The common currency in EMU renders a country's exchange rate purely as a function of relative inflation: countries that are more successful in keeping inflation under control (particularly within their sheltered sectors where wage moderation incentives are relatively weak), will witness more advantageous real exchange rates and more favorable current accounts. By the balance of payments identity, countries with more favorable current accounts become the creditors while countries with less favorable current accounts become the debtors.

The vast literatures in industrial relations and political science on the topic of sectoral corporatism have demonstrated quite convincingly that bargaining regimes which are most conducive towards limiting sheltered sector wage growth are those which grant considerable trend-setting authority to exposed sector wage-setters, the state, or a combination of both. Both these actors favour limited sheltered (especially public) sector wage growth: the former in the name of competitiveness, the latter in the name of fiscal prudence. Such bargaining regimes that transfer considerable powers to exposed-sector actors and/or the state take three shapes. The first are pattern bargaining systems

where the exposed sector leads national wage developments (Traxler and Brandl, 2010). The second consists of state-coordinated systems that enforce a permanent wage law or permanently encourage export-sector led bargaining (Pochet, 2004). And the third consists of incomes policies/wage pacts with a high degree of 'governability', which grant employers and/or governments considerable authority in the determination of sectoral/national wage settlements[3] -- typically this is introduced by governments after unsuccessful attempts to produce wage moderation, usually as a result of the weakness of peak associations (Brandl, 2012). In contrast, bargaining regimes that have been identified as limiting the role of the exposed sector and the state in collective bargaining are: one, peak-level bargaining systems where wages are determined by peak-organizations which embody multiple sectors (Traxler, Blaschke and Kittle, 2001); two, regimes where there is no coordinating mechanism between wage-setters; and, three, incomes policies or wage pacts with a low degree of governability (Brandl, 2012).

Peak-level bargaining, as Traxler and Brandl (2010) point out, can be more conducive towards delivering sheltered sector wage restraint if the exposed sector is given a leading voice and governance within peak-organizations is high – this explains the success of the Danish case in the 2000s, with the rise of five major wage bargaining cartels where wage setting was anchored by the industrial/manufacturing cartel. Incomes policies and, more notably, wage pacts with high governability are not usually permanent systems of coordination, as these policies and pacts tend to be more reactive by nature, often introduced and (in some cases unilaterally) implemented by governments in times of crisis. Nevertheless, they are frequently used to correct wage inflation across the entire economy, including sheltered sectors.

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[3] Examples of this include governments determining national wages unilaterally (via legislation enforcing a nation-wide wage-freeze) or wage pacts that grant export-sector employers or the state considerable authority in agenda setting.

Hence, this method of coordination is very effective at producing temporary wage moderation in the sheltered sector (even if persistent government intervention in wage bargaining may not be acceptable to social partners in the long run). These types of systems, and where they exist among developed economies, are outlined in Table 1 below.

Table 1: Wage moderation by bargaining regime and country (2000-2007)

Collective bargaining institutions that are conducive towards consistent sheltered sector wage moderation	*Collective bargaining institutions that are conducive towards temporary or permanent sheltered sector wage excess*
Pattern-bargaining systems (export-sector led): Austria, Germany, Japan, Sweden	*Peak-level bargaining*: - HG: Denmark, Finland (2001 & 2007), Netherlands (2000-2001, 2005-2007) - LG: Italy, Portugal, Spain
State imposed wage laws/state coordination (export-sector led): Belgium, France	*No coordination*: Australia, Canada, United Kingdom, United States
Incomes policies/Wage Pacts with high governability: Finland (2000, 2002-2006), the Netherlands (2002-2004)	*Incomes policies/wage pacts with low governability*: Ireland

Note: LG indicates low governability, HG indicates high governability
Source: Brandl, 2012, Visser, 2011, European Industrial Relations Observatory (various articles)

Given the distinction in the literature on how bargaining regimes influence sheltered sector wage developments, i.e. via power dynamics between the state/exposed sector and the sheltered sector, we expect EMU countries with bargaining regimes in the left-hand column of Table 1 (Austria, Belgium, Finland, France, Germany, and between 2002 and 2004 the Netherlands) to exert greater levels of wage moderation compared to countries in the right-hand column, which lists countries without permanent mechanisms to constrain sheltered sector wage growth (Spain, Italy, Portugal, Ireland and the Netherlands between 2000 and 2001 and after 2005). Consequently, countries with bargaining regimes that are conducive towards wage moderation will

witness lower national inflation, a more competitive real exchange rate and hence an improvement in their export share/current account balances.

Empirical Model and Variable Selection

We employ a panel regression analysis to test how the suppression of sheltered sector wages influences national competitiveness. In order to avoid an EMU bias, we select a 17 country sample from 1980 to 2007, which includes ten countries that adopted the euro in 1999 (Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, and Spain) as well as seven non-EMU participants (Australia, Canada, Denmark, Japan, Sweden, the UK, and the US). We selected 2007 as the end of our sample for two reasons: sectoral data which we use for the construction of one of our primary independent variables of interest only exists until 2007 for the 17 countries in this analysis. In addition, given the extraordinary circumstances since the crisis for countries with non-competitive bargaining systems and the regulation of wages in the sheltered sector, we sought to remove this exceptional period after 2007. We select export share growth[4] as a proxy for national competitiveness, rather than current account dynamics, in order to concentrate our analysis on how sheltered sector wage suppression influences the capacity of the export sector to expand output. Countries with a competitive real exchange rate should witness greater export expansion than those with an uncompetitive real exchange rate.

We select two independent variables as proxies for institutions that support wage moderation in the sheltered sector: the (lagged) differential between sheltered and manufacturing sector wage growth (results presented in Tables

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[4] We do not select export share levels as the dependent variable, given the absence of time stationarity within panels.

3 and 4), and a crude institutional dummy which embodies the value of 1 if a country at time t possesses one of the three bargaining institutions that enforce sheltered sector wage moderation, i.e. pattern bargaining, state-imposed coordination or incomes-policies/wage-pacts with high governability (results presented in Table 5). Since the first of these specifically measures the degree to which a country has managed to suppress wages in the sheltered sector below those in the trade-exposed manufacturing sector, it is a superior indicator. Since this indicator can be driven by both export sector wage moderation or sheltered sector wage excess, we also conduct supplementary regressions (Table 6), examining the influence of real wage growth in these sectors in isolation of each other on export share growth. Sheltered sector wage suppression is defined as the difference in the growth rate of the hourly wage in the sheltered sector and the growth rate of the hourly wage in the exposed sector.[5] Using the difference in sheltered and exposed sector wages rather than absolute sheltered sector wage growth removes direct influence of exposed sector wage dynamics on those in the sheltered sector. Hence what is captured is the degree to which sheltered sector wage setters have over/undershot wage developments within the (exposed) manufacturing sector, with positive/negative developments indicating that sheltered sector wage setters have managed to secure more/less lucrative wage gains than their exposed sector counter-parts.

We selected an employment-share weighted composite of the public administration and defence, education, and health and social work sectors - ISIC categories L, M and N, respectively – given these sectors relatively sheltered status from both foreign (and domestic) competition. For the exposed sector, we selected manufacturing (ISIC category D) as a proxy.

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[5] Because we are selecting the difference in sectoral wage growth within countries, real versus nominal wage distinctions become irrelevant, since both sectors are exposed to the same national inflation rate). We incorporate real wage growth for the supplementary regressions, where absolute wage growth is the primary independent variable of interest, in Table 6.

Wage and employment data are taken from the EU KLEMS database. Table 2 presents average wage growth differentials between our sheltered sector proxy and exposed sector proxy by bargaining regime between 1980 and 2007. The most persistent suppression of annual wage growth in the sheltered sector relative to the manufacturing sector is found in bargaining regimes that are characterized by pattern bargaining, state-imposed wage laws/export-sector coordination, and incomes policies/wage pacts with high governability. State-imposed coordination was the most effective at delivering sheltered sector wage suppression: wage growth in the sheltered sector was, on average, 1.14% below that in manufacturing each year between 1980 and 2007, implying the emergence of a 11.4% wage gap in favor of the manufacturing sector over a ten-year period). Weakly coordinated bargaining regimes also suppressed sheltered sector wage growth on average, albeit to a lesser extent than institutional frameworks built on coordination in the left hand column of Table 2. Peak-level bargaining regimes with high governability appear to have a similar capacity to sheltered sector wage suppression as high governability incomes-policies/wage pact regimes – likely the result of successful vertical coordination that can be feasibly implemented by powerful peak-associations.

Peak-level coordination with low governability and incomes policies/pacts with low governability proved the least effective at delivering sheltered sector wage suppression (for the former, wage growth in the sheltered sector was, on average, 0.32% above that in manufacturing each year between 1980 and 2007, implying the emergence of a 3.2% wage gap in favor of the sheltered sector over a 10 year period). The influence of an uncoordinated wage bargaining regime on wage growth differentials is more difficult to predict. Under Baumol's cost-disease framework (Baumol and Bowen, 1965) if wage-setters in an uncoordinated regime individually agree on wage settlements

that are equivalent to inflation (or average wage increases), differences in sectoral wage growth should be nil. If, however, wages are set according to a neo-classical framework, where workers receive pay awards based upon their productivity, these regimes may produce negative pay differentials between sheltered sectors and manufacturing, as the former tends to be dominated by service sectors where productivity growth is lower than in goods-based production sectors. While countries with no coordination bargaining regimes within our sample witnessed negative wage growth differentials between the sheltered and manufacturing sector (0.29% annual wage gaps on average), these differentials were substantially less than the pattern bargaining, state-imposed and high governability incomes policies bargaining regimes.

Table 2: Differences in sheltered sector and manufacturing sector annual wage growth by bargaining regime, 1980-2007 average

Collective bargaining institutions that are conducive towards consistent sheltered sector wage moderation	*Collective bargaining institutions that are conducive towards temporary or permanent sheltered sector wage excess*
Pattern-bargaining systems (export-sector led): -0.66% annual difference *State imposed wage laws/state coordination (export-sector led):* -1.14% annual difference *Incomes policies/Wage Pacts with high governability*: -0.41% annual difference	*Peak-level bargaining*: - HG: -0.40 annual difference - LG: 0.32% annual difference *No coordination*: -0.29% annual difference *Incomes policies/wage pacts with low governability*: 0.24% annual difference

Note: HG and LG refer to high and low governability

In order to examine our hypothesis that different wage-governance structures yielded significantly different export share growth rates, we used a crude sectoral wage-governance dummy as a means of distinguishing between institutions that are and are not conducive towards producing sheltered sector wage suppression. This dummy took the value of 1 for countries which

possess bargaining institutions that are conducive towards limiting sheltered sector wage settlements (pattern bargaining, state imposed coordination, and incomes policies/wage pacts with high governability), and 0 if otherwise. Six countries within our 17 country sample (Canada, France, Germany, Japan, the UK, and the US) maintained the same bargaining institutions over the 1980-2007 period. For this reason, we conducted these regressions without country fixed effects, in order to avoid perfect multicollinearity problems within these six panels. Data on bargaining regimes from 1980 to 2003 was taken from Brand (2012), while we updated data from 2004-2007 using wage pacts data from Visser (2011) and various articles from the European Industrial Relations Observatory.

In order to test whether the relationship between sheltered sector wage suppression and export performance is spurious or possibly causal, we employ a fixed effects panel regression model of the 17 countries above from 1980 to 2007 (as mentioned above, for the sectoral wage-governance dummy regressions, we employ a random effects model). The selection of growth rates, rather than levels delivers an added benefit for fixed effects. Using a growth rate for our main dependent and most of our independent variables makes the use of country fixed effects less problematic, as these dummies crowd out country-specific effects which are common in levels (see Plümper et al. 2005). Our results in Tables 3 and 4 remain significant and robust when we select random effects as an estimator, suggesting that they do not merely capture within-country, time variations, but also (in the random effects models, which are not shown here) cross-national variation.

Our empirical model can be summarized as follows:

$$\Delta(X/GDP_{i,t}) = \alpha_{i,t} + \beta_1(SheltWageSup_{i,t-1}) + \Sigma \beta_k X_{k,i,t} + \Sigma \beta_m Z_{m,i,t} + \varepsilon_{i,t}$$

in which $\Delta(X/GDP_{i,t})$ is the year-on-year change in country i's export share at time t, $SheltWageSup_{i,t}$ is the degree of sheltered wage suppression – measured either as the difference in log changes in the sheltered sector and manufacturing hourly wage for country i at time t-1 (results presented in Tables 3 and 4), as the crude high sectoral wage-governance dummy (results presented in Table 5), or as the absolute sheltered/manufacturing wage growth measure in isolation of manufacturing/sheltered sector wage growth (Table 6) – $\Sigma X_{k,i,t}$ is a vector of economic controls and $\Sigma Z_{m,i,t}$ is a vector of institutional controls. Data for export shares were taken from the EU's AMECO database. First differences are used for the dependent variable as well as most independent variables given the violation of time-stationarity within panels. For the sectoral wage independent variables, the (lagged) difference is used to avoid endogeneity problems with the dependent variable, as well as multicollinearity problems with terms of trade shocks and changes in the real exchange rate which we incorporate as controls (see below).

Regarding economic controls, we include year-on-year changes in net government borrowing, in order to test whether fiscal developments play a significant role in export expansion (Table 3, columns III-VI), terms of trade shocks and real exchange rate shocks; though our theory of how sectoral wage dynamics influences export performance operates primarily via the real exchange rate, we include it as a separate control to account for real exchange rate movements that may be influenced by developments other than sectoral wage dynamics (such as the prices of non-labour, factor inputs). We excluded terms of trades shocks from the wage-governance dummy regressions, given their slight, but significant, correlation with the dummy variable across all panels. Real interest rate shocks were purposefully excluded given their relationship by identity with real exchange rate shocks, via the interest rate

parity condition.[6] Terms of trade, net government borrowing and real exchange rate data all stem from the EU's AMECO database. For institutional controls, we included the level (not change) of social benefits as a percentage of GDP to account for Rodrik's (1998) hypothesis that highly open countries have large welfare states as an insurance mechanism against market risk; the proportion of legislative seats held by right parties to account for the fact that these parties may be more likely to pursue pro-business policies which favor export-growth; wage bargaining centralization; and the employment share of the sheltered sector (employment in sectors ISIC categories L, M and N as a percentage of total employment) to account for Garrett and Way's (1999) hypothesis that larger sheltered (public) sectors produce greater wage inflation and hence hamper macroeconomic outcomes. Because these data are presented in levels, their significance is likely to be influenced by the use of a fixed effects estimator, which we consider below. Wage centralization data stem from Visser (2011), right-wing legislative seats stem from Swank (2006), social benefits as a percentage of GDP were constructed from EU AMECO data, and sectoral employment share data stem from EU KLEMS.[7] Given the presence of auto-correlation for the baseline regressions, we incorporated a panel-specific Prais-Winsten transformation into our models, which both corrects for auto-correlation and absorbs less time-series dynamics than a lagged dependent variable (Plümper et al, 2005).[8] Panel corrected standard errors are used to control for heteroskedascity within panels (Beck and Katz,

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[6] Given that all countries within the sample are developed and possess limited capital controls, it is fair to assume that this condition would hold.

[7] The data appendix outlines the sources of all variables and how they were constructed.

[8] The LR Chi-squared statistics for the Wooldridge test for panel autocorrelation for the sectoral wage differential and governance dummy baseline models were 29.9 (p-value=0.000) and 19.57 (p-value=0.000), respectively. For the baseline models where real public sector wage growth and real manufacturing wage growth served as the primary independent variables of interest, LR Chi-squared statistic was 30.1 (p-value=0.000) and 29.89 (p-value=0.000), respectively.

1995).[9] We also incorporate n-1 time dummies into our regressions in order to control for unobserved time effects.

In the first series of regressions, we test the preliminary relationship between the (lagged) difference in sheltered and manufacturing wages and growth in the export share with several important controls (terms of trade shocks and changes in the real exchange rate, both of which are not included in the same models together due to multicollinearity problems). Models I-III in Table 3 present the results using the (lagged) difference in public and manufacturing wages as the primary independent variable of interest, while Models IV-VI present results where the (lagged) change in net government borrowing is the independent variable of interest.

Table 3: The influence of sectoral wage differentials on export growth

Independent Variables	I	II	III	IV	V	VI
(Lagged) Difference in Sheltered and Manu. Wage Growth	-.18*** (.067)	-.18*** (.066)	-.20*** (.066)			
(Lagged) Difference in Net Government Borrowing				0 (.000)	0 (.000)	0 (.000)
TOT Shocks		-.47*** (.074)			-.39*** (.065)	
RER Shocks			-.26*** (.038)			-.27*** (.030)
Constant	2.839* (1.598)	.132 (1.469)	-.086 (1.211)	6.45*** (1.574)	.538 (1.427)	.955 (1.158)
Observations	474	473	474	433	433	433
Wald Chi-Squared Statistic (P-value)	.000	.000	.000	.000	.000	.000
R-squared	.302	.363	.379	.312	.354	.401

Notes: Dependent variable is the year-on-year change in the export share (X/GDP). Model used was an OLS, including a panel-specific Prais-Winsten AR1 term, from 1980 to 2007. N-1 country and time dummies included but not shown. Panel corrected standard errors are in parenthesis. *, **, and *** indicate significance on a 90%, 95% and 99% confidence level.

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[9] Tests for panel heteroskedasticity were run without time dummies given the failure for the generalized least squares iterations to achieve convergence. LR tests for the baseline models (column I in Tables 3 and 5) were highly significant (122.27, p-value=0.000 and 133.75, p-value=0.000, respectively) indicating a high likelihood of panel heteroskedasticity. Tests for the sector wage growth models (columns I and III in Table 6) also presented significant evidence of heteroskedasticity (112.52, p-value=0 and 120.28, p-value=0.000, respectively).

Some interesting results emerge from Table 3. First, the (lagged) differentials between sheltered and manufacturing wages produces a significant dampening effect on export share growth, even when accounting for terms of trade and real exchange rate shocks. This implies that countries where sheltered sector wage growth exceeds wage growth in the manufacturing sector will, ceteris paribus, witness shrinkages in their export shares, while countries where public sector wage growth is kept below manufacturing wage growth witness expansions in their export shares. The second interesting result that emerges in Table 3 is that changes in net government borrowing do *not* have a significant or pronounced influence in terms of beta coefficient magnitude on export share growth. In other words, countries which increase fiscal deficits year-on-year do not behave significantly differently in terms of export performance than countries which increase fiscal surpluses.

Results in Table 4 demonstrate the robustness of the difference in sheltered sector and manufacturing hourly growth wage variable while incorporating further institutional controls into the baseline model; in all models, the sectoral wage differential variable maintained consistency in terms of beta magnitude and significance. These variables also retain their significance when a random effects estimator is used (results not shown). Other variables perform as expected (TOT shocks and RER shocks are associated with export share contraction while social benefits as a percentage of GDP are associated with export share expansion, per Rodrik's hypothesis[10]) or fail to hold significance across multiple models (bargaining centralization, and partisanship when RER shocks are included as a control). Partisanship and centralization exhibit a significant positive relationship with export growth when a random effects estimator is used for Model V in Table 4, although this

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[10] All of these variables retain significance when random effects are used, although social benefits as a percentage of GDP realizes significant reduction in its beta's magnitude.

significance is not robust when terms of trade shocks are used as a control. Contrary to Garrett and Way's results, sheltered sector employment share exhibits an insignificant relationship with export share growth, indicating that it is not the size of the public sector that matters per se, but whether its wage demands can be controlled by the exposed sector.

Table 4: Robustness results, the influence of sectoral wage differentials on export growth

Independent Variables	I	II	III	IV	V	VI
(Lagged) Difference in Sheltered and Manu. Wage Growth	-0.130**	-0.184***	-0.175***	-0.125**	-0.22***	-0.20***
	(0.057)	(0.059)	(0.067)	(0.055)	(0.057)	(0.067)
TOT Shocks	-0.35***	-0.502***	-0.467***			
	(0.066)	(0.078)	(0.076)			
RER Shocks				-0.27***	-0.23***	-0.26***
				(0.033)	(0.034)	(0.038)
Social Benefits (% of GDP)	0.61***			0.638***		
	(0.125)			(0.118)		
Legislative Seats Held by Right Parties		-0.036**			-0.021	
		(0.016)			(0.016)	
Wage Centralization		-3.749			1.043	
		(5.152)			(4.740)	
Sheltered Sector Employment Share			0.044			0.008
			(0.043)			(0.045)
Constant	-4.01**	2.003	-1.106	-5.71***	0.637	-0.314
	(1.589)	(1.818)	(1.956)	(1.566)	(1.687)	(1.821)
Observations	412	435	470	412	436	471
Wald Chi-Squared Statistic (P-value)	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.381	0.404	0.365	0.429	0.383	0.379

Notes: Dependent variable is the year-on-year change in the export share (X/GDP). Model used was an OLS, including a panel-specific Prais-Winsten AR1 term, from 1980 to 2007. N-1 country and time dummies included but not shown. Panel corrected standard errors are in parenthesis. *, **, and *** indicate significance on a 90%, 95% and 99% confidence level.

Regression results for the high sectoral wage-governance dummy are presented in Table 5. We included social benefits as a percentage of GDP in the baseline models but removed this indicator from models II and III given its high collinearity with partisanship and centralization, as well as its (minor) collinearity with the sheltered sector employment share. As mentioned above,

we exclude the terms-of-trade shock variable due to slight, but significant, collinearity between it and the governance dummy, as well as country fixed effects given perfect collinearity between them and the governance dummy within six panels. We conduct similar robustness checks as above, but contrary to the (lagged) sectoral wage differential variable, which lacked a significant interaction term with an EMU dummy, we also incorporate an interaction term between the wage-governance dummy and an EMU dummy to test whether the competitiveness enhancing effects of high sectoral wage-governance were magnified under monetary union.

Table 5: The influence of high sectoral wage-governance on export growth

Independent Variables	I	II	III	IV
High Sectoral Wage-Governance Institutions (1=yes)	1.168**	1.082**	1.326**	0.824*
	(0.453)	(0.504)	(0.531)	(0.489)
RER Shocks	-0.211***	-0.197***	-0.213***	-0.209***
	(0.032)	(0.034)	(0.040)	(0.031)
Social Benefits (% of GDP)	0.202***			0.195***
	(0.074)			(0.074)
Legislative Seats Held by Right Parties		0.012		
		(0.008)		
Wage Centralization		1.624		
		(1.086)		
Sheltered Sector Employment Share			0.024	
			(0.032)	
EMU Dummy				-1.759*
				(1.046)
*EMU Dummy * High Sectoral Wage-Governance Institutions*				1.611*
				(0.853)
Constant	-3.362***	-1.912**	-1.413	-3.092**
	(1.210)	(0.750)	(0.935)	(1.215)
Observations	414	437	471	414
Wald Chi-Squared Statistic (P-value)	0.000	0.000	0.000	0.000
R-squared	0.363	0.337	0.332	0.37

Notes: Dependent variable is the year-on-year change in the export share (X/GDP). Model used was an OLS, including a panel-specific Prais-Winsten AR1 term, from 1980 to 2007. N-1 time dummies included but not shown. Panel corrected standard errors are in parenthesis. *, **, and *** indicate significance on a 90%, 95% and 99% confidence level.

The high sectoral wage-governance dummy, like sectoral wage differentials, displays consistency in terms of significance and sign across all models in Table 5. Given results from columns I-III, countries that possess one of the collective bargaining institutions where either export sector wage setters or the state constrains the wage outcomes of sheltered sector employees tend to exhibit an annual increase in their export shares that is 1-1.3% higher than countries that lack these institutions. In addition to the direct effect, the wage-governance dummy also suggests an interesting, significant interaction with the EMU dummy (model IV, Table 5), implying that monetary union seems to have magnified the influence of high wage-governance institutions on export growth. Countries which possess these institutions under monetary union witness an additional export growth advantage of 2.435% per year, compared with countries without high wage-governance institutions, while outside monetary union, this export growth advantage is reduced to a 0.824% expansion per year. Supporting our theoretical argument above, results from model IV in Table 5 indicate that countries which possessed institutions that suppressed sheltered sector wage growth witnessed an enhanced corporatist comparative advantage under their pre-crisis EMU tenure.

Finally, because our wage growth differential variable is composed of two variables which may influence export performance on their own (the positive differential between sheltered sector and manufacturing sector wage growth could be driven by wage excess in the former or wage restraint in the latter) we also test how real sheltered and manufacturing sector wage growth correlates with changes in export performance. Results from Table 6 show that real wage growth in both sectors are significantly correlated with export decline. While it is not unsurprising that manufacturing wage growth is significantly associated with export decline, as manufacturing sector wages are an important input for the export sector, the significant, negative

association between sheltered sector wage growth and export growth (Columns I-III below) suggests that wage setting activity in the sheltered sector creates negative externalities for the export sector – indeed, given the similar beta magnitudes between the models, increasing wage growth in either sector by an additional 1% yields similar decreases in the export share. Suppressing wage growth in the sheltered sector, not only in relative but also in absolute terms, is an important condition for export success.

Table 6: The influence of sectoral wage growth on export growth

Independent Variables	I	II	III	IV	V	VI
(Lagged) Real Sheltered Sector wage growth	-0.34*** (0.058)	-0.33*** (0.053)	-0.32*** (0.048)			
(Lagged) Real Manufacturing sector wage growth				-0.32*** (0.067)	-0.30*** (0.064)	-0.27*** (0.065)
TOT Shocks	-0.36*** (0.069)			-0.37*** (0.067)		
REER Shocks		-0.26*** (0.032)	-0.23*** (0.028)		-0.27*** (0.033)	-0.22*** (0.030)
Social Benefits (% of GDP)	0.55*** (0.126)	0.59*** (0.120)	0.69*** (0.105)	0.59*** (0.121)	0.64*** (0.117)	0.74*** (0.115)
Legislative Seats Held by Right Parties			-0.033** (0.015)			-0.032** (0.014)
Wage Centralization			3.411 (4.763)			3.88 (5.128)
Constant	-3.32** (1.550)	-5.12*** (1.486)	-5.38*** (1.885)	-3.75** (1.490)	-5.53*** (1.440)	-6.23*** (2.011)
Observations	412	412	378	412	412	378
Wald Chi-Squared Statistic (P-value)	0	0	0	0	0	0
R-squared	0.42	0.463	0.479	0.398	0.44	0.446

Notes: Dependent variable is the year-on-year change in the export share (X/GDP). Model used was an OLS, including a panel-specific Prais-Winsten AR1 term, from 1980 to 2007. N-1 country and time dummies included but not shown. Panel corrected standard errors are in parenthesis. *, **, and *** indicate significance on a 90%, 95% and 99% confidence level.

Discussion and Conclusion

The results of the regression analysis are straightforward. Countries in which inflationary wage developments in the (private and public) sheltered sector are compensated by disinflationary wages in the exposed sector report export gains and current account surplus gains as a result of their relatively low inflation rates. If the exposed sector is unable to compensate for inflationary wages elsewhere in the economy, the reverse happens: competitiveness falls and exports decline. The effects are the combination of current account surpluses and capital account deficits for the creditor nations (primarily in the north of Europe) and current account deficits accompanied by borrowing (in both the public and the private sector) in the others.

Importantly, this effect appears to operate primarily though a (wage) price level effect, with domestic inflation eroding export competitiveness, thus leading to current account deficits, and not a fiscal effect, in which expanding budgets produce excessive public (and private) borrowing. Equally importantly, while the effect existed before the introduction of the euro, the fixed exchange rate regime heralded by EMU has reinforced this dynamic because of the absence of a safety valve in the form of nominal exchange rate depreciations. The crisis of EMU since 2008 may therefore primarily be a result of differences in wage-setting systems between north-western Europe and southern Europe, in which the former have been able to keep aggregate inflation under control through wage coordination (and concurrent supply-side productivity improvements), while the latter appear unable to do so. It is emphatically not a crisis of fiscal profligacy: budget balances show up as insignificant factors in our analysis. They are, if anything, symptoms of the problem, not causes.

Wages thus have been crucial in terms of inter-country adjustment in the European political economy since at least the introduction of the Maastricht criteria, if not before. Prima facie, this seems to confirm a central element in the standard interpretation of monetary unions and its challenges – the theory of optimal currency areas (OCA). According to that view, fixing exchange rates, interest rates, and fiscal policy inevitably implies that the bulk of adjustment runs through labour market flexibility. A closer look at the results here suggests that the world is not only more complex than these arguments suggest, but that this view covers, at best, only one possible world. The economies that have performed well under EMU have been those that relied on wage moderation – but essentially of the type provided by a combination of strong labour unions, wage coordination, and skills-based export competitiveness – almost the exact institutional opposite of the flexible labour markets proposed by OCA protagonists.

Wage moderation, however, is not an unmitigated blessing, as the inter-country dynamics of wage setting in EMU make clear. All other things equal, competitiveness gains in one group of countries as a result of real exchange rate depreciations must imply competitiveness losses as a result of real exchange rate appreciations elsewhere. In effect, by targeting unit labour cost growth below that of their trading partners, and using relatively tight systems of wage coordination as a means to do so, the creditor countries have imposed current account deficits on the others who lacked the institutional capacity to moderate wages. This does not bode well for the future of the single currency. For even if the current crisis can be contained, for example through a dramatic fiscal restructuring of the euro-zone, that would only buy time. The structural dynamics associated with the current account divergences that led to the crisis, which themselves have deep roots in the

different types of wage setting, will reassert themselves if they continue to remain unaddressed.

This has important implications for the policies currently (in 2012 and 13) adopted by the EU, especially in its Macro-economic Imbalances Procedure (MIP). The MIP is asymmetric, in the sense that the language regarding current account imbalances focuses solely on deficits, with little or no consideration that in a currency union which is (mostly) a closed economy, significant current account surpluses in one country imply significant current account deficits elsewhere. While some adjustment might be welcome, it is hard to see how 'internal devaluations', implying massive relative wage moderation in the deficit countries, can solve the problem on their own – assuming that beggar-thy-neighbour policies ever can. Without a parallel reflation or demand expansion in the creditor countries, particularly in Germany and among its well-performing neighbours, the problem is almost intractable. Put differently, alongside arguments for structural adjustment in the south, the European Commission should also consider using its influence to argue for significant wage increases in Germany for several years to come in order to allow southern Europe the space to adjust.

That, of course, is wishful thinking, if the arguments that have been coming from Berlin since the onset of the euro-crisis are anything to go by. Whilst there has been some muted mention of higher wages, the general tenor of German policy (and in its wake, in its satellites in northern Europe as well) has been in favour of more not less austerity, without aiming at expansion, wage-led or otherwise. In addition, it is not entirely clear what actually would happen if Germany adopted an expansionary course: the ECB's relatively dovish stance might – and according to its mandate almost certainly will – change, since rising German inflation is very likely to entail higher aggregate inflation throughout EMU. A reaction by the ECB thus would all but

eliminate the gains made through 'symmetric adjustment', but with an additional price for Germany to pay in the guise of higher interest rates. Germany's reluctance to engage in expansive policies might be informed by a misguided understanding of its own interests, as many observers have pointed out, but it is also built on a hard political-economic understanding of monetary policy in Europe that leaves policy-makers and wage setters in the country little choice.

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Data Appendix: Variable Measurement and Sources

Variable	Measurement	Source
Export share growth	Log change in the export share (measured as exports divided by GDP)	European Commission's Annual Macroeconomic Database.
Differences in sectoral hourly wage growth	The difference in the following values: 1) the log change of the sum of compensation of employees within the public administration and defence (ISIC category L), education (ISIC category M), and health and social work (ISIC category N) sectors divided by the sum of total hours worked within these sectors, and; 2) the log change of the sum of compensation of employees within manufacturing (ISIC category D), divided by the sum of total hours worked within manufacturing.	EU KLEMS Database
Sectoral hourly wage growth	The sectoral hourly wage growth variables are the absolute values of those used in the differenced variable, adjusted for annual inflation.	EU KLEMS Database and OECD Main Economic Indicators (for inflation data)
Net public borrowing	Net public borrowing divided by GDP	European Commission's Annual Macroeconomic Database. Sweden and Australia's more complete deficit data was obtained from the OECD.
Terms of Trade Shocks	The change in terms of trade (from the previous year)	European Commission's Annual Macroeconomic Database.
Real Exchange Rate Shocks	The change in the real exchange rate (from the previous year)	European Commission's Annual Macroeconomic Database.
Social Benefits	Social benefits other than social transfers in kind as a percentage of GDP	European Commission's Annual Macroeconomic Database.
Partisanship	Right-party legislative seats as a percentage of total legislative seats. In election years, party seats are weighted according to tenure.	Swank's (2006) Comparative Parties Dataset

Centralization	Based on Iversen's (1999) centralization index. Ranges from 0 (no centralization among unions) to 1 (monopoly centralization among unions).	Visser (2009)
Sheltered Sector Employment Share	The number of employees within the public administration and defence (ISIC category L), education (ISIC category M), and health and social work (ISIC category N) as a proportion of the total labor force	EU KLEMS Database
EMU Dummy	Assumes the value of 1 for years 1999-2007 for the following countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal and Spain. 0 if otherwise.	NA

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