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# The Revenge of Baumol's Cost Disease?: Monetary Union and the Rise of Public Sector Wage Inflation

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# The Revenge of Baumol's Cost Disease?: Monetary Union and the Rise of Public Sector Wage Inflation

Alison Johnston\*

## Abstract

Many political scientists and economists have addressed the implications of the public sector's sheltered status on their unions' wage strategies vis-à-vis the government. Since the public sector is a monopoly provider of necessary and price inelastic services, conventional wisdom suggests that public sector unions' push for wage increases which their productivity does not merit, exacerbating inflation and fiscal deficits. The argument in this paper challenges this conventional view, and maintains that the recent, puzzling rise in public sector wage inflation, relative to that in manufacturing, in Euro-zone countries is an unintended result of the institutional shift towards European Economic and Monetary Union (EMU). During the 1980s and 1990s, differences in wage inflation between the manufacturing and public sector within most EMU candidate-countries were low. After 1999, these differences significantly worsened; wage moderation continued in the manufacturing sector while wage inflation arose in the public sector. It is argued here that monetary union's predecessors, the European Monetary System and Maastricht regimes, imposed two important constraints on public employers, which enhanced their ability to enforce wage moderation: the commitment to a hard currency policy via participation in the Exchange Rate Mechanism, adopted by some earlier than others and, the Maastricht criteria. Monetary union's removal of these two constraints weakened public employers' capability to deny inflationary wage settlements to public sector unions. Panel regressions results outline a statistically significant relationship between monetary union and higher levels of wage inflation in the public sector, relative to manufacturing. The paper concludes with a brief discussion of the implications of monetary union for inter-sectoral dynamics.

**Keywords:** Sectoral Interests, Employers, Trade Unions, European Monetary Union, Institutional Change

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# The Revenge of Baumol's Cost Disease?: Monetary Union and the Rise of Public Sector Wage Inflation

The current fiscal crisis in Europe and the rush of governments to impose fiscal austerity measures suggest that little bodes well for Europe's public sector employees. With fiscal deficits in some countries reaching levels unseen since the Second World War, governments are attempting to reduce public spending to compensate for significant financial sector bail-out packages. One such attempt in a number of European Union (EU) countries is proposed legislation to limit wages of public sector employees. Considerable opposition to such legislation has arisen from public sector unions, that have resorted to general strikes to protest governments' cost-saving measures. Given the accompanying economic downturn, however, public opinion of unions' hostility is mixed. In some countries, economists perceive stringent cuts as necessary to correct excessive public sector pay imbalances.<sup>1</sup> Public opinion in countries that are net contributors towards the EU's €750 billion bail-out package has demonstrated little sympathy for public sector employees in the euro-zone's peripheral economies, and foresee IMF- and EU- induced reductions in public pay and employment as necessary measures to enforce moderation.

Many scholars in political science and economics have addressed the implications of the public sector's sheltered status on their unions' wage strategies vis-à-vis the government. Since the public sector is a monopoly provider of necessary and price inelastic services, conventional wisdom suggests that public sector unions' push for wage increases which their productivity does not merit, exacerbating inflation and

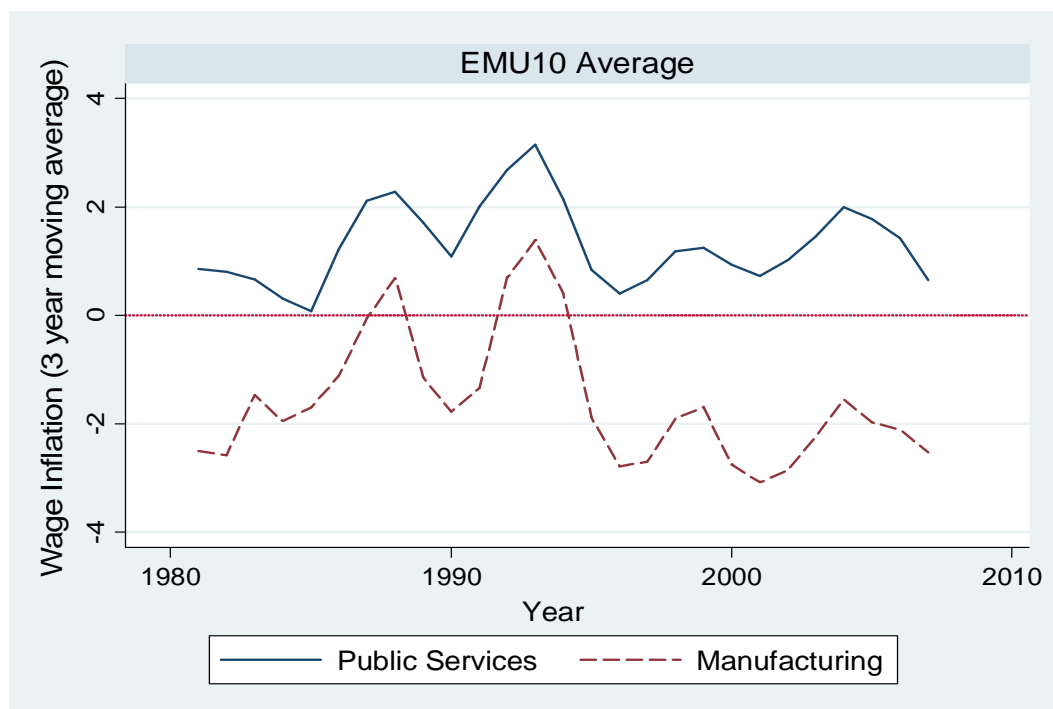
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<sup>1</sup> Referencing that fact that Irish public sector pay had risen to unsustainable levels, economics professor Phillip Lane proclaimed that "We were in such a big hole that we did a lot relative to other countries, but not a lot relative to the gap we have to close" (Gentleman, 2010).

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fiscal deficits. The argument in this paper challenges this conventional view, and maintains that the recent rise in public sector wage inflation, relative to that in manufacturing, in Euro-zone countries is an unintended result of the institutional shift towards European Economic and Monetary Union (EMU). From a historical perspective, differences in sectoral wage inflation (measured as Blanchard's wage-in-efficiency unit, real wage growth minus changes in labour productivity) within the EMU10 between the sheltered, public sector and the exposed, manufacturing sector were relatively low during the 1980s and the early and mid-1990s (see Figure 1 and Table 1).<sup>2</sup> Only in the late 1990s did these differences increase; wage restraint continued in the manufacturing sector, while wage inflation in public-services rose.

**Figure 1:** Wage Inflation by Sector for the EU10 (Unweighted Average), 1980-2007



Source Data: EU KLEMS

The introduction of EMU appears to have coincided with significant sectoral divergence within its member-states. Were such developments linked or merely coincidental? This question merits exploration for two reasons. First, lack of sectoral divergence prior to late 1990s in EMU countries is puzzling in light of what has been

<sup>2</sup> Greece and Luxembourg are excluded. Wage and productivity data for the manufacturing sector (ISIC category D) and the public sector (an employment-share, weighted composite of public administration and defense, education, and health and social work, ISIC categories L, M and N respectively) come from the EU KLEMS database. Sectoral data is available until 2007.

said in the literature on sectoral interests. Much of the political debate which emerged in the 1990s discussed the consequences of excessive rent capture by public sector unions for centralisation. The experience most referred to was that of Sweden in the 1970s and early 1980s (Lash, 1985; Thelen, 1993; Iversen, 1996; Pontusson and Swenson, 1996). The inclusion of the low-productivity, public sector in centralised wage agreements not only placed an inflationary squeeze on the export sector, but also limited how much manufacturing employers could pay their (more productive) workers. In contrast to Sweden, however, several EMU10 governments imposed austerity measures to enforce pay-freezes, or pay-cuts, on the public sector during the 1980s, while *all* EMU10 governments imposed major fiscal austerity measures during the 1990s in order to qualify for Maastricht. In addition to limiting public sector pay, governments in Belgium, Denmark, Italy, Luxembourg and the Netherlands placed restrictions, or outright suspensions, on pay indexation during the 1980s.<sup>3</sup> These experiences provide a sharp contrast to that witnessed in Sweden, which has emerged as a poster child of public sector militancy gone wrong.

Second, this divergence merits exploration because it suggests that EMU may have coincided with a redistributive shift between sectors. 10 years since its inception, workers in the exposed, manufacturing sector for most EMU countries (Italy, Spain and Portugal being the notable exceptions) continue to exert significant wage restraint, while workers in the public sector enjoy persistent wage inflation. Though public sector union leaders deemed such wage increases necessary, in order to bridge the private/public sector pay divide, manufacturing unions, in the presence of market constraints, remain limited in what they can bargain for. Even amidst the current European debt-crisis, public sector unions continue to drag their feet.<sup>4</sup> While such crises should provoke deterioration in the nominal exchange rate, either via depreciation or devaluation, providing some assistance to the export sector, a common currency precludes this option, leaving exposed sector unions and employers helpless to adjust. Consequently, in order to guarantee national

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<sup>3</sup> EIRR 135 (April, 1985): "Pay indexation", pg. 23-25

<sup>4</sup> "Unions across Europe protest over cuts", *Financial Times*. 29 September 2010.

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competitiveness, exposed wage setters must either wait for public sector adjustment, or compensate for public sector excess via further restraint.

The argument developed here to explain the sudden emergence of sectoral wage inflation divergence within the EMU10 hinges on comparing monetary union to the institutional constraints in place under its predecessors. The pre-EMU regime, the European Monetary System's Exchange Rate Mechanism (1979-1998) and Maastricht regime (1992-1998), imposed two restrictions upon public employers that facilitated the enforcement of wage moderation upon public unions; a hard currency policy and the Maastricht deficit criteria. Under the European Monetary System (EMS), countries were forced to peg their currencies to the German Mark, shadowing Germany's anti-inflationary monetary policy. The eventual shift to a hard currency policy depended on upon public employers' ability to thwart inflationary wage-settlements. Stubborn adjustment to monetary non-accommodation, while of relative insignificance to public sector unions whose jobs are shielded from business cycle dynamics, holds significant consequence for governments whose continued appeasement of public sector wage inflation can prolong contractionary pain. Once the commitment to a hard currency policy was made, public sector compliance was required to fulfil adjustment, and, due to its lower productivity, involved lower wage allowances compared to those granted in manufacturing. In 1992, the Maastricht budgetary criteria placed further pressures on public sector employers, particularly in the ERM's "peripheral" economies who pursued softer currency stances during the 1980s, to limit public sector pay rises. Consequently, wage inflation in public services, relative to the manufacturing sector, was restrained under the EMS (1979-1998) and Maastricht (1992-1998) periods.

Monetary union, however, removed these two constraints, leaving public employers with few external hands-tying devices. The absence of a hard currency commitment or Maastricht's exclusionary threat did little to affect exposed-sector employers, as competitiveness pressures continued to constrain their price mark-ups. Employers in the public sector, on the other hand, were left to negotiate with large service/public sector unions who had little to gain from wage moderation. While the



Stability and Growth Pact (SGP) imposed similar rules as Maastricht, penalties for breaching its terms failed to hold the same political clout as Maastricht's exclusionary-threat. Suffering consolidation fatigue, governments inherited a weak bargaining position against public sector unions, becoming less able to deny inflationary wage demands.

The next section presents a brief review of the literature on central banks, wage inflation and monetary union, and sectoral divergence. Section II presents the theoretical argument. Section III outlines the contextualisation of the dependent and independent variables, the model used to test the theory, and the empirical results. A brief discussion about monetary union's impact on sectoral cleavages, and its implications for wage adjustment, concludes.

## I. Monetary Union, Trade Unions, and Sectoral Wage Interests

Wage-setting behaviour under monetary union received much attention, both before 1999 and after. Some argued that in EMU, with its asymmetric structure consisting of a centralised monetary policy and separate wage-bargaining systems, national wage-setters would no longer be constrained in their wage demands by inflation-averse monetary authorities. Once monetary policy was transferred to the European Central Bank (ECB), national unions would pursue high wage increases (Hall and Franzese 1998; Iversen and Soskice 1998; Cukierman and Lippi 2001; Hancké and Soskice, 2003). The creation of the ECB significantly reduces the size of individual wage setters in relation to the central bank, moving national-level wage-setting towards a situation in which national labour unions are strong enough to extract high wage increases yet small enough not to bear the full cost of inflation (Calmfors and Driffill 1988).

These arguments were rooted in analysis on the impact of non-accommodating central banks on wage setters' decisions to control their wages. Scharpf (1991) was

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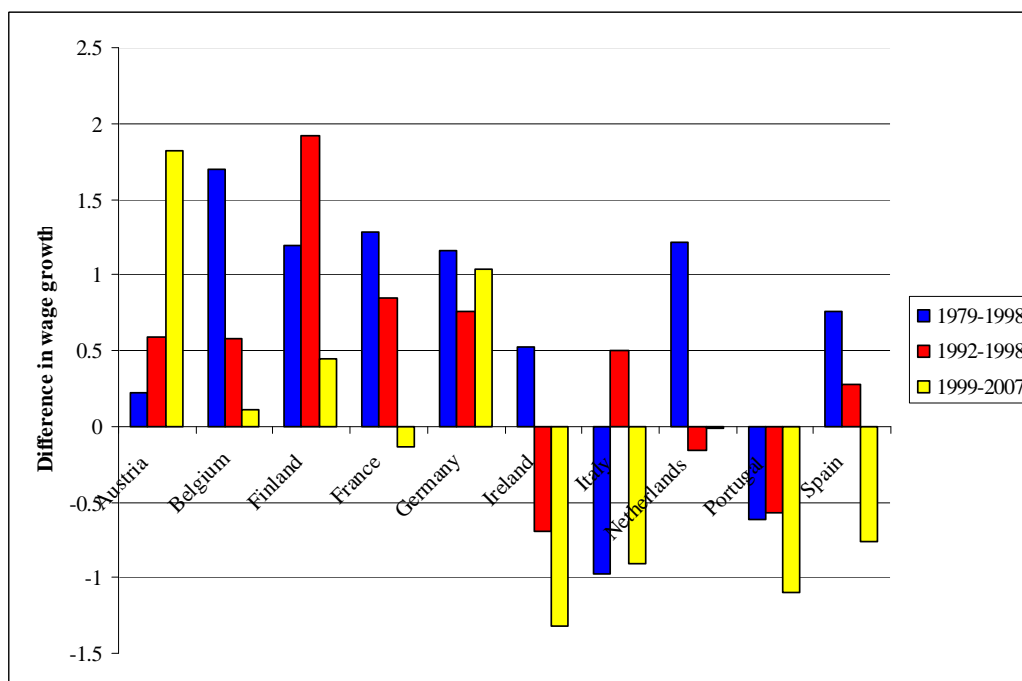
one of the first to advance the notion that a conservative/monetarist government limits wage decisions of self-interested unions. An accommodating government committed to the pursuit of full employment is fundamentally defenceless against uncooperative unions, because it cannot respond to aggressive wage claims with contraction. However, once monetary non-accommodation is delegated to the central bank, wage moderation on the behalf of unions ceases to be a concession, and becomes a "self-interested union response" (Scharpf, 1991; 172). If central banks are non-accommodating, enforcing an inflationary rule or shadowing a central bank that has one, the unemployment costs of inflationary wage settlements increase, prompting unions to exert greater restraint in their wage demands (Hall, 1994; Iversen 1998; Iversen 1999a and 1999b; Franzese, 2001). Consequently, many scholars anticipated that the removal of EMS's Exchange Rate Mechanism (ERM) and the Maastricht inflation criteria, which enhanced national central banks' inflation-aversion, would provoke wage inflation by unions.

While these arguments provide a clear explanation on why wage moderation increased considerably across EMU-candidates prior to 1999, they fail to provide a clear picture of what occurred under monetary union. At the aggregate level, wage inflation did not increase across the board, and for certain sectors (manufacturing) wage moderation continued. Only for the majority of EMU's sheltered sectors did wage excess ensue. Literature on sectoral economic interests poses multiple reasons why sheltered sectors witness greater wage excess than exposed ones. In the economics stream of this literature, dominated by the work of William Baumol, sectoral divergence arises simply due to productivity differentials (Baumol and Bowen, 1965; 1966). Wages at the national level tend to rise and fall together, yet sector productivity does not. Some sectors, services, experience static productivity growth while others, manufacturing, experience higher productivity growth. The political science stream of this literature focuses on competition's impact on employers' price mark-up strategies (Crouch, 1990; Iversen, 1996, Iversen 1999a). Inflationary wage increases produce lower unemployment costs for public employees than those in manufacturing, because increased labour costs can be financed through taxes or deficit spending rather than employment-shedding.

Garrett and Way (1999) outlined the macroeconomic consequences that significantly large public sector unions pose, in that their pursuit of significant wage increases has significant repercussions on the exposed sector.

Whether the divergence in Figure 1 can be attributed to wage developments or developments in productivity, can easily be gauged by examining wage growth trends on their own. The Balassa-Samuelson effect suggests that increased trade integration increases productivity in sectors exposed to international markets. As a result, wage actors in these sectors push for higher wages, leading to similar demands in sheltered sectors where productivity growth remains low; hence, higher (sheltered sector) wage inflation arises. However, data provided in Figure 2 suggests that what changed after 1998 was not simply labour productivity, but the setting of wages. Differences in nominal hourly wage *growth* between the manufacturing and public sector were significantly higher in the 1979-1998 (ERM) and 1992-1998 (Maastricht) periods than the EMU period. In some countries (Belgium, Finland, France, Germany and the Netherlands) manufacturing hourly wage growth exceeded that in the public sector by 1% *per annum* over the entire 1979-1998 period. After 1998, differences in hourly wage growth between manufacturing and public services decreased for all countries except Austria and Germany. Some countries (France, Ireland, the Netherlands and Spain) witnessed complete inversion, from higher wage growth in the manufacturing sector between 1979 and 1998, to higher wage growth in the public sector under EMU.

**Figure 2:**  
Difference in Manufacturing and Public Sector Nominal Wage Growth (period averages)



Source Data: EU KLEMS

The above literatures provide numerous explanations for sectoral wage inflation divergence, yet fail to address why we witness an increase in divergence for the EMU10 under monetary union. The lateness of divergence is puzzling because, if anything, increased privatisation and competition in the public sector should have rendered public sector unions less, not more, able to demand inflationary wage increases relative to their manufacturing counter-parts. It is argued here that sectoral convergence, which occurred under monetary union's predecessors, EMS and Maastricht, can be best understood if we contextualise the institutional constraints that these regimes place on public employers. ERM placed an important institutional constraint upon governments, which altered their bargaining strategies with public sector unions: a hard currency policy, enforced by non-accommodating central banks. Hard currency policies increase the unemployment costs of inflation, albeit not necessarily for the public sector. Given the public sector's relative lack of exposure to these increased unemployment costs, it is unsurprising that public sector unions have little incentive to moderate wages in response to a monetary threat. Governments, however, care a great deal about unemployment developments in the private sector. Of course, Governments can avoid such unemployment consequences

associated with inflationary public sector settlement via tax-financing. Such moves, however, bring political repercussions, particularly under monetary tightening.

Secondly, because hard currency commitments generally are internally-chosen (under a fixed exchange rate, decisions to follow a hard, versus soft, currency stance often fall upon domestic political actors rather than international ones) governments are likely to accommodate such policy shifts in the fiscal realm. Put otherwise, hard currency regimes are pointless if fiscal laxity impedes on central banks' ability to carry them out. Governments that make the commitment to a hard currency stance do so understanding the fiscal consequences involved in upholding their commitments, particularly in the presence of relatively open capital markets. This is not to say that all ERM participants committed themselves to fiscal adjustment in 1979. Monetary adjustment occurred at different times for different countries. Regardless of time differences, however, the process of monetary adjustment required the inflationary effects of budgetary spending to be limited. In the 1990s, the exclusionary threat of the Maastricht budgetary criteria further increased the costs of excessive public sector wage settlements to public employers. Subsequently, public employers' continued to impose restraint upon the public sector in order to fulfil EMU entry-requirements. Monetary union's removal of these two constraints weakened public employers wage bargaining power, and established a setting where public sector unions were able to extract more significant rent capture than their exposed counter-parts.

## II. A Theory on Monetary Union and Sectoral Divergence

The discussion of the pre-EMU era as an institutional construct which facilitated public sector wage restraint begins with the assumption of a dual-sector economy consisting of an exposed sector (of which manufacturing, ISIC category D, serves as a proxy) and a public sector (of which a composite of public administration and defence, education, and health and social work, ISIC categories L, M and N respectively, serves as a proxy). Employers and unions in the exposed sector face a competitiveness-constraint, given their presence in international markets, and therefore are confronted with a high demand elasticity for their goods. This implies that price mark-up responses to wage inflation are limited, because increased prices lead to a greater fall in quantity demanded. Given that competition increases unemployment costs associated with wage increases, unions in the exposed sector have incentive to exert wage moderation. Employers and unions in the public sector, on the other hand, are presented with no competition. They are monopoly suppliers and because public services are universally provided, it is difficult to suggest that their producers face any type of price elasticity, though higher spending on such services eventually imposes higher tax burdens. Due to the state's ability to tax and run deficits, actors in this sector face softer budget constraints than those in the private sector. Public sector unions have the least to gain in restraining their wages, employment wise, as domestic demand for public services is relatively fixed (Iversen, 1996; Franzese, 2001). Based upon these foundations, the theoretical argument is outlined below.

EMU's institutional predecessors introduced two pivotal institutions, one in 1979 and one in 1992, that facilitated governments' commitment to delivering wage moderation in the public sector; the EMS's Exchange Rate Mechanism (ERM) and the Maastricht budgetary criteria. In regards to the former, the selection of the German mark as the anchor of the ERM implied that national central banks were forced to shadow the Bundesbank's interest rate policy in order to avoid their currencies

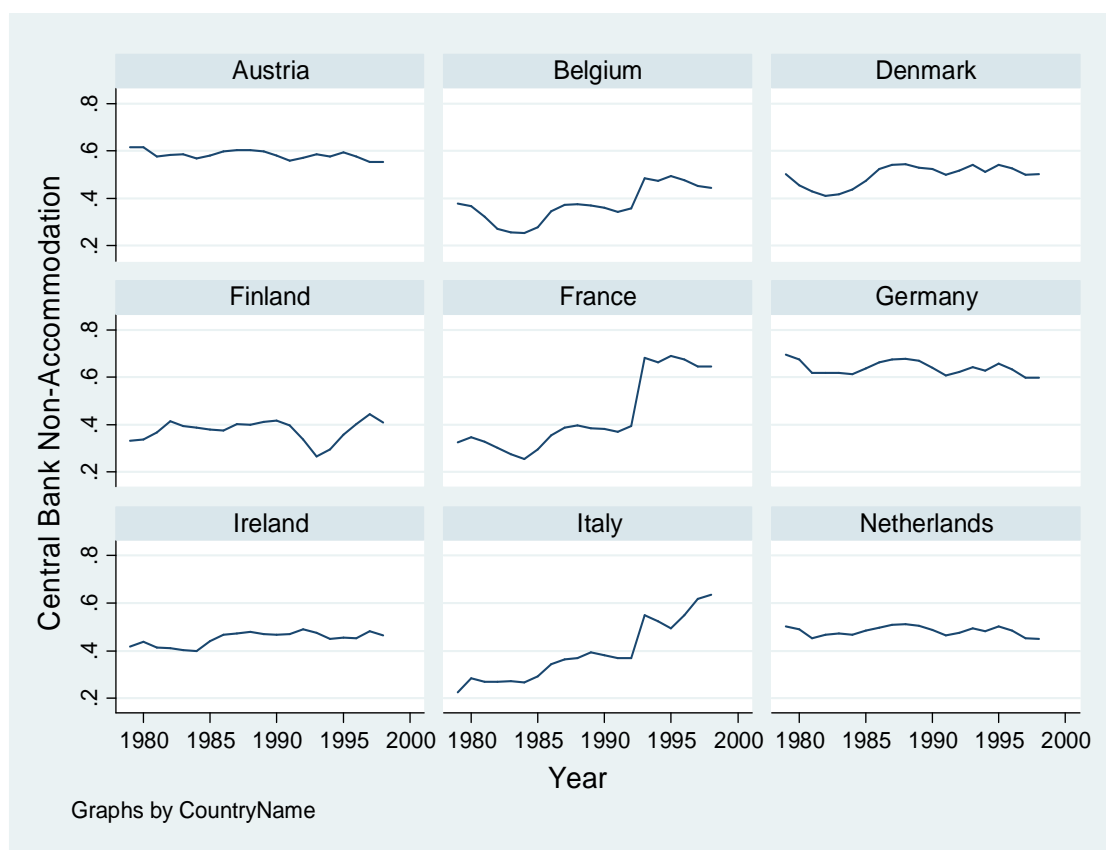
sliding against the Deutschmark.<sup>5</sup> Consequently, membership in the ERM meant that national monetary policy shadowed that in Frankfurt. The success of the strict adherence to the exchange rate peg, however, depended just as crucially on the cooperative behaviour of trade unions and their pursuit of responsible wage settlements (Hassel, 2003). Trade union cooperation could either be consensual, or in the case of public sector unions, forced. The “stickiness” of union adjustment in several EMU member-states, partially the result of employers’ reluctance to impose moderation in the presence of union militancy, resulted in wide variation towards the adoption of a credible commitment to the ERM. Figure 3 provides a variation of Iversen’s (1999a) monetary non-accommodation index for seven countries which participated in the EMS since its inception (Belgium, Denmark, France, Germany, Ireland, Italy and the Netherlands) as well as Austria, which held a separate peg arrangement with the Deutschmark, and Finland, which pegged its currency to a (Deutschmark double-weighted) basket in the early 1980s. The index is an average of the normalised Cukierman (1992) central bank legal independence index and normalised four year moving averages in the nominal effective exchange rate, a proxy for market confidence in the success of conservative monetary policy (Iversen, 1999a; Dornbusch, 1979). Values range from 0 to 1, with higher values being associated to more non-accommodating (conservative) monetary regimes.

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<sup>5</sup> While Austria was not a formal member of the EMS, it adopted a hard currency peg policy with Germany during the 1970s (Hochreiter & Winckler, 1995).

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**Figure 3:** Central Bank Non-Accommodation (1979-1998)



Time-variant modification of Iversen's (1999a) non-accommodation index. Source Data: CBI Index: Cukierman, 1992 and Polillo and Gullién, 2005; Nominal Effective Exchange Rate data from AMECO Database

Some countries – Austria, Denmark, and the Netherlands – adopted credible commitments towards hard currency stances early in the ERM regime. The Netherlands entered the ERM with a hard currency policy vis-à-vis Germany already in place; the country undertook only one devaluation prior to the 1992 crisis, a meagre 2% in 1983. Austria, likewise, made two (minor) devaluations in the late 1970s and early 1980s; since 1981, there was minimal fluctuation between the two currencies (Hochreiter & Winckler, 1995: 93). Denmark intensified its commitment to a hard current policy under the ERM after 1983 and France's last (major) devaluation with the German Mark, around 6%, took place in 1986 (Weber, 1991: 65-66). Such developments are visible in Figure 3 with the gradual increase in Denmark's non-accommodation index in the early 1980s, and France's in the mid-1980s. Walsh (1999) claims that Italian monetary adjustment began in 1988, although Weber (1991)



doubts whether Italy moved away from its soft currency policy during the 1980s. The early years of the ERM, 1979-1983, were marked by multiple currency realignments, yet the frequency of these alignments slowed after 1984; between January, 1987 and September, 1992, realignments were few and minor (McNamara, 1998).

After the 1992 ERM crisis, the ERM's exchange rate bands were widened to  $\pm 15\%$ . The strictness of the Maastricht inflation criteria, however, replaced the (looser) ERM constraint, further reinforcing inflation targeting objectives across all EMU candidate countries'. The Maastricht criteria imposed two conditions on candidate countries, which improved central bank non-accommodation. Firstly, it forced countries to adopt a strict inflation target; inflation could be no higher than 1.5% of the EMU's three best performers. Secondly, it prompted governments in some countries to reform their banking laws and enhance legal independence. In response to criteria established in the Maastricht Treaty, Belgium, France and Italy reformed their banking legislation, increasing the legal independence of their central banks near to that exhibited by the Bundesbank (Polillo and Guillén, 2005). These banking reforms account for the sudden rise in central bank non-accommodation for all three countries in 1992 seen in Figure 3. Only in Finland did monetary non-accommodation continue to deteriorate after 1993, due to a crippling recession, which initiated a 13% depreciation in the currency once it left the ERM in 1992; when the country rejoined the ERM in 1996, monetary conservatism was pursued.

As central banks increased their commitments to a hard-currency/anti-inflationary policy, employers became more restricted in the wage settlements they could grant to their employees. If a shadow country's inflation rate significantly increased relative to Germany's, threatening the peg, central banks would be forced to intervene via monetary tightening. While monetary tightening poses obvious demand and investment consequences for employers, and unions, in the manufacturing sector, several debate whether monetary non-accommodation similarly affects public sector trade unions (Iversen, 1999a; Franzese, 2001). Yet both Iversen and Franzese neglect the effect of monetary conservatism on *governments'*

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incentives to grant excessive wage settlements. The responsibility that follows a currency pegged to a non-inflationary currency, such as the Deutschmark, is that governments' capacity to maintain it depends on its ability to avert inflationary pressures with fiscal policy (Fischer, 1987). Transitions towards hard currency policies are generally not externally thrust upon governments. Rather, commitments to such policies often involve decisions made by domestic political actors. If there is doubt about government's ability to defend its currency's value on grounds of prolonged deficit spending, higher interest rates (a risk premium), stifling demand, will result. Of course, deficits do not have to result from excessive public sector pay settlements, if governments are able to increase taxes or decrease other social transfers. Monetary non-accommodation, however, increases the political costs of such a move. In the event that the private sector is forced to moderate its wages to facilitate labour market adjustment to a monetarist regime, increasing taxes or reducing benefits to accommodate public sector pay excess would not bode well for a government's popularity.<sup>6</sup> Especially for (rightist) business-friendly governments, the imposition of wage moderation on the public sector provides a more convenient alternative in limiting reproach from the central bank.

Governments which made early transitions to a hard currency peg under the ERM discontinued accommodating fiscal policies alongside the adoption of credible hard currency policies. The Belgian government introduced a number of special powers laws, which enabled it to not only dismantle its wage indexation system for all employees, but also restrict the salary level of newly employed civil servants to 80% of their normal salary in their first year of employment.<sup>7</sup> In the Netherlands, Lubbers' coalition implemented a public sector pay freeze in 1983, and a further 3% *nominal* public pay cut in 1984.<sup>8</sup> In Denmark, Schülter's centre-right coalition abandoned its goal of full employment after it pegged its currency to the Mark,

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<sup>6</sup> The Netherlands provides a case in point. In September 1982, after Government imposed numerous measures to restrict national pay agreements, the Christian Democratic Party campaigned on introducing civil servant pay freezes before the general election (EIRR 105 (October, 1982), "Focus on job creation", pg. 4)

<sup>7</sup> EIRR 98 (March 1982) "Pay indexation modified", pg. 4; EIRR 120 (January, 1984), "Reduced working time in the public sector", pg. 3.

<sup>8</sup> EIRR 108 (January 1983), "Incomes policy and pay bargaining", pg. 13-14; EIRR 120 (January 1984), "Public service dispute ends", pg. 5.

adopting a formidable bottom line: “any changes in wages and prices that were incompatible with the fixed exchange rate policy would be met by a tightening of monetary policies and hence a rise in unemployment” (Iversen 1996: 419). Real wage cuts in the public sector followed in 1985.<sup>9</sup>

A more symmetrical fiscal threat towards public sector wage militancy came in 1992 with Maastricht’s budgetary criteria. For most governments, the trade-off between EMU exclusion and enforcing further wage moderation on the public sector was an easy decision to make, but one which generated considerable unrest amongst labour unions. The adjustment to Maastricht’s fiscal constraints proved difficult for even the core Deutschmark bloc countries (Austria, Belgium, France, Germany and the Netherlands) where monetary adjustments and fiscal adjustments had been undertaken in the 1980s. Belgium introduced a finance bill in 1997 that not only cut welfare and increased taxes, but also placed ceilings on public sector pay rises.<sup>10</sup> In France, the Juppé plan, aimed at meeting the EMU convergence criteria by limiting public sector pay among other measures, drew considerable social unrest from unions, while in Germany, the introduction of austerity packages aimed at cutting public sector pay and public spending also witnessed union opposition.<sup>11</sup> In Austria, public sector workers were forced to accept pay rises of 0.3% in 1996 (compared to 2.4% increases in the private sector and a 1.9% rise in inflation), due to austerity measures introduced in the 1996/97 budget aimed at complying with Maastricht.<sup>12</sup> For employers in high-inflation, peripheral economies, cuts in public sector pay were more dramatic, and fiscal adjustments for some countries involved a resurgence in national social pacts. Italy and Finland witnessed dramatic reductions in real compensation of public employees. During the 1980s, average, annual, real compensation growth in the public sector was 5.22% in Finland and 4.06% in Italy; this figure declined to 1.4% and 0.97%, respectively, for the entirety of the 1990s (AMECO Database, 2010). In Italy, the Ciampi Protocol in 1993 reorganised the fragmented public sector pay system and introduced a series of ceilings on public

<sup>9</sup> EIRR 136 (May 1985), “Government imposes two-year pay settlement”, pg. 11-12.

<sup>10</sup> EIRR 277 (February 1997), “EU social partners consider the impact of EMU”, pg. 19-21

<sup>11</sup> *Ibid*

<sup>12</sup> EIRR 279 (April 1997), “Collectively agreed pay rose by 2.4% in 1996”, pg. 4.

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sector pay (Hassel and Ebbinghaus, 2000; Hancké and Rhodes, 2005). In 1998, the Greek Government passed a taxation bill which contained a controversial clause to curb collective bargaining rights in loss-making public sector utilities, granting Parliament the ability to intervene and unilaterally legislate on restructuring in the event of a bargaining stalemate.<sup>13</sup>

Monetary union was not intended to significantly alter Maastricht's/EMS's non-accommodating design. The ECB was just as conservative, if not more so, as the central banks that shadowed the Bundesbank's anti-inflationary policy prior to 1999. The Stability and Growth Pact (SGP), too, stipulated identical excessive deficit procedures as the Maastricht budgetary criteria. Yet, while the *content* of EMU was similar to the EMS/Maastricht regime, the *context* significantly differed. Little changed for exposed sector wage bargaining actors under EMU; competitiveness pressures continued to limit employers' ability to increase prices, forcing unions to further moderate wages. Public employers, however, were devoid of two crucial constraints which enabled them to enforce wage moderation on the public sector. Under a single currency, a hard currency policy at the national level becomes obsolete. Governments could no longer rely upon a conservative, national monetary authority to monitor low inflation amongst national labour unions.

There were some attempts to extend Maastricht's budgetary constraint into the EMU design. The SGP was created to enforce fiscal discipline in the Euro-area in order to safeguard the credibility of the ECB (Buti et al, 1998; Eichengreen and Wyplosz, 1998). While the Pact itself was not specifically intended to limit public sector pay excess, it was designed to continue to tie governments' hands, which may have otherwise been inclined to re-engage with expansionary fiscal policies. In practice, however, penalties associated with breaking the SGP were different from those of breaking the Maastricht criteria. After 1999, the SGP replaced Maastricht's exclusionary consequences with softer fines. The time scale for compliance was also less urgent: member-states had two years to correct fiscal excesses before their

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<sup>13</sup> EIRR 289 (February, 1998), "New taxation bill provokes disputes", pg. 7; EIRR 290 (March, 1998), "Controversial taxation bill passed", pg. 8.

mandatory deposits were transformed into financial penalties (Eichengreen and Wyplosz, 1998: 68). In EMU's early years, scholars pointed to considerable consolidation fatigue to explain why governments were unsuccessful in moderating fiscal expansions (Von Hagen, 2003; Alesina et al, 2008). Once EMU entry eliminated the exclusionary threat, large deficits reappeared in several members countries, and the SGP was widely violated and eventually reformed.

Throughout the 1980s and 1990s, public sector unions were forced to bear the brunt of fiscal adjustment to the ERM and Maastricht. Conditions of the Maastricht budgetary criteria were absolute: failure to meet the 3% deficit limit would result in EMU exclusion. However, Maastricht's weakness lay in the fact that it was finite. Public employers could afford to dictate austerity in the name of monetary union, yet once entry was secured, it could no longer utilise the urgency of fulfilling the Maastricht criteria as an excuse for fiscal austerity. Employers' negotiating strength significantly improved under the Maastricht years, because public sector wage excess could potentially block EMU entry. Once entry was obtained, however, public sector adjustment was turned on its head. With the monetarist threat removed from the national level, and no further possibility for externally-imposed exclusion, public employers entered EMU on the defensive.

### III. Empirical Model: Did EMU produce a trend-break?

Figures 1 and 2 provide a summary of sectoral wage dynamics in relation to the introduction of monetary union, yet lack the inclusion of other factors which could have contributed to the rise in wage inflation divergence. In this section, a time series analysis is employed to test whether, in the presence of economic and institutional controls, EMU was significantly associated with sectoral wage divergence across its member-states.

### III.1 Conceptualising the dependent and independent variables

The most widely used measurement of wage inflation across recent, yet limited, empirical scholarship on unemployment dynamics and shifts in the wage curve (Estevão, 2005; Simoni, 2007; Baccaro and Simoni, 2010) is Blanchard's wage-efficiency-unit (WEU; Blanchard and Wolfers, 2000; Blanchard, 2006). Blanchard's WEU is equal to the change in the real product wage minus the change in labour productivity, the latter defined as the change in total factor productivity minus the change in the labour share of GDP. Measurements of wage inflation used in this paper will also rely on Blanchard's efficiency wage formula, with changes in gross value added per hour worked used as a measurement for labour productivity.<sup>14</sup> Labour's share in sectoral output is not used in the construction of the dependent variable itself, but rather is used as a separate control in the regressions, in order to determine how varying degrees of capital augmentation across sectors influences variation in sectoral wage inflation over time. Sectoral wage inflation is defined as the percentage change in the sectoral real hourly wage minus the percentage change in sectoral gross value added per hour worked. Data on compensation of employees, number of hours worked and gross value added was obtained from EU KLEMS.

The theoretical model outlined above is a *relative* one, not an *absolute* one. It is not public sector wage inflation that is the primary variable of interest, but rather public sector wage inflation relative to manufacturing. The dependent variable, relative public sector wage inflation, is constructed as the difference between public sector wage inflation and manufacturing wage inflation. Percentages are expressed from 1 to 100 rather than from 0 to 1.<sup>15</sup> If this value is negative, wage restraint persists in the public sector relative to manufacturing, indicating that government has kept wage inflation in the public sector below that in manufacturing. If this value is positive, wage inflation persists in the public sector relative to manufacturing. Table 1

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<sup>14</sup> Labour's share in total factor productivity is not available at the sectoral level.

<sup>15</sup> Percent-change independent variables are measured in a similar fashion.

provides period averages of the dependent variable for the eight EMU and six non-EMU countries included in the sample.<sup>16</sup>

**Table 1: Relative Public Sector Wage Inflation (Period Averages)**

	<b>1979-1989 Average</b>	<b>1990-1998 Average</b>	<b>1999-2007 Average</b>
<b>Austria</b>	3.62	1.93	3.80
<b>Belgium</b>	2.60	3.06	2.88
<b>Finland</b>	4.27	3.79	7.75
<b>France</b>	-0.82	2.88	2.73
<b>Germany</b>	0.17	-0.09	1.24
<b>Ireland</b>	4.61	7.12	10.33
<b>Italy</b>	4.9	2.02	0.27
<b>Netherlands</b>	0.16	2.00	3.70
<b>EMU Average</b>	<b>2.44</b>	<b>2.84</b>	<b>4.09</b>
<b>Australia</b>	1.9	0.86	1.65
<b>Denmark</b>	0.75	0.42	1.54
<b>Japan</b>	4.43	1.84	2.19
<b>Sweden</b>	1.8	4.76	6.16
<b>UK</b>	2.82	1.92	3.07
<b>US</b>	4.06	3.64	4.07
<b>Non-EMU Average</b>	<b>2.63</b>	<b>2.24</b>	<b>3.11</b>

Source Data: EU KLEMS Database

The independent variable of interest is the presence or absence of monetary union. Monetary union, as an institutional change, is defined in a binary fashion: 1 for countries that are exposed to monetary union at time  $t$ , 0 for countries that are not. Given the theory above, it is expected that the monetary union dummy should hold a positive correlation with relative public sector wage inflation; countries under EMU should have higher divergence between public and manufacturing wage inflation, *ceteris paribus*, than countries outside monetary union.

<sup>16</sup> Spain and Portugal are excluded from the regression analyses due to the lack of fiscal data before 1995.

### III.2 The empirical model: A panel-data analysis

Compared to standard wage models, *relative* wage models, notably sectoral ones, have not been extensively developed. It is therefore difficult to depart from a benchmark. Estevão (2005) uses two separate empirical models to examine the impact of product market regulation on aggregate wage moderation; one using the change in unemployment rate as the core macroeconomic control, and another using real GDP growth. Because Estevão's dependent variable is an aggregate one, it is suitable to utilise aggregate macroeconomic variables for controls. However, though it is possible to obtain data on the number of people employed in a given sector from the EU KLEMS database, unemployment rates are unavailable by sector. Therefore, the model presented will utilise sectoral controls, where possible, and macroeconomic controls where relevant sectoral variables are impossible to obtain or calculate. Keeping these considerations in mind, the baseline empirical model is the following:

$$y_{i,t} = \alpha + \beta_1(\text{MU Dummy}_{i,t}) + \sum \beta_k X_{k,i,t} + \sum \beta_m Z_{m,i,t} + \varepsilon_{i,t}$$

where  $y_{i,t}$  is relative public sector wage inflation for country  $i$  at time  $t$ ,  $\text{MU Dummy}_{i,t}$  is the monetary union dummy for country  $i$  at time  $t$ ,  $\sum X_{k,i,t}$  is a vector of economic controls, and  $\sum Z_{m,i,t}$  is a vector of institutional controls. Fourteen countries are included in the sample, eight EMU members and six non-members: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Sweden, the UK and US. Non-EMU countries are included in the sample to ensure that sectoral wage inflation divergence is not simply a time-trend phenomenon. Two different panels were run; one for 1992-2007 (presented in Table 2), in order to compare the EMU period to Maastricht, and one for 1979-2007 (presented in Table 3) in order to simultaneously compare the ERM and Maastricht regimes against EMU.

Economic controls include real GDP growth, change in the export share, net public borrowing, the change in labour share ratios between the public and manufacturing sector, and the change in employee ratios between the public and manufacturing sector. The beta coefficient on GDP growth should be positive; public sector unions



should be better positioned to secure higher wage settlements, relative to manufacturing, in booms rather than busts. Data on real GDP growth was obtained from the OECD's Main Economic Indicators. The sign on the beta coefficient of the change in export share should also be positive; increases in the export share result in greater exposure to trade, which should prompt manufacturing wage-setters to restrain wages relative to their public sector counter-parts. Data on export shares was obtained from the European Commission's AMECO database. The beta coefficient on net public lending should be positive; deficits (negative balances) should prompt Governments to limit public sector wage increases. Net public lending was run on a lag, in order to avoid endogeneity problems. Data on fiscal deficits were obtained from European Commission's AMECO database, with the exception of Australia and Sweden, whose (more complete) deficit data was obtained from the OECD.<sup>17</sup>

In regards to sectoral economic controls, the change in labour share ratios between the public and manufacturing sector is included to account for differences in capital substitution between sectors. Greater wage militancy may prompt employers to switch away from labour inputs towards capital, which in turn will affect unions' wage demands. However, it is more difficult for employers to shift towards capital in labour-intense outputs (i.e. services) than capital intensive ones (i.e. manufacturing). In order to control for the impact of differences in capital substitution, the change in the ratio of the public sector's labour share to total output over manufacturing's labour share is included. This variable is also run on a lag, due to endogeneity issues. The beta coefficient for the (lagged) change in labour share ratio should be positive. As the labour share in the public sector relative to the manufacturing sector increases, indicating greater capital substitution in manufacturing, relative public sector wage inflation should also increase. Finally, the change in the employee ratio between the public and manufacturing sector is also included to control for different employment trends within sectors. The sign on this variable is ambiguous, as it is difficult to determine whether employment dynamics

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<sup>17</sup> AMECO public accounts data was more complete for the remainder of the sample than fiscal data from the OECD.

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are driven by supply or demand factors. Data for both labour share and number of employees by sector was obtained from EU KLEMS database.

Institutional and political controls used include wage coordination, centralisation, trade union density, (right-wing) government composition and fiscal centralisation. The beta coefficient on wage coordination should be positive. Wage coordination produces wage growth compression, particularly at the bottom of the income distribution where coordinated union bargaining exists on wage floors (Kahn, 1998). Hence, public sector wage growth should be closer to manufacturing under higher levels of wage coordination, than lower levels of wage coordination. Centralisation is also included. A linear term was included although regressions were also run with a linear and quadratic term.<sup>18</sup> Given that centralisation has been found to be linearly correlated with wage inequality (see Wallerstein, 1999), the sign on centralisation should be positive. Higher levels of centralisation should lead to more compressed wage growth. The beta coefficient on trade union density should also be positive, given trade union density's positive correlation with wage compression (Machin, 1997; Rueda and Pontusson, 2000). Finally, it is expected that right-wing government composition, measured as the proportion of cabinet seats occupied by right-wing parties weighted by the number of days the government is in office, as well as fiscal centralisation, measured as the proportion of tax revenue of central government to total taxation, should be negatively correlated with relative public sector wage inflation. Right-wing governments, and central governments with greater control over public revenues, should be more conducive to enforcing public sector wage moderation. Wage bargaining institutional data was taken from the AIAS ICTWSS database; the wage coordination measure in the dataset is an updated version of Kenworthy's (2003) index while the centralisation measure is constructed in a similar manner to Iversen's (1999a). Data on cabinet composition and fiscal centralisation was taken from the Comparative Political Economy Data Set. Because the latter only has political data from 1990 onwards, cabinet composition and fiscal centralisation were excluded from the 1979-2007 panel.

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<sup>18</sup> This was done to account for the Calmfors-Driffill (1988) hypothesis. In both cases, centralisation failed to possess a significant coefficient.

Aside from the above controls, an interaction term between trade union density and the change in public to manufacturing employee ratio was included to control for Garrett and Way's (1999) hypothesis that larger public sector unions are better able to secure excessive wage growth. Ideally, this interaction term would be between public sector union density and relative public sector employee growth. Sectoral data on union density, however, is scant at worst and patchy at best. Garrett and Way rely upon Visser's (1991) data on union membership by ISIC sector classification, yet Visser's data is limited to five individual years, the last of which is 1988. Trade union density is used as a rough proxy for public sector union density. While this variable is (ambitiously) used as a proxy public sector union strength, it is the only indicator of rough comparability which possesses relative completeness across the sample. The beta coefficient on this interaction term should be positive. The impact of high relative employment growth in the public sector on relative public sector wage inflation should be higher in countries with high, rather than low, (public) trade union density.

One control that was purposely excluded was a measure of central bank non-accommodation. Though its omission is problematic, given the centrality of a hard currency policy to the theory outlined above, there is one significant methodological caveat with including either central bank independence (measured via Cukierman's legal index) or a more time-variant monetary non-accommodation (measured via Iversen's index) within the panel regressions; they are highly correlated with the monetary union dummy. Since all EMU countries inherited the ECB as their monetary authority after 1998, and hence, have identical CBI/non-accommodation indices after 1999, there is near perfect correlation with both measures of monetary conservatism and monetary union.<sup>19</sup> Regressions were run, including these measures, individually, with monetary union. The inclusion of Iversen's monetary non-accommodation index failed to impact the significance or sign of the monetary

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<sup>19</sup> Pair-wise correlations between Cukierman's CBI and the monetary union dummy are 0.80 (p-value = 0.000) and 0.86 (p-value = 0.000) for the 1979-2007 and 1992-2007 samples, respectively, while those between Iversen's non-accommodation index and monetary union are 0.70 (p-value = 0.000) and 0.80 (p-value = 0.000) for the 1979-2007 and 1992-2007 samples, respectively.

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union dummy (the index itself was insignificant). Inclusion of Cukierman's CBI index eliminated monetary union's significance. CBI did not possess a significant coefficient, yet the beta coefficient was positive, indicating that higher CBI is associated with greater relative public sector wage inflation. This positive coefficient is unsurprising given the correlation, *not causation*, between sectoral wage inflation divergence under EMU coupled with the ECB's strong legal independence (0.9 out of 1).

An ordinary least squares (OLS) regression method with panel corrected standard errors (PCSE) was applied to test the baseline model above, which enables one to correct for both country-specific heteroskedasticity and spatial correlation of errors (Beck and Katz, 1995). A baseline model was first run with a GLS estimator, but an LR test confirmed the presence of panel heteroskedasticity (Wald test:  $\chi^2(19) = 54.66$ ). The test for no serial correlation could not be rejected, so all models included a lag of the dependent variable in order to control for auto-correlation. Some question the inclusion of a lag as a proper method of testing auto-correlation, as it can cause a serious (downward) bias in OLS's estimators, due to its absorption of large parts of trend (see Achen, 2000 and Plümper et al, 2005 for excellent critiques of the "standard" Beck and Katz method). Plümper et al (2005) report that a Prais-Winsten (AR1) transformation neither fails auto-correlation tests nor shows spherical distribution of errors, yet manages to absorb less time-series dynamics than a dependent lag. A Prais-Winsten (AR1) transformation did not alter the significance of monetary union's beta coefficient for any of the models presented, yet produced slightly higher coefficient values (between 2% and 8% higher) than the inclusion of a lag. Consequently, because the lag method of auto-correlation control produces more conservative estimates, its coefficients are presented instead. As a further robustness check, OLS regressions were also run using country clustered standard errors (CSE), which produces larger (i.e. less forgiving) standard errors than PCSEs (column IX and VII in Tables 2 and 3, respectively; Rogers, 1993; Williams, 2000).

Country dummies were included in order to control for country-specific omitted variables; an F-test of country dummies in both time-panels confirmed that they

belong in the (one-way fixed effect's) model's specification.<sup>20</sup> Time dummies were excluded for two reasons. Firstly, their inclusion poses obvious multicollinearity problems with the monetary union dummy. Plümpert et al's (2005) critique of country dummy inclusion (that they eliminate "too much" cross-sectional variance, and reduce significance of time-invariant controls, such as institutions, that may be specific to countries) applies equally to the inclusion of time dummies when measuring the impact of institutional shifts on breaks in trend. Secondly, joint F-tests for both panels confirmed that the time dummies were insignificant.<sup>21</sup>

In both time panels, the monetary union dummy holds the proper sign and remains highly significant, regardless of controls or estimation method used. Monetary union also maintains its significance when a time trend, which is not significant, is controlled for, indicating that the rise in public sector relative wage inflation is not a time-related phenomenon across the entire sample but rather is concentrated within EMU countries after 1999. EMU's beta coefficient is not significantly different between the 1992-2007 and 1979-2007 panels, offering further evidence that divergence after 1998 was not merely a Maastricht effect, but was also a departure from fiscal adjustments made in the 1980s. Regarding economic controls, GDP growth and change in the export share hold consistent significance across all models, with the correct sign. The change in public to manufacturing employee ratio is significantly positive, indicating that greater employee growth in the public sector relative to the manufacturing sector produces higher relative public sector wage inflation. This result could be driven in part by the "Garrett and Way" hypothesis; public sector inflation, relative to manufacturing rises when its share of employees, relative to manufacturing rises, due to higher bargaining power that accompanies a larger employee base; the significance with of its interaction with trade union density certainly suggests this would be the case. The lag of relative labour share ratio is significant across all models, but holds the improper sign, indicating that more

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<sup>20</sup>  $\chi^2(13) = 73.54$ ,  $\text{prob} > \chi^2 = 0.0000$  for the 1992-2007 panel and  $\chi^2(13) = 67.58$ ,  $\text{prob} > \chi^2 = 0.0000$  for the 1979-2007 panel.

<sup>21</sup>  $\chi^2(15) = 12.64$ ,  $\text{prob} > \chi^2 = 0.6224$  for the 1992-2007 panel and  $\chi^2(28) = 23.73$ ;  $\text{prob} > \chi^2 = 0.5914$  for the 1979-2007 panel.

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intensive use of labour inputs within the public sector relative to the manufacturing sector leads to lower relative public sector wage inflation.

Strangely, all institutional controls fail to hold significance, bar one. The interaction between trade union density and the change in public to manufacturing employee ratio, holds a significant, positive sign, supporting Garrett and Way's (1999) hypothesis. Trade union density is weakly significant, with the improper sign, but only when its interaction with the change in relative employee ratio is included in the 1992-2007 panel. When a time trend is included in the 1979-2007 panel, trade union density's sign becomes positive, although it still remains insignificant. The "Garrett and Way" variable's interaction with the EMU dummy (not included in the tables below) failed to produce a significant coefficient, although its individual components remained significant. Other controls' interaction with the EMU dummy were also insignificant (including interactions between EMU and bargaining institutions), indicating that divergence occurred in all countries, regardless of collective bargaining structure.

The results of the right-wing government composition pose a slight anomaly. If the monetary union dummy is excluded from the 1992-2007 panel, the term has a significant, positive coefficient with relative public sector wage inflation, indicating right wing governments produce *greater* wage inflation in the public sector than left wing governments. When the monetary union dummy is included, its significance wanes; yet when an interaction term between the two is included, it enhances the significance of the hierarchal terms without the interaction being significant itself (see Column VII, Table 2). Such strange positive correlation between right-wing governments and relative public sector wage inflation could be explained by one of two factors. One is the shared positive and statistically significant relationship of right-wing governments and the monetary union dummy with the time trend. While both variables have little correlation with each other over the entire panel (the pairwise correlation between right-wing cabinet composition and the monetary union dummy is -0.02, with a corresponding p-value of 0.973), both variables are positively significant with a general time-trend across the entire sample (right governments and

monetary union hold a pair-wise correlation of 0.17, p-value = 0.009, and 0.54, p-value = 0.000 with the time-trend variable, respectively). Hence, the positive coefficient could be driven by a shared positive trend over time between the rightist government and relative public wage inflation, although it is important to stress that right-government's relationship with the time-trend is reflective across the entire sample, including the six non-EMU participants which did not witness similar divergence trends in wage inflation as the EMU countries. Alternatively, the positive relationship between relative public sector wage inflation and right-wing governments could be explained by class alliances; public sector unions may be more willing to exercise wage moderation under leftist governments than rightist ones.

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**Table 2:** Regression results for Public Sector Wage Inflation (1992-2007)

<i>Independent Variables</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>	<i>IX</i>
<i>Lag</i>	0.163* (0.086)	0.172** (0.086)	0.163* (0.086)	0.153* (0.087)	0.155* (0.086)	0.17** (0.086)	0.18** (0.085)	0.159* (0.087)	0.15** (0.063)
<i>Monetary Union Dummy</i>	1.52*** (0.407)	1.50*** (0.414)	1.53*** (0.407)	1.12** (0.456)	1.15*** (0.425)	1.38*** (0.390)	1.90*** (0.596)	1.08** (0.499)	1.54*** (0.516)
<i>GDP Growth</i>	0.67*** (0.129)	0.66*** (0.130)	0.67*** (0.129)	0.65*** (0.129)	0.71*** (0.130)	0.70*** (0.126)	0.71*** (0.127)	0.65*** (0.132)	0.67*** (0.150)
<i>Export Share Growth</i>	0.31*** (0.046)	0.31*** (0.046)	0.31*** (0.047)	0.31*** (0.046)	0.29*** (0.046)	0.32*** (0.046)	0.31*** (0.046)	0.31*** (0.046)	0.31*** (0.047)
<i>Fiscal Deficit (Lag)</i>	-0.029 (0.081)	-0.018 (0.086)	-0.036 (0.080)	-0.070 0.080	-0.111 (0.080)	-0.031 (0.079)	-0.031 (0.078)	-0.050 (0.083)	-0.032 (0.106)
<i>Change in Relative Employment</i>	0.39*** (0.086)	0.38*** (0.082)	0.39*** (0.086)	0.38*** (0.087)	0.101 (0.126)	0.38*** (0.086)	0.40*** (0.085)	0.38*** (0.087)	0.38*** (0.079)
<i>Change in Capital Accumulation (Lag)</i>	-0.20*** (0.054)	-0.21*** (0.051)	-0.20*** (0.054)	-0.20*** (0.054)	-0.20*** (0.054)	-0.21*** (0.054)	-0.21*** (0.054)	-0.21*** (0.055)	-0.20*** (0.073)
<i>Centralization</i>		3.492 (5.855)							
<i>Wage Coordination</i>			0.129 (0.391)						
<i>Trade Union Density</i>				-0.096 (0.070)	-0.115* (0.070)				
<i>TU Density * Change Relative Employment</i>					0.007** (0.003)				
<i>Right Government</i>						0.008 (0.005)	0.011** (0.005)		
<i>Fiscal Centralisation</i>						0.006 (0.065)	-0.002 (0.067)		
<i>Right Government * Monetary Union Dummy</i>							-0.015 (0.016)		
<i>Time Trend</i>								0.061 (0.048)	
<i>Constant</i>	-0.484 (0.797)	0.595 (1.906)	-0.626 (0.938)	0.819 (1.219)	1.455 (1.252)	-1.282 (2.954)	-1.203 (2.978)	0.216 (2.491)	-0.416 (0.593)
<i>Method</i>	PCSE	PCSE	PCSE	PCSE	PCSE	PCSE	PCSE	PCSE	CSE
<i>Time Dummies</i>	No	No	No	No	No	No	No	No	No
<i>Country Dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Observations</i>	237	233	237	236	236	237	237	236	237
<i>Number of Countries</i>	14	14	14	14	14	14	14	14	14
<i>Wald chi squared Stat</i>	454.1***	424.9***	455.8***	552.3***	471.8***	663.7***	820.8***	492.1***	129.4***
<i>R Squared</i>	0.5309	0.5259	0.5318	0.5385	0.5488	0.5374	0.5433	0.5497	0.522

Model used was an OLS method, including an AR1 term, with PCSE/CSE from 1991 to 2007. N-1 country dummies included but not shown. Standard errors are in parenthesis. \*, \*\*, and \*\*\* indicate significance on a 90%, 95% and 99% confidence level.



**Table 3:** Regression results for Public Sector Wage Inflation (1979-2007)

<i>Independent Variables</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
<i>Lag</i>	0.133** (0.062)	0.138** (0.063)	0.133** (0.062)	0.133** (0.062)	0.131** (0.062)	0.130** (0.061)	0.166** (0.063)
<i>Monetary Union Dummy</i>	1.515*** (0.388)	1.489*** (0.396)	1.522*** (0.388)	1.505*** (0.456)	1.579*** (0.471)	1.254*** (0.489)	1.473*** (0.456)
<i>GDP Growth</i>	0.688*** (0.108)	0.679*** (0.110)	0.672*** (0.108)	0.688*** (0.109)	0.706*** (0.109)	0.711*** (0.108)	0.676*** (0.164)
<i>Export Share Growth</i>	0.210*** (0.038)	0.209*** (0.039)	0.207*** (0.038)	0.210*** (0.038)	0.192*** (0.038)	0.184*** (0.038)	0.211*** (0.052)
<i>Fiscal Deficit (Lag)</i>	0.004 (0.065)	0.009 (0.067)	-0.019 (0.065)	0.003 (0.066)	-0.026 (0.066)	-0.033 (0.064)	0.004 (0.078)
<i>Change in Relative Employment</i>	0.266*** (0.071)	0.260*** (0.070)	0.263*** (0.071)	0.267*** (0.072)	-0.017 (0.121)	-0.045 (0.123)	0.269*** (0.078)
<i>Change in Capital Accumulation (Lag)</i>	-0.163*** (0.043)	-0.165*** (0.044)	-0.158*** (0.043)	-0.163*** (0.043)	-0.159*** (0.043)	-0.162*** (0.043)	-0.167*** (0.055)
<i>Centralisation</i>		0.361 (4.173)					
<i>Wage Coordination</i>			0.340 (0.242)				
<i>Trade Union Density</i>				-0.001 (0.047)	-0.020 (0.047)	0.015 (0.058)	
<i>TU Density * Change Relative Employment</i>					0.006*** (0.002)	0.007*** (0.003)	
<i>Time Trend</i>						0.045 (0.031)	
<i>Constant</i>	0.619 (0.734)	0.565 (1.438)	0.276 (0.795)	-2.678 (1.296)	1.433 (1.093)	0.226 (1.468)	0.506 (0.776)
<i>Method</i>	PCSE	PCSE	PCSE	PCSE	PCSE	PCSE	CSE
<i>Time Dummies</i>	No	No	No	No	No	No	No
<i>Country Dummies</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Observations</i>	372	368	372	371	371	371	372
<i>Number of Countries</i>	14	14	14	14	14	14	14
<i>Wald chi squared Stat</i>	227.4***	225.0***	223.8***	226.8***	236.5***	244.9***	240.8***
<i>R Squared</i>	0.3385	0.3359	0.342	0.3383	0.3487	0.3518	0.3528

Model used was an OLS method, including an AR1 term, with PCSE/CSE from 1979 to 2007. N-1 country dummies included but not shown. Standard errors are in parenthesis. \*, \*\*, and \*\*\* indicate significance on a 90%, 95% and 99% confidence level.

Jack-knife analyses were conducted on the baseline model (Column I), excluding individual countries and years, to test whether the monetary union dummy's positive significance was not driven by an outlier country or year. Only the value of the EMU coefficient, as well as its standard error, is reported in Tables 4 and 5. Remarkably, EMU remains robustly significant, regardless of the country and year excluded for both the 1992-2007 and 1979-2007 panels. The EMU dummy's significance drops below 99% when using the CSE estimator, yet on no occasion does

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it fall below 95%. The value of monetary union's coefficient does not considerably differ from the baseline model, nor does it lose its significance, when Ireland, which witnessed the largest rise in relative public sector inflation after 1999 (see Table 1), is excluded.

**Table 4:** Country Jack-knife results on EMU coefficient

<i>Country Excluded</i>	<i>Base PCSE Model (1979-2007; N=348)</i>	<i>Base PCSE Model (1991-2007; N=220)</i>	<i>Base CSE Model (1991-2007; N=220)</i>
<i>Australia</i>	1.510*** (0.416)	1.530*** (0.414)	1.567*** (0.517)
<i>Austria</i>	1.581*** (0.412)	1.395*** (0.439)	1.426** (0.566)
<i>Belgium</i>	1.793*** (0.439)	1.787*** (0.446)	1.829*** (0.471)
<i>Denmark</i>	1.479*** (0.407)	1.525*** (0.427)	1.532** (0.535)
<i>Finland</i>	1.471*** (0.505)	1.612*** (0.545)	1.626** (0.573)
<i>France</i>	1.377*** (0.362)	1.654*** (0.375)	1.690** (0.570)
<i>Germany</i>	1.469*** (0.460)	1.305*** (0.499)	1.316** (0.559)
<i>Ireland</i>	1.321*** (0.355)	1.316*** (0.362)	1.341** (0.512)
<i>Italy</i>	1.910*** (0.465)	1.695*** (0.427)	1.731*** (0.555)
<i>Japan</i>	1.539*** (0.413)	1.527*** (0.441)	1.554** (0.548)
<i>Netherlands</i>	1.489*** (0.382)	1.620*** (0.455)	1.632** (0.568)
<i>Sweden</i>	1.379*** (0.392)	1.271*** (0.397)	1.293** (0.500)
<i>UK</i>	1.530*** (0.399)	1.426*** (0.413)	1.449** (0.524)
<i>US</i>	1.419*** (0.380)	1.524*** (0.412)	1.540** (0.529)

Monetary union's beta coefficient from baseline model (Column I) from Tables 2 and 3 reported. Robust standard errors are in parenthesis. \*, \*\*, and \*\*\* indicate significance on a 90%, 95% and 99% confidence level.

**Table 5:** Year Jack-knife results on EMU coefficient

<i>Year Excluded</i>	<i>Base PCSE Model (1979-2007; N=358)</i>	<i>Base PCSE Model (1991-2007; N=223)</i>	<i>Base CSE Model (1991-2007; N=223)</i>
<b>1992</b>	1.497*** (0.387)	1.371*** (0.368)	1.410** (0.554)
<b>1993</b>	1.463*** (0.398)	1.365*** (0.415)	1.386** (0.568)
<b>1994</b>	1.501*** (0.374)	1.476*** (0.409)	1.526*** (0.495)
<b>1995</b>	1.607*** (0.391)	1.650*** (0.414)	1.693*** (0.529)
<b>1996</b>	1.526*** (0.405)	1.581*** (0.439)	1.581*** (0.482)
<b>1997</b>	1.604*** (0.394)	1.632*** (0.433)	1.640** (0.564)
<b>1998</b>	1.520*** (0.402)	1.625*** (0.437)	1.631** (0.564)
<b>1999</b>	1.447*** (0.413)	1.447*** (0.429)	1.476** (0.498)
<b>2000</b>	1.548*** (0.397)	1.559*** (0.385)	1.592** (0.561)
<b>2001</b>	1.480*** (0.392)	1.437*** (0.388)	1.488*** (0.478)
<b>2002</b>	1.374*** (0.377)	1.354*** (0.376)	1.428** (0.493)
<b>2003</b>	1.494*** (0.411)	1.496*** (0.437)	1.540*** (0.511)
<b>2004</b>	1.576*** (0.401)	1.662*** (0.419)	1.686** (0.594)
<b>2005</b>	1.548*** (0.412)	1.560*** (0.442)	1.570** (0.608)
<b>2006</b>	1.641*** (0.419)	1.733*** (0.455)	1.719** (0.655)
<b>2007</b>	1.406*** (0.394)	1.358*** (0.404)	1.384*** (0.434)

Monetary union's beta coefficient from baseline model (Column I) from Tables 2 and 3 reported. Robust standard errors are in parenthesis. \*, \*\*, and \*\*\* indicate significance on a 90%, 95% and 99% confidence level.

To conclude, the empirics provided above lend support to the existence of a significant EMU trend-break. Such an effect does not appear to be limited to a comparison with the Maastricht period, as the monetary union dummy continues to remain significant with the inclusion of the 1980s. This empirical result is expected, considering that many EMU-candidate countries initiated fiscal adjustment to a hard currency policy and imposed moderation onto public employees during the 1980s. Based upon the results above, monetary union contributed, on average, to a 1.5%

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increase in wage inflation divergence between the public and manufacturing sector within EMU member-states. Lack of a significant time-trend indicates that this increase was EMU-specific; public sector unions in non-EMU member-states do not appear equally successful in outbidding their manufacturing counter-parts in one time period of the sample versus another. The argument provided here to explain this divergence is an institutional one; monetary union removed critical constraints on public employers which enabled them to impose wage moderation upon the public sector. Prior to 1998, hard currency commitments and the Maastricht criteria posed limitations on the wage increases that public employers could grant their employees. With the disappearance of these constraints after 1999, public employers bargaining power waned significantly, leading to higher wage increases for the public sector, relative to that in manufacturing. Such pay rises, should have translated towards higher inflation. Yet what kept inflation stable throughout most of the EMU period was the exposed sector's continued commitment to wage moderation. In order to remain competitive within a single currency area, exposed sector wage setters were forced to internalise the public sectors' abandonment of adjustment.

## IV. Conclusion: Frieden's dichotomy revisited

Despite being a project that was widely supported by private employers across numerous candidate countries (Sandholtz, 1993; Verdun, 1996), EMU proved to be a Trojan Horse: it introduced a setting where sheltered sector unions were able to push for excessive wage settlements at the expense of their exposed (more business friendly) counter-parts. It is no surprise that in countries where some level of public sector pay moderation was maintained, price competitiveness surged; between 1999 and 2007, Germany and Austria, whose public sectors continued to exercise restraint, witnessed the highest export share growth in EMU. For the majority of countries where public sector excess arose, however, the manufacturing sector was forced to compensate via significant deflation in order to remain competitive (Ireland, Finland

and the Netherlands). Only in the south did wage-push also arise in the manufacturing, leading to a significant deterioration in its real exchange rate. Understanding EMU's perverse effects on sector wage inflation, and the pressures it places on exposed sectors to compensate for lack of adjustment in sheltered ones, offers an novel perspective to the debate on macroeconomic policy and sectoral interests. Frieden (1991) identified a monetary autonomy/exchange rate stability policy dichotomy based upon sectoral interests; internationally oriented producers hold greater preference for exchange rate stability, while sheltered producers desire monetary autonomy. Sandholtz (1993) used Frieden's dichotomy to outline why business interests highly favoured monetary union in the years before the formulation of the Maastricht Treaty; EMU safeguarded the creation of a major, stable currency, which would limit costs associated with trading in multiple, and volatile, currencies.

However little analysis has been conducted on how Freiden's dichotomy changes once monetary union comes into effect. What is most ironic about Sandholtz's discovery is that monetary union, unlike the EMS and Maastricht regimes where the public sector was held in check, holds exposed sectors hostage to inflationary wage settlements in sheltered ones via developments in the real exchange rate (RER). Exchange rate policy under EMU depends purely on relative inflation. This becomes problematic, because, if public sector unions are in a position to secure inflationary wage settlements from their (weakened) employers, actors in the exposed sector must deflate their wages in order to retain a competitive RER. Of course the exposed sector is not forced to make this adjustment if it is willing to see itself priced-out of international markets. While extreme cases of public sector excesses (i.e. debt crises) would merit some level depreciation/devaluation in even the strictest currency regimes, bringing needed adjustment to the exposed sector, a currency union precludes such a possibility. Rather, under monetary union, exposed sector interests are presented with a most unpleasant trade-off; either compensate for public sector wage excess and maintain competitiveness, or refuse to facilitate adjustment and accept an over-valued RER. Under such terms, the current debt crises in the EMU's Southern countries may hold a silver lining for their struggling manufacturing

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sectors. Externally-driven fiscal austerity pressures will provide needed adjustment to Southern public sectors, whose inflationary wage settlements have hampered national price-competitiveness for the preceding decade.

## References

Achen, C (2000). "Why lagged dependent variables can suppress the explanatory power of other independent variables". Washington University (St. Louis) Political Methodology Working Paper.

AIAS ICTWSS Database. Ed. Visser, J. University of Amsterdam, Amsterdam Institute for Advanced Labour Studies. Last Updated: January 2 2009. <http://www.uva-aias.net/208>

Alesina, A., Ardagna, S. and Galasso, V. (2008). "The Euro and Structural Reforms." National Bureau of Economic Research Working Papers, National Bureau of Economic Research.

Baccaro, L. and Simoni, M. (2010). "Organizational Determinants of Wage Moderation". Working Paper.

Baumol, W and Bowen, W. (1965). "On the Performing Arts: The Anatomy of their Economic Problems. *American Economic Review*. Vol. 55(1); pp. 495-502

Baumol, W and Bowen, W. (1966) *Performing Arts: The Economic Dilemma*. New York, The Twentieth Century Fund.

Beck, N and Katz, J. (1995) "What to Do (And Not to Do) with Time-Series Cross-Section Data". *American Political Science Review*. Vol 89. Pg 634-648.

Blanchard, O. (2006). "European Unemployment: The Evolution of Facts and Ideas." *Economic Policy* **21**: 5-59.

Blanchard, O. and J. Wolfers (2000). "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence." *Economic Journal* **110**(462): 1-33.

Buti, M., Franco, D., and Ongena, H. (1998). "Fiscal Discipline and Flexibility in EMU: The Implementation of the Stability and Growth Pact." *Oxford Review of Economic Policy* **14**(3): 81-97.

Calmfors, L. and J. Driffill (1988). "Bargaining Structure, Corporatism, and Macroeconomic Performance." *Economic Policy* **6**(April): 14-61.

Comparative Political Dataset (2010). Institut für Politikwissenschaft. Universität Bern. [http://www.ipw.unibe.ch/content/team/klaus\\_armingeon/comparative\\_political\\_data\\_sets/index\\_ger.html](http://www.ipw.unibe.ch/content/team/klaus_armingeon/comparative_political_data_sets/index_ger.html). Last updated: 7 August 2010.

Crouch, C. (1990). Trade Unions in the Exposed Sector: Their Influence on Neo-corporatist Behaviour. *Labour Relations and Economic Performance*. Brunetta and Dell'Aringa, International Economic Association.

Cukierman, A. (1992). *Central Bank Strategy, Credibility and Independence*. Cambridge, Massachusetts. MIT Press.

Cukierman, A. and F. Lippi (2001). "Labour Markets and Monetary Union: A Strategic Analysis." *The Economic Journal* **111**: 541-565.

Dornbusch, R. (1976) "Expectations and Exchange Rate Dynamics". *Journal of Political Economy*. **84**: 1161-1176.

Eichengreen, B and Wyplosz, C. (1998) "The Stability and Growth Pact: More than a Minor Nuisance", *Economic Policy*. April: 67-104

Estevão, M (2005). "Product Market Regulation and the Benefits of Wage Moderation". IMF Working Paper, WP/09191. IMF

## The Revenge of Baumol's Cost Disease?

European Commission's Directorate General for Economic and Financial Affairs (2007). (AMECO) Annual macro-economic database European Commission's Directorate General for Economic and Financial Affairs.

EU KLEMS Database. <http://www.euklems.net>. Last updated 27 November 2009. Accessed June – September, 2010.

Franzese, R. (2001). Institutional and Sectoral Interactions in Monetary Policy and Wage-Price Bargaining. *Varieties of Capitalism: The Institutional Foundation of Comparative Advantage*. P. Hall and D. Soskice. Cambridge, CUP: 104-144.

Freiden, J. (1991). "Invested Interests: The Politics of National Economic Policies in World of Global Finance". *International Organization*. Vol. 45, No. 4. Pg. 425-451.

Garrett, G and Way, C. (1999). "Public Sector Unions, Corporatism, and Macroeconomic Performance". *Comparative Political Studies* 32 (4), p. 411 - 434

Gentleman, A. (2010). "Ireland's anger a taste of life after cuts", *The Guardian*. 30 September 2010.

Hall, P. (1994). "Central Bank Independence and Coordinated Wage Bargaining: The Interaction in Germany and Europe." *German Politics and Society* 31: 1-23.

Hall, P. and Franzese, R. (1998). "Mixed Signals: Central Bank Independence, Coordinated Wage Bargaining and European Monetary Union." *International Organization* 52(3): 505-535.

Hancké, B. and Rhodes, M. (2003). "EMU and Labour Market Institutions in Europe: The Rise and Fall of National Social Pacts." *Work and Occupations* 19(1): 149-160.

Hancké, B. and Soskice, D. (2003). "Wage Setting and Inflation Targets in EMU." *Oxford Review of Economic Policy* 19(1): 196-228.

Hassel, A. (2003). "The Politics of Social Pacts", *British Journal of Industrial Relations*. 41(4): 707-726.

Hassel, A. and Ebbinghaus, B. (2000). "Striking deals: concertation in the reform of European welfare states". *Journal of European Public Policy*. 7(1): 44-62

Hochreiter, E. Winckler, G. (1995). "The Advantages of Tying Austria's Hands: The Success of the Hard Currency Strategy." *European Journal of Political Economy* 11: 83-111.

Iversen, T. (1996) "Power, Flexibility and the Breakdown of Centralized Wage Bargaining: The Cases of Denmark and Sweden in Comparative Perspective". *Comparative Politics*. Vol 28. Pg 399-436.

Iversen, T. (1998). "Wage Bargaining, Central Bank Independence and the Real Effects of Money." *International Organization* 52(3): 469-504.

Iversen, T. (1999a). *Contested Economic Institutions: The Politics of Macroeconomics and Wage Bargaining in Advanced Democracies*. Cambridge, UK. Cambridge University Press.

Iversen, T. (1999b). "The Political Economy of Inflation: Bargaining Structure or Central Bank Independence?" *Public Choice* 99: 237-258.

Kahn, L. (1998). "Collective Bargaining and the Interindustry Wage Structure: International Evidence". *Economica*. 65(4): 507-534.

Kenworthy, L. (2003). "Quantitative Indicators of Corporatism". *International Journal of Sociology*. 33(3): 10-44



- Lash, S. (1985). "The end of neo-corporatism?: The breakdown of centralised bargaining in Sweden". *British Journal of Industrial Relations*. **23**(2): 215-239
- Machin, S. (1997). "The decline of labour market institutions and the rise of wage inequality in Britain". *European Economic Review*. **41**: 647-657.
- McNamara, K. (1998). *The Currency of Ideas: Monetary Politics in the European Union*. Cornell University Press, Ithaca.
- Plümper, T, Troeger, V., and Manow, P. (2005). "Panel data analysis in comparative politics: Linking method to theory", *European Journal of Political Research*. **44**: 327-354.
- Polillo, S and Guillén, M. "Globalization Pressures and the State: The Global Spread of Central Bank Independence." *American Journal of Sociology* **110**(6) (May 2005):1764-1802.
- Pontusson, J. and Swenson, P. (1996). "Labour markets, production strategies, and wage bargaining institutions". *Comparative Political Studies*. **29**(2): 223-250.
- Rogers, W (2003). "Regression standard errors in clustered samples", *Stata Technical Bulletin*. **3**: 88-94.
- Rueda, D. and Pontusson, J. (2000). "Wage Inequality and Varieties of Capitalism". *World Politics*. **52**(3): 350-383.
- Sandholtz, W. (1993) "Choosing Union: Monetary Politics and Maastricht" *International Organization*. Vol. 47, No. 1. Pg. 1-39
- Scharpf, F. (1991) *Crisis and Choice in European Social Democracy*. Ithaca, New York. Cornell University Press.
- Simoni, M. (2007) *The Renegotiated Alliance between the Left and Organized Labour in Western Europe*. Ph.D. Thesis. London, London School of Economics.
- Soskice, D. and Iversen, T. (1998). "Multiple Wage-Bargaining Systems in the Single European Area." *Oxford Review of Economic Policy* **14**(3): 110-124.
- Thelen, K. (1993). "West European Labour in Transition: Sweden and Germany Compared", *World Politics*. **46**(1): 23-49.
- Verdun, A. (1996). "An "asymmetrical" economic and monetary union in the EU: Perceptions of monetary authorities and social partners". *Journal of European Integration*. **20**(1): 59-81.
- Visser, J. (1991). "Trends in trade union membership". In OECD (Ed.), *Employment Outlook*. Paris: OECD
- Von Hagen, J. (2003). "Fiscal Discipline and Growth in Euroland. Experiences with the Stability and Growth Pact". ZEI Working Paper. Universität Bonn
- Wallerstein, M. (1999). "Wage Setting Institutions and Pay Inequality in Advanced Industrial Societies". *American Journal of Political Science*. **43**(3): 649-680.
- Walsh, J. (1999). "Political bases of macroeconomic adjustment: evidence from Italy", *Journal of European Public Policy*. **6**(1): 66-84.
- Weber, A. (1991) "Reputation and Credibility in the European Monetary System". *Economic Policy*. **6**(12): 57-102.
- Williams, R. (2000) "A note on robust variance estimation for cluster-correlated data." *Biometrics* **56**: 645-646



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