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WAGE FLEXIBILITY ACROSS EMU MEMBERS: HOW ENDOGENOUS IS THE CURRENCY UNION?

Abstract. The authors test whether the introduction of a common currency and the single monetary policy in the European Monetary Union might have increased the need for nominal wage flexibility. They try to find out whether wage dynamics between euro member countries became more synchronized through the adoption of the common currency. They run a model of endogenously induced changes of bilateral correlation coefficients of wage dynamics, where trade intensity, sector specialization and financial integration are assumed to be the driving forces for endogeneity on the labor markets. They use a panel data structure to allow for cross-section weights for country-pair observations. Regressions are with instrument variables in order to disentangle exogenous from endogenous influences. They apply these techniques to the dynamics of nominal wages, real wages and unit labor costs. They find evidence of persistent asymmetries in nominal wage formation, despite a single currency and monetary policy, which is responsible for diverging unit labor costs and emerging trade imbalances among the EMU member countries.

Key words: convergence, wage dynamics, European Union, cross section estimates

1. INTRODUCTION

A common currency could affect the various economies of a currency area differently. Hence, it is assumed that the introduction of a common currency and a single monetary policy would increase the demand for nominal wage flexibility either by disciplining wage setters or by adjusting labour market institutions (Calmfors, 2001). Both would lead to more symmetric nominal wage responses across the regions of the currency area, despite wage setters acting independently of each other. We analyze wage-cost developments in euro member states before and after the introduction of the euro. Our motivation for such an investigation is that wages and unit labor costs of EMU countries have diverged since the introduction 1999, indicating a weaker relation between nominal wage and productivity developments. We argue that divergence might not reflect short-term

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deviations from a long-run convergence path, but rather a lack of market-coordinated (synchronized) wage formation. De-synchronization in wage dynamics might reflect an asymmetric response of national wage setters after economically or politically caused shocks, hence a shift of competitive positions and current account imbalances away from fundamentals. Asymmetric policy responses might include a downward competition of wages, which we consider to be one of the most destabilizing perspectives of the euro area.

Our study is a test of the theory of the endogenous currency area, which explains the conditions of an optimum currency area (OCA) to be endogenous to a common currency and single monetary policy. The endogenous currency area hypothesis is a major guide for official EU integration policy (the so-called Brussels-Frankfurt consensus) in which a strong monetary authority and a single currency are sufficient to ensure stability and long-run integration, and for which no other strong or centralized political coordination mechanisms are necessary. We perform this test from a macroeconomic perspective.

According to our best knowledge, the literature, which tested the hypothesis of endogenous OCA criteria for the EMU from a macroeconomic perspective, has excluded the labor market. Our study, thus, sets foot in new territory. Our test for endogenous EU labour markets is based upon a model that explains a synchronization indicator (bilateral correlation coefficients for labor costs) by trade integration, financial market integration and changes in product specialization, whereby the dependent and the explanatory variables are all endogenous to the common currency.

The study is organized as follows. The second section asks what we can learn from the relevant theoretical and empirical literature on OCA for our labor market analysis and where the open questions lie. The third section presents the variables of our model, describes how they are calculated and which data source we have exploited. The fourth section presents the modeling and the results of the regressions. The final section concludes. We find evidence for a persistent lack in the synchronization of nominal wage flexibility and are inclined to reject the hypothesis of endogenous labour markets.

2. THEORY AND EMPIRICISM OF AN ENDOGENOUS CURRENCY AREA

An OCA is characterized by a set of regions with integrated commodity, capital and labour markets, which may have a common currency since the structures of the regions are sufficiently similar. The currency area has the property of being endogenous if the similarity of structures is a product of the common currency and the single monetary policy. Then, agents respond to shocks in

a coordinated way, though this coordination is of market and not of political type. In other words, with endogenously driven market integration and coordination of market actions, the distribution of shocks across the regions becomes symmetric over time¹. The hypothesis of an endogenous currency area was formulated and first tested in the seminal paper of Frankel and Rose (1998; see also 2002)². The relevance of their paper stems from its clear contrast to the opinion dominating until then among economists that regions should form a currency area only when the institutional and structural similarities have already been established. For example, Krugman (1993) argued that regions should not form a common currency area if they differed largely in sector or product patterns (i.e. large differences in per capita income). This debate was focused on the planned institution of the common currency. Bayoumi and Eichengreen (1993) compared the responses of business cycles in the EU and the US to shocks, becoming skeptical about the introduction of a common currency in the EU. The single European currency might even push the member countries into a more specialized economic structure, thereby magnifying the asymmetric nature of (demand) shocks (Basevi, 1993). However, Frankel and Rose (1998) argued that optimum conditions must not be fulfilled *ex ante* but must emerge *ex post* under the influence of the common currency and single monetary policy.

Since the introduction of the euro, the literature has followed a more micro and institutional perspective. Authors try to understand the impact of a common currency on absolute nominal wage flexibility and on labor market institutions for a single national labour market (see, for example, Soscice and Iversen, 2000; Calmfors, 2001; Traxler, 2002; Holden, 2003; Mongelli and Vega, 2006; Andersen and Seneca, 2008). We follow the line that was opened by Frankel and Rose, who asked for the relative flexibility of members of a currency area. However, this research has focused on business-cycle synchronization in the EU (for an overview, see de Haan et al., 2008). There are few studies that only deal with the issue of endogenous labor markets. Mann-Quirici (2005) uses a wage function for the US with various monetary policy regimes from 1900. He argues that an increase of the coefficients of the unemployment rate and output dynamics is seen as evidence of endogenous labor-market responses, and he expects a similar development for the euro area. Silva (2005) applies a convergence regression and standard deviations and finds no synchronization of wage dynamics in the euro area. The omission of labor markets is somewhat surprising since influen-

¹ This statement is often related to the Lucas critique, which means that a regime shift (in exchange rates or in a currency union) will change the behavior of agents.

² The debate started earlier, at the latest with the introduction of the German mark in the then GDR in 1990, between the followers of the so-called ‘crowning theory’ and those who believed that the mark would be the engine for integrating both countries. The subsequent breakdown of East German production made many economists sceptical about the introduction of the euro.

tial early contributions to the OCA literature (Meade, 1957; Mundell, 1961; Ingram, 1973) discussed the labor market issue prominently.

Despite the obvious lack of literature with a macroeconomic perspective on the labor markets, the existing literature on business cycle synchronization offers theoretical insights and empirical procedures we might consider to be potentially relevant to our study. Firstly, this literature calculates an indicator for the synchronization of changes in a macroeconomic aggregate (in this case, business activity like GDP or industrial output) in a bilateral context. Following Bayoumi and Eichengreen (1993), the synchronization indicator is computed as a set of bilateral correlation coefficients of de-trended time series – mostly GDP – of the countries involved. Secondly, this synchronization indicator is regressed on a set of variables which explain the changes in bilateral synchronization. The explanatory variables are assumed to be also endogenous to the common currency.

Frankel and Rose (1998) tested an empirical model for OECD countries, with various trade intensity indicators as explanatory variables. In their study (and recently also in Silvestre and Mendonca (2007) on EU relations with Portugal), the common currency and single monetary policy reduce transactions costs in trade, increase the bilateral flows of commodities and synchronizes the business cycles of the regions concerned. The coefficient should be positive in regressions if the regions form a currency union or, at least, cooperate closely in monetary policy. Further, a positive coefficient would reflect the absence of industry-specific shocks, prevalent in the case of inter-industry specialization (reflecting Krugman's 1993 specialization hypothesis). We transfer the trade intensity argument to the labor market as follows:

First Statement: The higher the intensity of trade, the more present are the labor costs of country i in the wage formation process in country j . Hence, higher trade intensity leads to a higher synchronization of member countries' wage flexibility. If this is so, we should expect a positive sign of the trade intensity coefficient in regressions.

More recent studies on output synchronization (Imbs, 2004; Schiavo, 2008) have augmented the trade model with specialization and financial integration variables. With respect to specialization, one may argue that specialization patterns decide the transmission of industry-specific shocks. With high specialization, one would expect instead desynchronized wage (or output) dynamics. In contrast to the more static view in the former research, specialization is now seen as endogenous in the currency area too. The driving force behind changes in specialization is financial integration, which certainly belongs to the mostly endogenous variables in an area with common currency. The hypothesis of a strong linkage between financial integration and specialization is rooted in

a strand of literature (see Kalemli-Oczan et al., 2003) which states that more risk sharing through an increased trade in assets acts like the lifting of trade barriers: countries can specialize their production according to their comparative advantages:

Second Statement: *More financial integration leads via more specialization to a de-synchronization of wage dynamics via industry-specific shocks.*

However, the presence of financial integration as a driver for specialization, as well as an independent and endogenous variable, produces a severe problem of multicollinearity in empirical testing. The inclusion of both variables in one model (Imbs, 2004; Schiavo, 2008) would make sense only if financial integration exerts not only an indirect effect on the synchronization indicator via specialization, but has in addition an independent direct impact on this measure.³ Such a direct impact might be assumed if financial integration propagates the aims of a common monetary policy to the wage setters in a set of countries with formerly divergent monetary conditions – formerly divergent inflation rates need to converge.

Third Statement: *The common inflation rate would be included in the national wage functions if more financial integration leads to an increased correlation of wage dynamics.*

The general model that the literature on the endogenous currency area seems to suggest for output correlation – and which we will empirically test for correlation of wage dynamics – takes the form:

$$C_{i,j,\tau} = C(T_{i,j,\tau}, S_{i,j,\tau}(F), F_{i,j,\tau}) \quad (1)$$

with $C_{i,j,\tau}$ as an indicator of synchronization of any type of macroeconomic aggregate change (output, prices, wages) in a bilateral context of a country i and a country j over the period τ , while T , S and F are the explanatory variables that we have found in the literature. T stands for the bilateral trade intensity; S is a bilateral specialization index, which is a function of bilateral financial integration; and F is the financial integration variable, which may impact indirectly (via

³ We leave the interesting issue as to whether intra-industry trade explains synchronization rather than interindustry trade (Fidrmuc, 2001; Fidrmuc and Korhonen, 2004; Imbs, 2004) to further research. Of course, this issue includes also the possibly different impacts of financial integration on both of these trade specialization concepts, for the impact of finance on intra-industry trade seems not well developed in the literature.

specialization) and/or directly on the dependent variable. Specific care should be given in empirical testing that the S - F linkage in the model might produce a problem of multi-collinear relationship. A schematic presentation of the links discussed and the propositions to be tested is given in Figure 1.

3. DATA AND CALCULATION OF VARIABLES

We investigate changes in the bilateral correlation coefficients of wage dynamics between 1980 and 2007. Coefficients are calculated from the European Commission's annual macroeconomic database (European Commission Ameco database) according to three concepts: nominal compensation per employee (NCE) in Euro, and real compensation per employee (RCE) as an index, transformed into Euro series. The nominal compensation per employee is not restricted to contractual wages and includes social taxes (employers' contributions).⁴ The RCE is used to evaluate the impact of different inflation processes in the countries. We assume a similar movement of NCE and RCE if nominal wage shocks are completely transferred to the inflation rate. European Commission Ameco database data present real indices achieved by the use of the GDP deflators. Correlation coefficients are calculated using first differences of the log-values. In regressions, we use for the dependent variable logistically transformed correlation coefficients in logs according to:

$$c_{ij,\tau} = \ln\left(\frac{\rho_{ij,\tau} + 1}{1 - \rho_{ij,\tau}}\right), \quad (2)$$

where $\rho_{ij,\tau}$ is the original correlation coefficient, with i and j as the pair of countries, and τ is the period concerned. The transformation overcomes the restriction on correlation coefficients, which roots in their range from -1 to $+1$, and widens the admissible range to $-\infty$ to $+\infty$, which is considerably closer to the standard assumption of linear regression models (see also Otto et al. 2001). The improved variance of the dependent variables should lead to a better fit of the model as compared without such transformations.

We computed the bilateral trade intensity according to three concepts: exports (TX), imports (TM) and total trade (TT):

⁴ The Ameco database presents the number of employees in full-time equivalents, as far as possible; hence, they also include a good portion of part-time work and related employment models.

$$TX_{i,j,\tau} = \frac{X_{i,j,\tau}}{X_{i,\tau} + X_{j,\tau}}, \quad (3a)$$

$$TM_{i,j,\tau} = \frac{M_{i,j,\tau}}{M_{i,\tau} + M_{j,\tau}}, \quad (3b)$$

$$TT_{i,j,\tau} = \frac{X_{i,j,\tau} + M_{i,j,\tau}}{(X_{i,j,\tau} + M_{j,\tau}) + (X_{j,i,\tau} + N_{j,i,\tau})}. \quad (3c)$$

The reason for the need for these three concepts is that trade reporting in national statistics differed in the past, and even differs under the EU single market to a certain degree. Hence, exports of country i to country j are not necessarily the imports of country j from country i . In the discussion of regression results we have a preference for total trade, since reporting failures might be less significant than in export and import indicators. A positive sign in regressions confirms Proposition 1. We constructed the specialization indicator on the basis of the employment shares of 26 sectors of the STAN database of the OECD (2006) as:

$$S_{i,j,\tau} = \sum_k |share_{i,k,\tau} - share_{j,k,\tau}|, \quad (4)$$

with k various sectors⁵. A pair of countries has an identical industrial structure if the variable takes the value 0. Otherwise, the higher the value is, the larger are the differences in structure. With increasing specialization, the regression coefficient should obtain a negative sign (Proposition 2 is not rejected). Schiavo (2008) has constructed an additional specialization indicator – as the Herfindahl index – for each country, taking the product for each country pair. We restricted our approach to the first indicator, which seems to be more transparent in its economic content.

The financial integration variable is built as Euclidian distance:

$$F_{i,j,\tau} = \sqrt{(lir_{i,\tau} - lir_{j,\tau})^2 + (sir_{i,\tau} - sir_{j,\tau})^2}, \quad (5)$$

where lir and sir are the long-term (ten years of T-bonds) and short-term interest rates (three months), respectively. Data are from OECD and were obtained from *Datastream*. A diminishing variable signals more financial market integration.

⁵ Average of the period 1999–2007 is based on observation until 2003 only.

Hence, the sign should become positive in regressions with specialization, and negative in regressions with one of the wage concepts (Proposition 3). To put it precisely: Proposition 2 cannot be rejected if financial specialization takes a negative sign in regressions with specialization, and if specialization takes at the same time a negative sign in regressions with the dependent variable.

We divide the entire period 1981–2007 into three sub-periods in order to find meaningful results with respect to the various currency regime events and shifts. The first period includes the years 1981–89 (the European Monetary System (EMS) with an exchange rate band of ± 2.5 per cent). The second period runs from 1990 until 1997 (including the EMS crisis of 1992–93, the relaxation of the band width to ± 15 per cent and the preparations of countries to fulfill the convergence criteria). The third period includes the first ten years of the euro currency and a common monetary policy, starting with 1998 (the fixing of exchange rates). So far our approach is different to other work that uses dummies for fixed exchange rates (Frankel and Rose, 1998) or for EMU membership (Schiavo, 2008). Period-average coefficients include information about lagged reactions of a country's wage formation to a shock from the partner country.

4. RESULTS OF ESTIMATIONS

In the following set of regressions we use a panel structure of the data, since this allows for using cross-section weights. Cross-section weights seem to be adequate for a set of very different country pairs (for example, Germany–Greece versus France–Italy). Further, cross-section weights serve to mitigate the possible problem of heteroskedasticity in the residuals of our cross-section estimates. All results reported include country pairs with the Netherlands. We complete the tests with a set of robustness checks, which include country pairs without the Netherlands, with a dummy for the Netherlands, and regressions based on annual growth rates of wage dynamics. All variables enter regressions in their log-levels. Following the literature, we apply regressions with instrument variables. Instruments serve to separate exogenous from endogenous components in the explanatory variables. In the case of trade intensity variables, distance (the log of) or a common border (as a dummy) are the best documented exogenous impacts compared to the endogenous impacts of a common currency. Our own tests confirm this assumption, and we refrain from repeating them here. In the case of financial integration and specialization, the literature assumes one-year lagged values to reflect the exogenous impacts at best; a reliable test for the appropriateness of those instruments in a cross-section approach is not available, however.

Table 1 presents estimation results according to a linear version of the model in equation (1) with respect to NCE. With respect to Proposition 1, we observe a turn of the trade intensity concepts from positive to negative in the period since the introduction of the euro. This holds for all three trade intensity concepts, so we may reject Proposition 1. We observe a similar change in the sign for specialization. A negative sign means that increasing specialization (the specialization index increases) is coupled with declining synchronization of nominal wage dynamics, or, said differently, industry specific (productivity) shocks gain relevance for the co-movement of nominal wage dynamics if specialization becomes more pronounced through a common currency. Hence, we should not reject Proposition 2. However, here we need an additional test that confirms an increasing specialization after more financial integration. We come back to this issue below. But, first, we have to discuss the third variable in the regression, financial integration. Here we observe a change from a negative to a positive sign: more financial integration (the measure in equation (5) declines) is coupled with less synchronization of nominal wage dynamics. Hence, we can reject Proposition 3, which states that financial integration creates a unique macroeconomic environment for nominal wage synchronization, or, in other words, a monetary shock that is common to all does not discipline national wage setters or induce a common adjustment of national labour market institutions. Nominal wage formation in individual EMU countries does not seem to embrace common macroeconomic policy, as reflected in an average inflation rate for the entire area. Rather, nominal wage flexibility at the national level follows the national inflation rate. The relevant variables appear with high significance.

We have drawn particular attention to the interplay of specialization and financial integration. Schiavo (2008) has observed a result with one of the two variables being insignificant – a typical hint at multicollinearity. In contrast, our regressions show both variables to be significant, and multicollinear relations seem not to dominate the model and distort the results. The explanatory power remains at a high level (more than 90 per cent) only in the case of the import intensity concept; with respect to export and total trade intensity, the adjusted R^2 drop significantly for the euro period. Therefore, we have controlled the results by estimating the same model specification with the Netherlands excluded. Although the explanatory power turned out to be more constant, financial integration became insignificant in the euro period, while specialization was insignificant in the pre-euro period.

Table 1. Cross-section Estimates of NCE Synchronization

	1990–1997	1998–2007	1990–1997	1998–2007	1990–1997	1998–2007
Constant	0.985	11.216***	0.088	5.090***	0.779	5.860**
<i>TX</i>	0.607***	-0.331***				
<i>TM</i>			0.796***	-0.160***		
<i>TT</i>					0.652***	-0.219***
<i>S</i>	0.969***	-3.472***	1.420***	-1.596***	1.063***	-1.893***
<i>F</i>	-1.161***	0.294***	-1.043***	0.152***	-1.144***	0.144**
R ² adj.	0.991	0.508	0.939	0.996	0.982	0.402

Notes: Calculated using 55 observations and IV estimates with cross-section weights. Instruments: distance, joint border, 1-period lagged *S*, 1-period lagged *F*, constant. All variables are in their log-levels (except common border dummy). ** significant at 5%; *** significant at 1%.

Source: European Commission Ameco database and OECD (2006) and Datastream; authors' calculations.

What remains to be done is a final test on the linkage between financial integration and sectoral specialization in order to reject or confirm Proposition 2. Indeed, all specifications of this linkage reveal a highly – as in Schiavo (2008)⁶ – significant and positive relationship between financial integration and specialization in both periods (see Table 2). We may finally conclude that Proposition 2 is more confirmed than rejected. While the common currency does not seem to trigger off a market mechanism that synchronizes nominal wage flexibility through more trade and financial flows, it strengthens specialization patterns in the countries with a negative impact on the synchronization of wage dynamics. This is a somewhat ‘perverse’ result of the currency area, a term coined by Farina and Tamborini (2004), explaining a possible divergence of business cycles (‘dispersion of output gaps’) by an asymmetric impact of the monetary policy transmission channels.

Table 2. Impact of Financial Integration (*F*) on Sector Specialization (*S*)

<i>No.</i>	<i>Constant</i>	<i>F</i>	<i>R</i> ² (<i>adj.</i>)	<i>Period</i>	<i>Specification</i>
1	3.782***	0.078***	0.826	1980–1989	OLS
2	3.568***	0.140***	0.797	1990–1997	OLS
3	3.650***	0.059***	0.746	1998–2007	OLS
4	3.591***	0.120***	0.868	1990–1997	IV: const, <i>F</i> (-1)
5	3.772***	0.139***	0.942	1998–2007	IV: const, <i>F</i> (-1)
6	3.568***	0.132***	0.976	1990–1997	IV: const, <i>F</i> (-1), joint border, distance
7	3.782***	0.144***	0.812	1998–2007	IV: const, <i>F</i> (-1), joint border, distance

Notes: Calculated using 55 observations and cross-section weights. All variables are in their log-levels (except common border dummy). *** significant at 1%.

Source: European Commission Ameco database and OECD (2006) and Datastream; authors' calculations.

⁶ Schiavo tested a specification proposed by Imbs (2004).

If nominal wage dynamics in countries do not follow the common monetary rules, what might be the impact on the co-movement of real compensation? Table 3 reports the results of estimations to be compared with the results in Table 1. There are some surprises. Firstly, trade intensity has a positive sign for both periods (compared to the negative sign in the euro period I in Table 1). Secondly, throughout all regressions, the coefficient for specialization takes a positive sign, with the variable being significant in most cases. That means the increase of specialization after more financial integration leads to more similarity in real wage dynamics, which certainly cannot be explained with the endogeneity theory. The sign of financial integration has changed from a negative in the pre-euro stage to a positive one since 1998. But how can more financial integration lead to more synchronized real wage dynamics when the opposite holds for nominal wage dynamics? Obviously, this might happen if national inflation rates – the benchmark for nominal wage formation – turn out to be different from the euro-wide inflation rate. Different inflation rates compensate for different nominal wage dynamics, and real wage dynamics appear to be more synchronized.

Table 3. Cross-section Estimates of RCE Synchronization

	Dependent variable: $\Delta\text{Log(RCE)}$					
	1990–1997	1998–2007	1990–1997	1998–2007	1990–1997	1998–2007
Constant	-1.093***	-10.241***	0.205	-3.791	-0.921	-9.569***
Log(x)	0.536***	0.505***				
Log(m)			0.835***	0.282**		
Log(tt)					0.663***	0.525***
Log(sp)	1.302***	3.628***	1.207**	1.602	1.357***	3.505***
Log(fi)	-0.748***	-0.086***	-0.292	0.065	-0.575***	0.018
R2 adj.	0.904	0.990	0.877	0.508	0.825	0.746
Nobs	55	55	55	55	55	55

For a definition of the variables see appendix. N = 55 cross section units. Least squares estimates with cross-section weights. ***, (**), (*) = significant at the 1%, (5%), (10%) level. Instruments: log(distance), common border, 1-period lagged log(sp), 1-period lagged log(fi), constant.

Source: own calculation.

Several additional regressions were estimated to test the robustness of the results obtained above. The first attempt serves to check whether the outlier, the Netherlands, has an impact on regression results. In general, the results excluding the Netherlands or using a dummy for country-pairs with the Netherlands are overwhelmingly similar to those reported in the tables above. The second attempt is to repeat all estimations with correlation coefficients computed on the basis of first differences of the logs or the actual growth rates of the wage aggregates. Most results remain unchanged in their signs as well as in their statistical

significance. It should be noted that the import variable performs considerably worse compared with the export intensity or total trade intensity. We conclude that cyclical movements due to business cycle developments and additional random effects, which might be included in growth rates, seem not to play a relevant role.

Table 4. Cross section estimates of real wages, IV estimates, The Netherlands excluded

	Dependent variable: $\Delta\text{Log(RCE)}$					
	1990–1997	1998–2007	1990–1997	1998–2007	1990–1997	1998–2007
Constant	0.043	-9.134***	-0.042	-1.600	1.210**	-7.025***
Log(x)	0.624***	0.466***				
Log(m)			0.703***	0.231***		
Log(tt)					0.780***	0.482***
Log(sp)	1.025***	3.245***	0.997***	0.958**	0.830***	2.693***
Log(fi)	-0.468***	-0.126**	-0.056	0.104**	-0.233***	-0.089
R2 adj.	0.826	0.986	0.913	0.695	0.853	0.983
Nobs	45	45	45	45	45	45

For a definition of the variables see appendix. N = 55 cross section units. Least squares estimates with cross-section weights. ***, (**), (*) = significant at the 1%, (5%), (10%) level. Instruments: log(distance), common border, 1-period lagged log(sp), 1-period lagged log(fi), constant.

Source: own calculations.

5. CONCLUSIONS

We set out to find how endogenous labor markets are in the EMU. We have tested whether the introduction of a common currency and the single monetary policy has increased the demand for nominal wage flexibility – an issue rather overlooked by the macroeconomic research and more likely to be found at the micro and institutional level. We have developed three analytical propositions, of which the first states a positive relationship between trade intensity and the synchronization of wage dynamics; the second states a positive relationship between financial integration and sector specialization, and a negative relationship between specialization and the similarity of wage dynamics; and the third assumes financial integration to create a common monetary environment for all national wage setters. We have found that higher trade intensity does not exert a synchronizing impact on nominal wage flexibility. But we have found increasing specialization to have a de-synchronization effect, while higher specialization itself turned out to be indeed a product of more financial integration. Finally, we have found that financial integration explains the synchronization of real wage dynamics but is coupled with a de-synchronization of nominal wage dynamics. In sum, our tests have revealed that there is no monetary force that

induces national nominal dynamics to synchronize across the currency area or to create the conditions of an optimum currency area *ex post*. National wage setters seem to include the national inflation rate and not the area-wide inflation rate into the wage function. The policy-relevant conclusion is that this behavior constitutes resistant asymmetries in labor market institutions and in an asymmetric nominal shock distribution across the euro member countries.

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