Completing EMU: a feasible and shared goal? Economics and political economy of the next EU reforms

Riccardo Rovelli, Università di Bologna¹

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Abstract

This paper aims to evaluate some proposals in the Five Presidents' Report in relation to their economic motivations and for their political economy implications.

To this purpose, we first identify and characterize two patterns of divergence within EMU and, to provide a broader comparison, the EU. We focus on the current account balances and on inflation differentials, and we relate the latter to differences in labor market institutions.

In a second step, we discuss the potential impact of the new policy tools and institutional arrangements proposed in the Five Presidents' Report to strengthen those structural features of the Economic Union, which are necessary for the good functioning of the Monetary Union.

We conclude that, while the proposed reforms have been correctly identified, the likelihood of their adoption or implementation appears weak, in the absence of strong incentives for member states. In this respect, the proposed EUBS is not only a desirable institutional reform in itself. In addition, making participation to EUBS conditional on the adoption of commonly agreed (possibly country-specific) standards aimed at improving macroeconomic convergence would provide a powerful incentive for member states to adopt the other, necessary reforms.

Thus it is likely that until EUBS, and possibly other measures that provide similar incentives for reform adoption, are adopted, the timeline for the other reforms is likely to remain frozen.

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¹ Email: riccardo.rovelli@unibo.it.

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I. Introduction

In December 2017 the European Commission (EC) published an array of proposals, under the broad headline of a "Roadmap for deepening Europe's Economic and Monetary Union". These proposals are a follow-up on the Five Presidents' Report of June 2015.

If these proposals will be adopted in the coming years, an impressive range of new powers and instruments would be entrusted to EU institutions, providing new tools for both purposes of macroeconomic stabilization and structural reforms.

This paper aims to evaluate some proposals in the Five Presidents' Report in relation to their economic motivations and for their political economy implications.

To this purpose, we first identify and characterize two patterns of divergence within EMU and, to provide a broader comparison, the EU. We focus on the current account balances and on inflation differentials, and we relate the latter to differences in labor market institutions.

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II. Preliminaries: How the adjustment problem was lost

The exchange rate of a country should be adjusted so that its cost structure will tend to be pushed neither downward nor upward by an artificial exchange rate.

An equilibrium exchange rate is therefore one that represents a "parity" in the cost structure of the different countries. It should not be very difficult to discover.

A.H. Hansen (1944)

The Werner Report (1970) was the first official document to argue in detail in favor of the idea that the European Community should implement a full monetary union (MU) among its members. The authors of the Report – which was published some time before the demise of the Bretton Woods arrangements – were motivated by a strong *belief* that a MU would be highly desirable:

"Economic and monetary union will make it possible to realize an area within which goods and services, people and capital will circulate freely and without competitive distortions, without thereby giving rise to structural or regional disequilibrium.

The implementation of such a union will effect a lasting improvement in welfare in the Community and will reinforce the contribution of the Community to economic and monetary equilibrium in the world." (id., p.9).

The Report went on to define that:

"A monetary union implies inside its boundaries the total and irreversible convertibility of currencies, the elimination of margins of fluctuation in exchange rates, the irrevocable fixing of parity rates and the complete liberation of movements of capital." (id., p.10).

The authors of the Report were well aware, as a matter of fact, of the (Mundell-Fleming) "policy trilemma".² In fact, even though they did not advocate (at least, not as a first step) the "adoption of a sole currency which would confirm the irreversibility of the venture" (id., p.10), they were explicit that, in the context of *complete liberation* of capital flows,

"it is indispensable that the principal decisions in the matter of monetary policy should be centralized, whether it is a question of liquidity, rates of interest, intervention in the foreign exchange market, the management of the reserves or the fixing of foreign exchange parities vis-a-vis the outside world." (id., p.10).

The idea that irrevocably fixed exchange rate parities within the boundaries of the European Community were highly desirable survived the breakup of the Bretton Woods arrangements and was the focal point first of the Delors Report (1989) and then of the "One market, one money" (OMOM) report by the European Commission (1990).

In synthesis, the latter argued that:

- (i) "Elimination of exchange rate uncertainty and transaction costs, and further refinements to the single market are sure to yield gains in efficiency (...)
- (ii) ... and will help further strengthen the trend of investment and growth.

² Although the concept had yet to be popularized (by Rudiger Dornbush, 1976) and formally named (by Maurice Obstfeld and Alan Taylor, 1998).

- (iii) The Community will achieve a "great advantage" in "attaining price stability at least cost, an then maintaining it" since it "has the opportunity of being able to build its monetary union on the basis of the reputation for monetary stability of its least inflationary Member States.
- (iv) "EMU will also bring valuable gains for many countries' national budgets through reductions in interest rates", which "will very probably outweigh the loss of seigniorage revenue"
- (v) In terms of adjusting to economic shocks, "EMU will reduce the incidence of countryspecific shocks. Relative real labour costs will still be able to change; budgetary policies at national and Community levels will also absorb shocks and aid adjustment, and the external current account constraint will disappear" (European Commission, 1990, p.11)

The last few words, about the *disappearance* of the current account constraint, are especially to be noted in the context of our paper. In fact, they echo an earlier statement in the Werner Report:

"For such a [monetary] union only the global balance of payments of the Community vis-a-vis the outside world is of any importance. Equilibrium within the Community would be realized at this stage in the same way as within a nation's frontiers, thanks to the mobility of the factors of production and financial transfers by the public and private sectors." (Werner Report, p.10).

Although the "One market, one money" report was clearly taking an optimistic perspective, there was an attempt to ground its optimism in articulated ways, suggesting that "EMU will have a very pervasive impact on the workings of the economy. Many different mechanisms will come into play and interact", generating benefits and costs (European Commission, 1990, p. 18). Indeed, the report identifies sixteen mechanisms that would operate through three

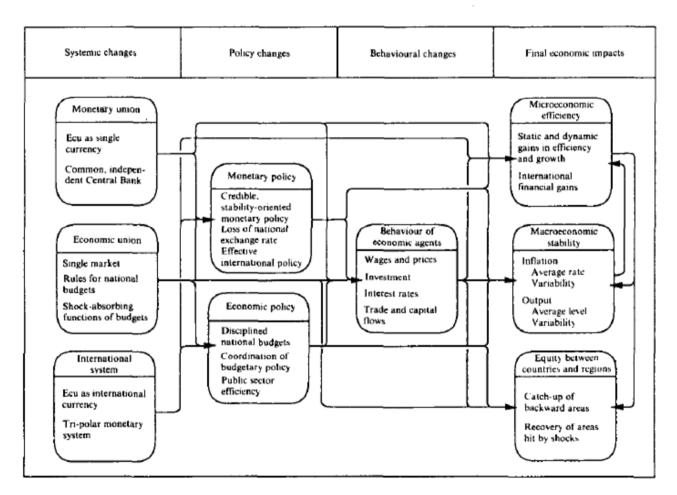
"successive phases: first systemic changes, these leading to actual policy changes, and then on to behavioural changes in the economy, before emergence of the final economic impacts in terms of the objectives of public policy. (id., p.18).

The final effects of EMU are synthesized in Figure 1 (which reproduces Graph 1.4 from the Report).

The move to EMU involves, in this graph, the decision on the systemic changes (column 1) plus setting up the single monetary policy (column 2, top). Obtaining the desired and desirable final effects, however, requires an intermediate stage of induced changes:

- Policy changes to be adopted by MS (column 2, bottom): Budgetary discipline, Coordination, Public sector efficiency.
- Behavioral changes to be adopted by private agents (column 3, top): changes in the wage and price setting modes, and in the spatial horizon assumed for investment decisions and for trade and capital flows.

Figure 1. Detailed scheme of the effects of EMU (from OMOM)



Source: European Commission (1990), p.19.

Without these induced policy and behavioral changes, the foreseen, desirable impacts of EMU might not become true. As mentioned above, the Report suggests that these changes should activate sixteen "mechanisms generating benefits and costs"³. Here I will briefly mention only the four mechanisms (11 to 14) "concerning adjustment without exchange rate changes"⁴:

- Mechanism 11 is the *loss of the nominal exchange rate instrument*.

 While this is assumed to be "the most important cost involved" (p. 24) in setting up a MU, the consequences of its loss "should not be exaggerated", thanks to the three other mechanisms:
- Mechanism 12: "some important prices can change still between regions (e.g. those of housing and commercial property) as well as wage costs"
- Mechanism 13: adjustments will become less necessary because
 - deeper 'intra-industry' trade and investment relations will reduce the country-specific impact of sector-specific shocks;
 - o a credible monetary union will affect the behavior of wage-bargainers;
 - o Emu itself will eliminate exchange-rate shocks as a source of country-specific shocks.
 - **3.1** Mechanism 14: Financial flows (from private markets, national budgets and the Community's structural policies) will be available to absorb shocks.

In practice, we may ask if these replacement mechanisms (12 to 14) were good enough to play their role. In the following sections we shall provide an answer in relation to specific aspects of some mechanisms, but here we anticipate some general issues.

As for the cross-country <u>adjustment of prices and wages</u>, the first years of EMU have witnessed the persistence of inflation differentials unrelated to Balassa-Samuelson effects. And, contrary to the expectations nourished by OMOM, these differentials seem to have provoked, rather than adjusted, the misalignment of real exchange rates across the union. When, after the Great Recession, a rebalancing of relative prices has taken place, it seems to have been driven by the traditional mechanisms of unemployment-induced deflation, rather than through the more virtuous mechanisms envisaged in the Report.

As for the claim that over time <u>adjustments will become less necessary</u>, in the last twenty years this question has been addressed by many researchers, following the empirical work of Frankel and Rose (1998), who indicated that greater trade integration would be correlated with greater cyclical correlation of GDP across countries. This finding has been interpreted to suggest the "endogeneity" of Optimal Currency Areas (OCA): in the sense that, as integration proceeds, a currency area would gradually develop the characteristics required by the normative literature on OCA. Skeptics about this conclusion find support in the observation that the Great Recession has amplified economic inequalities both across and within member states: dispersion of GDP per capita has increased across member states since 2007, and so have regional disparities within most member states.

As for shock-absorption through financial flows, while this takes place automatically, it is nevertheless still a source of political contentions, as it is often perceived to be equivalent to a forced (and non-transparent) mechanism of solidarity or redistribution across member states.

³ See Table 1 in European Commission (1990), p.19.

⁴ Interestingly, although OMOM mentions that "regional mobility could substitute for real wage adjustment to absorb a regional shock" (European Commission, 1990, p.151), it does not indicate internal migrations among these adjustment mechanisms.

III. The current account strikes back

"Under the pre-euro European monetary system, the exchange rate acted as a guard rail: whenever a country strayed from the path of discipline needed to keep its currency stable, it experienced a foreign exchange crisis which forced it to restore order to its finances and economy. (...)

By eliminating this external constraint, the introduction of the euro allowed some countries to persistently consume more than they produced. (...)

The crisis has taught us that we have under-estimated the effect of the removal of the external constraint. It taught us that the discipline resulting from the external constraint needs to be replaced by discipline imposed within the Eurozone which must go much further than the Stability and Growth Pact."

Edmond Alphandéry, The Euro Crisis. Fondation Robert Schuman policy paper n.240, May 2012.

In a MU, "the external current account constraint will disappear" (European Commission, 1990, p.18). This statement must be understood correctly: the current account does indeed disappear as a constraint, but should not disappear as an indicator of underlying unbalances. Unfortunately, the latter has indeed too often been the case: the euro-founders did not incorporate a mechanism for disciplining the current account among the tools of EMU governance, and some member states were thoroughly happily to also forget about the whole issue.

Table 1 provides an indirect support to this claim. The first three columns show the average current account balance as a ratio to GDP in three different periods: the last twelve years of the Bretton Woods era, the first ten and the last eight years of EMU. As the last row shows, the standard deviation of the current account balance (among the 11 EMU members, plus Denmark) was almost four times larger in the first decade of EMU than in the last period of Bretton Woods. At the same time, reversals of the sign of the balance were quite frequent under Bretton Woods: presumably an indication that countries had internalized the need to avoid fundamental disequilibria. Among the 12 countries included in the last row of the Table, 2.9 adjustments (sign reversal) took place on average every year during BW, but only 0.9 during the first decade of EMU, and 1.1 in the more recent period. Under BW, only Greece never changed sign; during the first period of EMU, seven countries never changed their sign.

We must interpret these facts with some caution, as it could be the case that either the distribution of macroeconomic disturbances or the availability of policy tools or both might have been different from Bretton Woods to EMU. Nevertheless, the more likely interpretation is, in my view, that stabilization/adjustment policies were considerably more reactive to current account imbalances under the former regime⁵.

⁵ On the other hand, realignments of the fixed parities took place only rarely. As Bordo (1993) reports, between 1949 and 1967 the only adjustments "were the Canadian float in 1950, devaluations by France in 1957 and 1958, and minor revaluations by Germany and the Netherlands in 1961".

EA 11+DK

Table 1. The current account balance: Bretton Woods versus EMU											
Countries		Average		No. ∆ sign per year							
	1960-71	1999-08	2009-17	1960-71	1998-08	2008-17					
Belgium	1.04	4.15	0.66	0.18	0.00	0.33					
Denmark	-1.79	3.23	7.23	0.18	0.00	0.00					
Germany	0.79	2.72	7.14	0.36	0.10	0.00					
Ireland	-2.22	-2.02	1.20	0.36	0.30	0.11					
Greece	-1.88	-10.65	-4.87	0.00	0.00	0.00					
Spain	-0.59	-6.00	-0.54	0.18	0.00	0.11					
France	0.35	0.47	-2.47	0.36	0.10	0.00					
Italy	1.62	-0.77	0.08	0.18	0.30	0.11					
Netherlands	0.85	6.15	8.69	0.36	0.00	0.00					
Austria	0.04	1.40	2.29	0.27	0.10	0.00					
Portugal	-2.93	-9.85	-3.12	0.18	0.00	0.33					
Finland	-1.44	5.50	-0.72	0.27	0.00	0.11					
Sweden	0.55	6.54	5.37	0.36	0.00	0.00					
UK	0.27	-2.73	-4.60	0.45	0.00	0.00					
USA	0.33	-4.10	-2.01	0.45	0.00	0.11					
Japan	0.45	3.17	2.48	0.55	0.00	0.00					
	Stan	dard devia	ition	Total No. Δ sign per year							
	1	· · · · · · · · · · · · · · · · · · ·		1	1						

Table 1. The current account balance: Bretton Woods versus EMU

Source: Ameco.

0.90

This suggests that, while a MU is indeed a more resilient institution than an ER agreement, in the sense that it provides a commitment to ER stability that is more costly to repudiate, this does not translate into a stronger incentive to internalize the behavioral constraints—required by participation to the MU: as if the strength of the hull reduced the alertness of the helmsman.

4.14

2.91

1.43

5.43

A related piece of evidence which is in accord with this view is provided in my earlier work (D'Adamo and Rovelli, 2015). Here we report that the "dual inflation differential" (defined as the difference in the differential of the non-tradables vs. tradables inflation rates between European "catching up" countries⁶ and the core euro area) is much higher (more than double) for those catching up countries that have adopted the euro (or pegged their exchange rate to it), relatively to those that retained a floating rate regime. In addition, we find that a higher dual inflation differential is strongly associated, especially for the period 1998-2008, with both a lower world export market share and with higher real labor costs – both result pointing to the fact that adopting the euro has resulted in a relative loss of competitiveness vs other EU member countries. In particular, euro adoption has lead on average (also taking into account the responsiveness of the inflation differentials rates to the exchange rate regime) to a 7% lower export market share.⁷ Again, these results points to the fact that adopting the euro may have induced countries to become less attentive to the evolution of domestic indicators of competitiveness.

In the following section, we shall examine in more detail the emergence of real imbalances, or divergences, following the adoption of the euro.

⁶ Catching up countries are defined as European countries with GDP per capita below 75% of the average among the EU 15 in 1998. These include 13 current EU members plus Turkey. Eight of these had either adopted the euro or a currency board regime.

⁷ See the results reported in Tables 9 and 10 in D'Adamo and Rovelli (2015).

IV. Patterns of divergence

"With the benefit of hindsight, 1999–2007 looks like a period in which good growth performance and a benign financial environment masked the accumulation of an array of macroeconomic, financial, and fiscal vulnerabilities." Philip Lane (2012).

In this section we locate two "symptoms of unbalance" within the EU and especially the EA: in the current account and in price level differentials. For each, we discuss their origin and possible consequences. In the following sections, we shall then discuss whether and which a policy reaction should be adopted.

IV.1. The current account

We noted in section II the asymmetric behavior of countries' current account balance between the BW and the EMU periods. Table 2 below focuses on the 19 euro area (EA) countries during the latter period.

The table is divided in four panels: the two above include the 12 countries that exhibited a deficit in 2007. Along this row, the panel on the left shows the data for 1998-2007: with the exception of Ireland and Italy, and to a lesser extent of Malta, the remaining nine had persistent deficits throughout the period, with the three Baltic countries and Greece ending below -15%. The panel on the right shows the same countries for 2008-2016: by the end of the period, only Cyprus, Latvia and Lithuania still show a (modest) deficit; all the others have turned to a surplus.

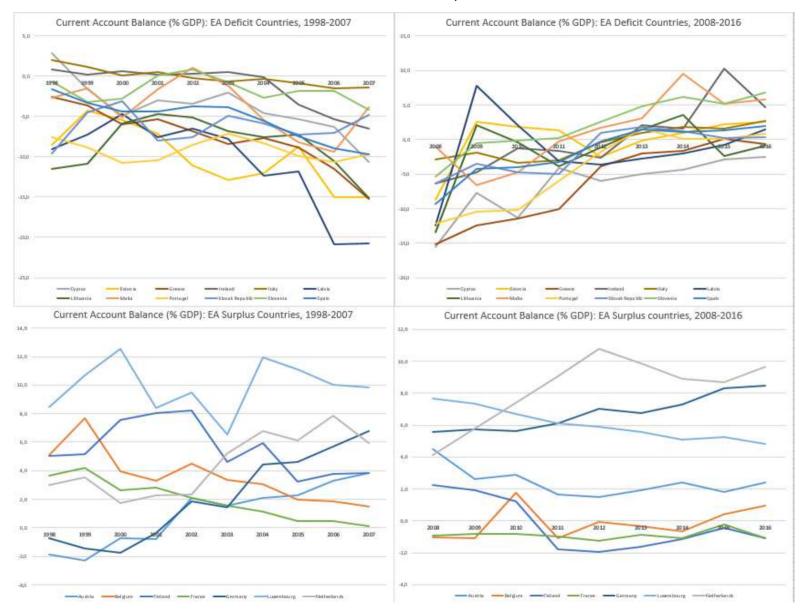
The lower row shows, again for two separate sub-periods, the seven countries that had a surplus in 2007: differently from the previous group, on average they maintained their positions across both sub-periods. The notable difference is for Germany and the Netherlands: both have been almost steadily increasing their surplus from 2000 until 2016, reaching sizeable surpluses by the end of the period (8.5% and 9.6%, resp.). In this group, only Belgium, Finland and France have been reducing their surpluses between the two periods, reaching fairly balanced positions towards the end.

Two main observations can be made out of these graphs: first, deficit countries have reversed their positions, presumably under the pressure of the Great Recession and the financial crisis; second, surplus countries have not adopted a symmetric behavior. As a result, while the EA had an almost balanced current account vis-à-vis the rest of the world between 1999 and 2008, it then began to accumulate surpluses, reaching 3.3% of GDP in 2016.

A natural question to ask is: does all this matter? Maurice Obstfeld (2012) argues in favor of a positive, even if importantly qualified answer. According to him (i) policymakers must continue to monitor global current accounts, but (ii) this is not sufficient to ensure global financial stability, since "large gross financial flows entail potential stability risks that may be only distantly related, if related at all, to the global configuration of saving investment discrepancies".

Figure 2.

EA19: Current Account Patterns, 1998-2016



Data source: International Monetary Fund, World Economic Outlook Database, April 2017.

Nevertheless, he concludes that "looking at the current predicament of the euro zone, it is easy to argue (unfortunately, with hindsight), that its members' external imbalances after 1999 were symptomatic of unsustainable trends – Greece's government deficit, housing and construction booms in Spain and Ireland, and excessive private borrowing in Portugal, with finance provided in large measure by European banks (including banks in surplus countries)", that eventually found themselves in trouble.

At the macroeconomic level, "a current account deficits creates a basic vulnerability to a sudden stop in financial inflows" (Obstfeld, 2012): this, however, should be a lesser concern within a MU - where (just like among regions within the same country) net cross border flows of cash should occur almost automatically. Nevertheless, there can still be some problems associated with such deficits:

- (i) Cash flows are intermediated through the banking system and, as the debate on the Target2 payment system has shown, persistent current account deficit (surpluses) in some member states imply that the respective national central banks end up accumulating gross and net liabilities (claims) vis-à-vis Target2 over time.⁸ In turn, this may become a source of concern as the Target claims represent an exposure risk in case of a euro break up. This problem, clearly, would be of no concern between regions within a single state. It may be a source of considerable concern, however, within EMU.
- (ii) More generally, to the extent that a current account deficit is financed, or in general accompanied by an exposure to foreign credit, any domestic financial crisis would be amplified by the sudden stop in external financing, which would force domestic deleveraging and a larger collapse in aggregate demand.
- (iii) Alternatively, if a current account deficit generates domestic inflationary pressures, in a MU it would have the paradoxical effect of (ceteris paribus) lowering domestic real interest rates, thus creating a domestic monetary easing relative to the average monetary policy stance adopted by the ECB.

In my view, it is hard to neglect the importance of these issues. But which is then the appropriate way to take them into account? The European Commission has acknowledged that, before the crisis, there was little effort to contain the building up of macroeconomic imbalances. This understanding has resulted in the adoption of the European Semester for policy coordination, and in the monitoring of additional indicators of macroeconomic imbalance within the EA. But, as the above discussion has pointed out, macroeconomic imbalances are correlated with financial imbalances (and thus the spreading of financial risks). This clearly complicates both the definition and the adoption of appropriate solutions. This is a question that will be examined in the final section.

In addition, the origins of current account imbalances must be identified, and solutions to excessive buildups of liabilities must be found also at the origin.

Broadly speaking, a country might develop a negative current account balance either because of faster growth (if growth leads imports to increase faster than exports) or of worsening competitiveness (or a combination of both). In a MU, the simplest indicator of changes in competitiveness is given by a cumulated price level differential. In turn, domestic prices might grow faster than in competitor countries because of demand or supply pressure.

⁸ See e.g. Buiter etal. (2011) and Sinn (2012)

On the dynamics of price (and wage) differentials across the EU and the EA, unfortunately, we do not know enough. To the extent that price differentials accumulate after asymmetric demand pressures, this may originate from inappropriate demand management in some member states, thus from the domestic fiscal stance. Supply pressures may instead originate whenever the growth of nominal wages in the "non-sheltered" sectors⁹ exceeds the growth rate of labor productivity in the same sectors. There may be many different reasons for this to happen. For instance, high wage growth in relevant "sheltered" sectors (such as, possibly, public sector employees) may spread, because of Keynes' "relativities"¹⁰, to the other, non-sheltered sectors, possibly causing there a growth of nominal wages higher than the rate of growth of labor productivity. For the same reason, "transparency" of wage settlements across countries may induce a higher correlation in the growth of nominal wages between countries, paradoxically diminishing the correlation between domestic wage and productivity growth.

In the following section, we examine some aspects of the differential dynamics of cumulative price changes within the EU. A wider, comprehensive survey of the determinants of these differentials is badly needed but, unfortunately, beyond the limited purposes of this study.

IV.2. Inflation differentials¹¹

Even in a MU, inflation differentials may persist and cumulate over time. At first sight, this is surprising. While short-lived differentials may be a desirable feature of adjustments towards an equilibrium (for instance, as argued in European Central Bank, 2005), the persistence of such differentials over time may reflect (possibly undesirable) institutional differences in the labor and/or in the product markets and may affect the relative competitive positions of countries as well as their external (im)balances.

In fact, even persistent price (and inflation) differentials within a MU are not necessarily harmful. They may be benign, if they are due to the "Penn effect", which may be explained by the Balassa-Samuelson hypothesis. They may be harmful, within a currency area, if related to differential trends in unit labor cost and/or markups between previously homogeneous countries. In addition, as competitiveness losses cause current account imbalances, the resulting capital inflows may induce further price increases, exacerbating the problem.

How large are these differentials in the EA?¹² Table 2, panel A, summarizes the evidence for all the EU (and EA) members. For convenience, all figures are reported as differences from the German inflation rate. The striking fact about inflation differentials in the EA is their persistence – which sets them apart from differentials in other MU, such as the USA. Persistence over time leads to sizeable price differentials: as can be seen from Table 2, panel B, the cumulated price differential versus Germany in the period 1999-2007 was 29% for Latvia, 21% for Estonia and between 11% and 15% percent for Greece, Ireland, Portugal and Spain.

⁹ That is, sectors or industries producing tradeable goods or services.

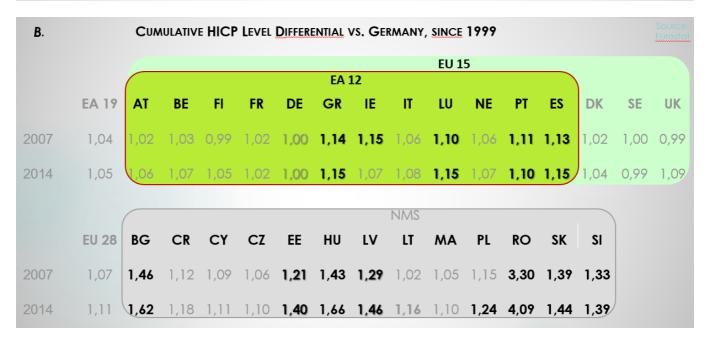
¹⁰ Or labor market homogeneity, as we would define it today.

¹¹ This section borrows extensively from an unpublished paper, D'Adamo and Rovelli (2018).

¹² The first to comment on this phenomenon were, to my knowledge, Angeloni and Hermann (2004); ECB (2005) and De Grauwe (2006).

Table 2. Inflation and Price Differentials in the EU, 1999-2014

A. AVERAGE YEARLY HICP INFLATION IN THE EU, 1999-2014: DIFFERENCE FROM GERMANY														Source: Eurostat	
	EU 15														
EA 19	AT	BE	FI	FR	DE	GR	IE	IT	LU	NE	PT	ES	DK	SE	UK
Ave.1999-07 0,5	0,2	0,4	0,0	0,2	0,0	1,6	1,8	0,7	1,2	0,8	1,4	1,6	0,4	0,0	0,0
Ave.2008-14 0,1	0,6	0,5	0,8	0,0	0,0	0,1	-1,1	0,3	0,7	0,2	-0,2	0,2	0,2	-0,2	1,3
							NMS								
EU 28	BG	CR	СҮ	CZ	EE	HU	LV	LT	MA	PL	RO	SK	SI		
Ave.1999-07 1,1	4,6	1,6	1,0	0,7	2,4	5,2	3,1	0,3	0,7	2,3	20,2	4,9	3,9		
Ave.2008-14 0,5	1,6	0,9	0,4	0,6	2,2	2,1	1,9	2,0	0,7	1,2	3,2	0,5	0,6		



In part, these differentials may be explained by the Balassa-Samuelson effects. To explore this issue, we may look at Table 3, which is based on the data used by D'Adamo and Rovelli (2018). In that paper, we model separately the behavior of prices in sectors producing tradable vs. non-tradable goods and services, distinguishing the two broad sectors on the basis of their effective degree of tradability¹³.

Comparing countries, inflation differentials are higher for the non-traded (NT), but still quite sizeable also for the traded (T) sector. In particular, inflation (INF) in T is higher for the four Mediterranean countries (and for Luxembourg) relative to the rest of the EA11 and Denmark.

¹³ Tradability is defined for each sector as the ratio between the value of international trade and gross value added.

Also, within each country, INF_NT > INF_T, and the average differential is well above 2% in a large group of countries: Czech Republic, Estonia, Ireland, Lithuania Slovakia, Slovenia, UK: these include some, but not all the new member states, where Balassa-Samuelson may explain a good part of the differential¹⁴. It also includes older member states, like Ireland and the UK, where Balassa-Samuelson is most certainly not involved.

Overall, the inflation rates reported in Table 3 suggest that there are factors quite different from price level convergence or initial monetary conditions or different monetary policy goals, which have generated sizable inflation differentials within the EU and the EA since 1999.

Table 3.

	TRADED & NON-TRADED SECTORS: AVERAGE INFLATION, EU 26, 1994- 2012												
	AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE
INF_T	1,23	1,78	5,8	2,32	4,05	1,5	6,55	1,02	1,43	1,37	3,7	4,92	1,44
INF_NT	2,24	2,11	6,71	2,93	7,37	2,91	10,29	2,52	2,07	1,58	5,02	5,92	3,76
	IT	LV	LT	LU	NE	PL	PT	RO	SK	SI	ES	SE	UK
INF_T	2,29	4,89	3,11	2,25	1,57	4,78	1,97	9,94	4,72	5,08	2,5	1,47	0,55
INF_NT	2,87	6,23	5,56	2,5	2,71	6,61	3,69	10,2	7,34	8,48	3,6	2,17	3,58

Source: D'Adamo and Rovelli (2018).

What factors can potentially explain these persistent differences in inflation rates, also in the traded sectors? As anticipated above, these factors may originate either from the pressure of domestic aggregate demand or from objectives and constraints that bear on labor market negotiations and price-setting practices – hence from labor and product market institutions. Consistently with this, in a simple markup model, the rate of change of output prices may be related to changes in the markup plus the rate of change of wages minus that of productivity. In the section below we focus on one single –and hitherto not much studied - aspect of this model.

IV.2.1. The role of labor market institutions

In D'Adamo and Rovelli (2018) we explore in particular the role of two institutions, wage coordination and union density, that may have persistent effects on wage and price dynamics. Differently from state regulations and policies, such as employment protection laws, unemployment benefits and active labor market policies, these institutions are likely to affect *directly* the bargaining power and goals of labor market participants.

In general, we expect that:

- 1. The interactions between shocks and labor market institutions may amplify the size and persistence of the effects of shocks on inflation (à *la* Blanchard & Wolfers, 2000);
- 2. For catching up countries, the persistence of the Balassa-Samuelson effect should be reflected in the persistence of higher inflation in the non-traded sectors;

¹⁴ See also Egert (2007).

3. Stronger bargaining power of labor may induce persistent goal of increasing wages, without necessarily internalizing the effect on inflation.

On the last point, we expect in particular that more coordination in collective wage bargaining may generate emulation, and thus:

- 3.1. Wage increases following productivity increases in one industry may lead to higher wage claims in other industries, thus raising the general inflation rate;
- 3.2. Wage responsiveness to macro shocks may decrease, as more exposed sectors want to keep up with less exposed ones, thus flattening the Phillips Curve;
- 3.3. Workers may «collude» across sectors to prevent wages being eroded by higher import prices, leading to higher real exchange rate pass-through.

We test our hypotheses in the framework of a modified Phillips curve, which is applied separately to the determination of inflation in the traded and non-traded sectors.

Our empirical results¹⁵ provide a strong support for the view that labor market institutions do affect inflation both directly and indirectly, through their interaction with macro shocks, and in particular that stronger wage bargaining coordination and higher union density:

- **a.** are associated with higher inflation in both sectors, and especially for tradables;
- **b.** increase the persistence of inflation in the less exposed (non-traded) sectors);
- *c.* reduce the sensitivity of wages and henceforth prices to unemployment shocks, hence the Phillips curve is flatter;
- **d.** generate a stronger reaction (pass-through) of inflation to real exchange rate shocks, especially in the traded sectors.

A graphical summary of these results is given in Figure 3, where countries have been divided in three separate groups (panels), from left to right, on the basis of the increasing extent of wage coordination. The following patterns can be easily detected:

- (i) Inflation persistence, as measured by the coefficient of inf(t-1), is quite similar for the traded sector across the three groups of countries (around 0.1).
- (ii) For the non-traded sectors, inflation persistence is substantially higher, and it is somewhat increasing with the degree of wage coordination (from around 0.3 in panel b.1 to 0.4-0.5 in panel b.3).
- (iii) On the other hand, the negative response of inflation to unemployment shocks (*unem*) is much more pronounced (i.e., the Phillips curve is much steeper) in countries with low wage coordination (panels a.1 and b.1), whereas the point estimate appears marginally positive in countries with high coordination (panel a.3). In addition, and for all three groups, the negative impact is more pronounced for the non-traded sectors (all panels b vs. panels a).
- (iv) The response to real exchange rate shocks (the exchange rate pass-through, *reer*) is close to zero for countries with low coordination, whereas it is always negative for the other groups, and is especially high for the traded sector in countries with a high degree of wage coordination (panel a.3), approaching 0.3 in the case of Belgium and Ireland (pre-2009).

Overall, these observations contribute to depict a coherent pattern: in countries where wage bargaining is more coordinated, prices become less flexible in response to cyclical shocks. This in turn:

¹⁵ The methodology adopted in the research and the detailed estimation results are presented in D'Adamo and Rovelli (2018).

- produces a higher persistence of inflation in the less exposed (non-traded) sectors);
- reduces the response of inflation to unemployment shocks ("flattens" the Phillips curve);
- increases the exchange rate pass-through, thus isolating wages from negative exchange rate shocks, especially in the traded sectors.

Without entering in more detailed comments, we may in passing also notice that our result (*a.*) contradicts the Calmfors and Driffill's (1988) hypotheses of a hump-shaped relationship between centralization and the outcomes of wage bargaining.

How can we rationalize our findings? Orthodox theories of trade union behavior and objectives do not provide much help. One tract that these theories have in common is "that they rely on simple spot contracts in the labour market and disregard that labour contracts can be rather sophisticated long-term constructs with aspects of risk-shifting and intertemporal utility smoothing" (Horn and Svensson, 1986). Horn and Svensson then go on to suggest that, alternatively, we should view "an employment contract as a longer-term relationship. In line with this, we think that to regard the labour market as a market for spot contracts, as is done in most of the trade union literature, can be seriously misleading" In the same vein, Agell (2002) has suggested that "many characteristics of European labor markets (like employment protection, compressed wage structures and collective bargaining) can be thought of as second-best instruments of risk sharing, which make up for the absence of a complete set of contingent markets". It is also consistent with this view that "risk averse workers are prepared to pay a premium … to be insured against (real) income variability" (Checchi and Lucifora, 2002).

More recently, this line of thought has re-emerged in the debate on the role of collective bargaining in influencing the share of labor in the distribution of income (see Askenazy et al, 2018).¹⁷

Building on the assumption that trade unions may seek to stabilize over time both real wages and employment levels, we show the possibility of such an outcome in Figure 4. It is convenient to think of the graph as portraying labor market equilibrium in the case of an industry with many imperfectly competitive firms and a single trade union. Panel 4.1 reproduces some well-known "textbook" equilibria, in the case of a labor demand curve, L_0^D , stable over time. w_0 is the relevant opportunity real wage. With no unions, or a powerless union, equilibrium will be at point A. Curve Π_0 is the isoprofit curve drawn at the level of zero profits.

Thus, if the union acts as a monopolist and is able to extract all the firms' rents, equilibrium will instead be at point M on the intersection between this curve and labor demand. However, as long as the union has some bargaining power, it will recognize both equilibria A and M to be improvable. To see how they can be improved, we draw the curves U_0 and U_1 to represent two of the union's indifference curves. It is easy to see that, assuming efficient bargaining, an outcome such as point E might then be mutually agreed between the firms and the union. Things are different, however, when labor demand cannot be assumed stable through the industry's business cycle.

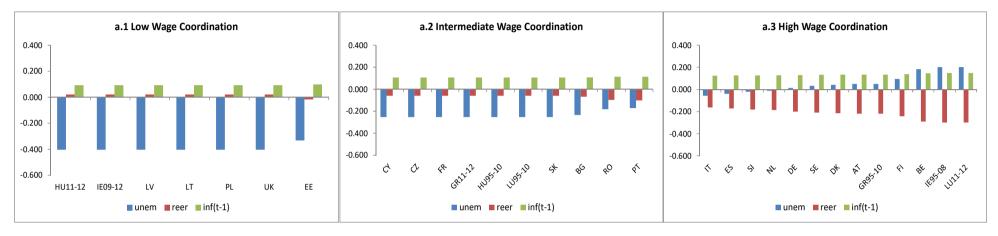
¹⁶ An earlier proponent of the approach followed by Horn and Svensson is Hall (1980).

¹⁷ In a parallel line of research, Ciminelli and Furceri (2017) have suggested that countries offering higher employment protection tend to have a lower level of inequality.

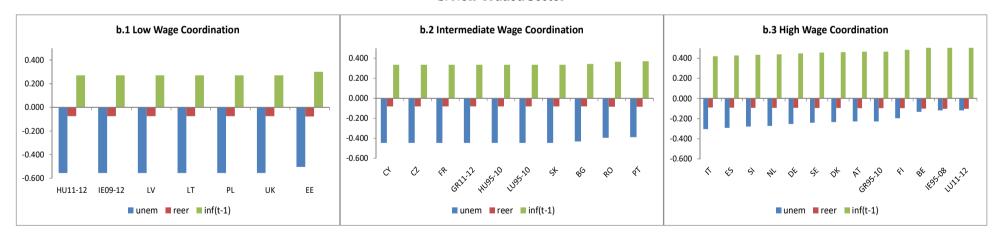
¹⁸ See for instance Booth (1995, ch.5) or Boeri and van Ours (2008, ch.3).

Figure 3. Inflation response to macro shocks by country

a. Traded Sector



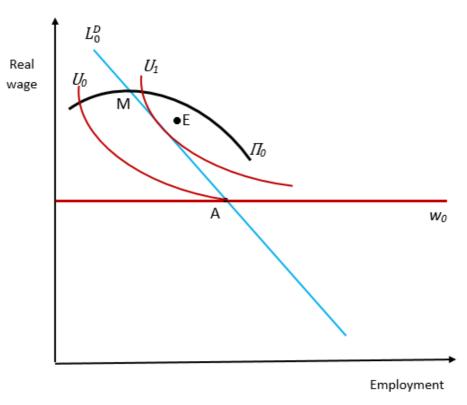
b. Non-Traded Sector



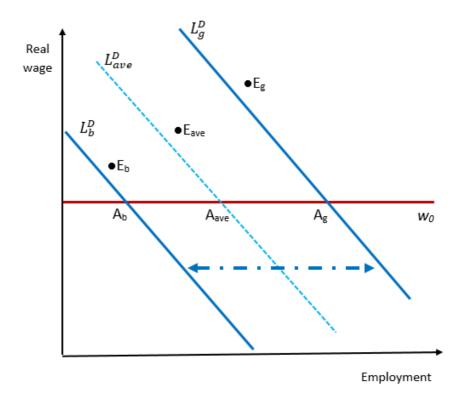
Source: D'Adamo and Rovelli (2018).

Figure 4. Labor market equilibria and union stabilization objectives

4.1. Equilibria in the one-shot case



4.2. Efficient and competitive equilibria when labour demand oscillates



Source: D'Adamo and Rovelli (2018)

In panel 4.2, labor demand is assumed to oscillate between L_b^D and L_g^D , and accordingly the one-period equilibria will jump between E_b and E_g (in the case of efficient bargaining) or A_b and A_g (in the case of a powerless or non-unionized labor market¹⁹). In this case, if workers are inter-temporally risk-averse, they might prefer to reduce the variability of the real wage, or of the employment level, or possibly both. To show just one possibility, points E_{ave} and A_{ave} illustrate the outcome of the latter situation, respectively for the case of efficient bargaining and of a powerless union. In fact, as long as firms face non-negligible hiring and firing costs, also a union which has no bargaining power towards firms but commands authority over the workers would be able to strike a credible agreement to keep the employment level constant at a point such as A_{ave} . In either case, firms would end up providing fair-price insurance to stabilize the workers' incomes over the business cycle.

Turning back now to the interpretation of our empirical findings, the fact that greater bargaining coordination is associated with flatter Phillips curves and with more complete exchange rate pass-through suggests that the outcome of coordinated bargaining tends to focus on wage more than on employment stability. In turn, this is a plausible outcome when, within the unions, the bargaining power favors insider workers (who ask for wage stability) rather than outsiders (who are left to bear the costs of employment variability).

Based on these discussions, there is one point that we may carry over to more general settings. This may be summarized as follows. Assume risk-averse workers and a collective bargaining process. Then, the stronger and more coordinated are the labor unions, the more likely they are to obtain enforceable outcomes, which are preferable (for workers) in the inter-temporal wage-employment space. This will then result in different paths of co-variability, over the business cycle, between real wages, aggregate demand and employment levels. In addition, since in practice negotiations are made in reference to nominal wages conditional on observed or expected prices, also the business cycle correlations between inflation and real variables, both at each industry's and at the aggregate level, will be affected by the outcome of labor market negotiations. In this setting, in comparison to a world of more flexible wages, it would not be surprising to observe flatter Phillips curves and more complete exchange rate pass-through. These patterns of adjustment would plausibly be affected by the extent of labor markets segmentation (between insiders and outsiders), by unions' objectives and by their degree of coordination across industries.

A more precise description of these patterns of variability would be feasible in the context of a general equilibrium analysis, whose scope is beyond the purpose of the present paper.

IV.2.2. Policy implications

Even outside a formal macroeconomic framework to interpret our findings, they may lead to two broader considerations, in reference to the theory of optimal currency areas.

First, in the view proposed by Mundell (1961), it was up to labor mobility and/or (real) wage flexibility to provide the necessary conditions for a "classical" adjustment mechanism to work among countries faced, within the same currency area, with asymmetric ("idiosyncratic") shocks.

Initially, proponents of the common European currency often minimized, optimistically, the practical need to employ such classical adjustment mechanisms. For instance, OMOM claimed that "EMU will reduce the incidence of country-specific shocks" (European Commission, 1990). However, in

¹⁹ And assuming for simplicity the opportunity wage to be constant over the cycle.

particular since the Great Recession, reliance on the classical adjustment mechanism, based on wage flexibility, has been reaffirmed as the prevailing, almost "natural" adjustment mechanism: *internal devaluation* is the new name of the old adjustment mechanism.

In this respect, our discussion above suggest that excessive reliance on wage flexibility (and on the institutional adjustments that may be required to implement it in full), may entail relevant costs, which follow from the erroneous assumption that wage contracts are spot contracts, rather than as longer term arrangements with some implied insurance provisions.

Second, our results confirm the opinion that institutional differences in the labor markets "can lead to divergent wage and price developments [in a monetary union], even if countries face the same disturbances" (De Grauwe, 2016). They point out clearly that, even in a MU, greater wage coordination is associated with higher inflation in the traded vs. non-traded sectors and with a stronger response of inflation to unemployment and real exchange rate shocks in the traded sectors.

Should this observation translate into a simple normative recommendation that EU and especially EMU members should pursue less coordination and more wage flexibility? This conclusion is not supported by our results, and would actually contradict our interpretation of those results. To understand this point we observe that, within the same group of countries with a high degree of wage coordination (Panels a.3 and b.3 in Figure 3), we find both those considered to be the "virtuous" members of EMU (Austria, Belgium, Denmark, Finland, Germany, the Netherlands and Sweden – countries whose current account has generally been in surplus, especially until 2007) as well as the "laggards" (Greece until 2010, Ireland until 2008, Italy and Spain – which were in deficit during those same years).

The observation that high wage coordination and union density can be associated with either a good or a bad overall macroeconomic performance should induce us to refrain from accepting excessively simplistic claims on the importance of unqualified wage flexibility. The claim that institutions such as coordinated bargaining or labor unions have no purpose other than preserving the rents of labor market insiders is unjust. On the contrary, these institutions may both strengthen the bargaining power of labor in bilaterally non-competitive settings and provide fair insurance against unfavorable events over time. The challenge of governance, also within EMU, is thus to preserve the welfare-enhancing characteristics of labor market institutions while at the same time discouraging wage claims that are incompatible with macroeconomic stability. This leads us into the topic of the next section.

V. Towards a new governance for EMU?

In this paper we have examined some diverging trends that have emerged among EU and EA economies, and we have argued that they are analogous to those which, in a fixed exchange rate regime, would signal the need for "fundamental adjustments".

In particular, in the previous section, we examined two patterns of divergence within the macroeconomies of the EA: current account imbalances and persistent inflation differentials; the latter we have also related to the heterogeneity of institutional settings within domestic labor markets.

We focused only on these divergences for reasons of space and we chose them because they are too often forgotten in both policy and academic debates.

As we now move on to discuss more general issues of governance within EMU, it is helpful to remember that other profound divergences have also emerged:

- Attitudes towards the use of fiscal policies, which have resulted in innumerable "excessive deficits" and also in extremely high (to the point of being unsustainable) debt ratios.
- Diverging levels of institutional quality and socio-economic characteristics.
- Diverging trends in productivity, between and within member states, which have also resulted in different trends in potential (and actual) output growth²⁰
- ... and diverging trends in unit labor costs, which are the combined effect of the dynamics of productivity and of wage bargaining. These have an obvious impact on price dynamics, and are then mapped into accumulating imbalances in the current account.

Focusing on diverging price levels, within a MU adjustments could take place through "internal devaluations": but these can be painful and costly. On the other hand, if no adjustment is undertaken, the resulting imbalances may have two damaging consequences:

- They weaken the resilience of the macroeconomic systems to adverse shocks.
- They pit "surplus" vs "deficit" countries against each other, reducing the political cohesion among MS.

Both have materialized since the Great Recession and the ensuing financial/sovereign crises. With the benefit of hindsight, it would have been much better to prevent these imbalances. The question is how.

For too long, the rhetoric of EMU has accepted the proposition that, in a MU, the external constraint disappears.²¹ This is incorrect. First, most arguments about the "endogeneity of OCA" have proven empirically wrong: if at all, asymmetric shocks have been amplified, rather than reduced. Second, the external constraint disappears only among regions of a fully integrated economic, monetary,

²⁰ These are extensively documented by Berlingieri, Blanchenay and Criscuolo (2017) and Diaz del Hoyo et al. (2017).

²¹ Notice that this observation has nothing to do with the issue of whether long run convergence has or is taking place among the participating countries. Long run convergence is defined with respect to GDP per capita levels. Accumulating imbalances in the current account may happen between countries which share the same of GDP p.c., and *vice-versa* countries with sharply different GDP levels may have perfectly balanced accounts.

financial and *political* union²². EMU, as part of the EU, is aiming and for several aspects close to be a complete union in the first three dimensions – not at all in the fourth and critical one.

If we accept this as a matter of fact – as a binding constraint – then it follows that the best feasible option is to *prevent* the need for fundamental adjustments – just as much as "too big to fail" financial institutions must be prevented from failing.²³ This requires that arising divergences must be spotted as soon as they develop, and individual member countries should then be induced to respond quickly to them.

In order to respond promptly and efficiently to arising imbalances, proper mechanisms of governance must be in place – and they must activate remedial actions within individual member states. To date the practice and the rhetoric of the MU have de-emphasized the need for such actions. Hence, incentives to act must be put back in place.

Most of the actions now on the table (and also the reforms that have already been put in place) aim to tackle sources of financial vulnerability (hence, the proposals to complete the Banking and the Capital Markets Unions) and to increase the tools for EA-wide stabilization.²⁴ These are necessary, important and urgent reforms. But they are not sufficient. Measures to induce member states to address potential imbalances to the external constraint must be added to this list.

Here, I briefly examine the Five Presidents' Report (Juncker et al, 2015) from this perspective. The Report openly acknowledges that "today's divergence creates fragility for the whole Union" and proposes four parallel roads ("fronts") to reform, respectively named as a "genuine" Economic Union, a Financial Union, a Fiscal Union and a Political Union²⁵.

I focus on the proposals for the Economic Union, as they are the ones more closely related to the issues raised in the previous sections of this paper. The general purpose of these proposals is to strengthen those structural features of the economic system, which are necessary for the good functioning of the Monetary Union. On this front, there are four proposals ("pillars"), which should have been implemented during a first stage, between 2015.07 and 2017.06:

- A system of Competitiveness Authorities within the EA. These independent, national authorities should have a mandate to 'assess whether wages are evolving in line with productivity and compare with developments in other euro area countries and in the main comparable trading partners'.
- A stronger Macroeconomic Imbalance Procedure (MIP, already part of the European Semester), "to prevent and correct imbalances before they get out of hand".

²² Even within a political union, it might generate separatist tensions, such as those that originated within both Italy and Spain.

²³ Unless, of course, one supports a catastrophic view of Monnet's functionalism: but catastrophes do not strengthen the EU. Rather, there is a risk that they may lead to *dis-integration*.

²⁴ See, in addition to the Five Presidents' Report (Juncker et al, 2015), the Commissions' Reflection Paper on the Deepening of the EMU (European Commission, 2017a) and the large debate that has preceded and followed it.

²⁵ The reference to a "Political Union" seems, on reading the related proposals, in fact a misnomer, as the reforms suggested on this front are merely a strengthening of certain aspects of democratic accountability and legitimacy, and a rationalization of already existing inter-governmental arrangements.

- A stronger focus on employment and social performance (also part of the European Semester), which includes the monitoring of labor markets flows and institutions and also of the related education and social systems.
- A stronger coordination of economic policies (also part of the European Semester) which should essentially give member states clear recommendations to "focus on priority reforms" and hold them accountable for delivering on their commitments. This process should be based on two successive levels of analysis and recommendations: first at the EA level, and then at the countries' level.

These pillars clearly point in the correct directions, where action should be taken (by member states) to prevent or where necessary to overcome the real divergences that so far have undermined EMU. Also, these proposals are consistent with the (partial) diagnoses of the causes of price level divergences and current account imbalances that have been discussed in the previous sections. In addition, the Report has adopted a much less "arrogant" view of the benefits of EMU: in particular, it admits that "relative price adjustment will never occur as quickly as exchange rate adjustment" 26,27.

On the other hand, the obvious weakness of this procedure is not only its (unavoidable) lack of binding mechanisms, but also the lack of strong incentives, beyond "self-interest" and peer pressure.

Possibly as a response to this criticism, the Report suggests that, during Stage 2, "the convergence process ... should become more binding". This would take place first by agreeing on a set of "common high-level" standards (to be defined in EU legislation). These standards "should focus primarily on labour markets, competitiveness, business environment and public administrations, as well as certain aspects of tax policy (e.g. corporate tax base)".

This list of desirable standards is correct, but also extremely ambitious. Given the diversity of preferences among member states, converging in the definition of common standards appears a herculean task. Nevertheless, it is necessary!

As for the lack of incentives, this would also be remedied in the second stage, as "Significant progress towards these standards – and continued adherence to them once they are reached – would be among the conditions for each euro area Member State to participate in a shock absorption mechanism for the euro area during this second stage".

This last proposal (which in practice would result in the adoption of a European Unemployment Benefit Scheme, EUBS) is in my view the keystone of the whole set of proposals to strengthen the

²⁶ A statement that echoes Milton Friedman's (1953) defense of the superiority of flexible exchange rates: "If internal prices were as flexible as exchange rates, it would make little economic difference whether adjustments were brought about by changes in exchange rates or equivalent changes in internal prices. But this condition is clearly not fulfilled. The exchange rate is potentially flexible in the absence of administrative action to freeze it. At least in the modern world, internal prices are highly inflexible. They are more flexible upward that downward, but even on the upswing all prices are not equally flexible. The inflexibility of prices, or different degrees of flexibility, means a distortion of adjustments in response to changes in external conditions. The adjustment takes the form primarily of price changes in some sectors, primarily of output changes in others" (Friedman, 1953).

²⁷ The Report also takes a balanced approach to the desirability of labor market flexibility: while reaffirming the importance of "efficient labour markets that promote a high level of employment and are able to absorb shocks without generating excessive unemployment", it also states that "what matters is the outcome", and that "there is no 'one-size-fits-all' template to follow"

"Economic Union". ²⁸ In its absence, the whole process would most probably only result in cheap talk. The delay - if not the total neglect - that can already be observed in the realization of "stage 1" of the Economic Union is extremely revealing in this respect: no progress in the absence of strong incentives.

"Self-interest" of member states is not a sufficient motive to ensure the adoption of reforms that are quite hard if not impossible to adequately motivate in front of the skepticism of domestic public opinion. If this is the case, then the necessary reforms or procedures could either be imposed from the top (through harmonization) or adopted from below in the presence of sufficient incentives. In this case, however, harmonization would be inappropriate from the point of view of a desirable attribution of competences between member states and the Union, and unfeasible (illegal) from the point of view of the existing attribution of competences.

Thus, the only viable solution is that reforms should be adopted "from below" (that is, by member states) thanks to appropriate incentives.

In this perspective, conditional participation to EUBS (as stated above) is a perfect incentive, as EUBS would be a highly desirable achievement from the view point of the Union (as it would radically improve the set of the existing tools for macroeconomic stabilization) and also of the member states (as its benefits would be easy to motivate to the domestic voters).

In the same spirit, other measures should be adopted that provide similar incentives for reform adoption: for instance, measures that make access to EU structural funds, conditional on the adoption or achievement of commonly agreed (but possibly country-specific) standards aimed at improving macroeconomic convergence.

Thus, it would be a pity if unjustified worries among (certain) member states concerning possible situations of moral hazard that EUBS and other reforms could generate would delay its realization.

As a final related remark, it would be appropriate if not urgent to revise and adjourn in the light of the accumulating evidence also the Maastricht Convergence Criteria (Protocol 13 to the Treaty on the Functioning of the European Union). Despite their inadequacy, which is apparent also in the light of the above discussion, these criteria still provide today the benchmark for examining convergence in the perspective of euro adoption by member states with a derogation. This is awkward and potentially dangerous. A fuller discussion of this point is beyond the scope of this paper.

²⁸ See Brandolini, Carta and D'Amuri (2014).

References

- Agell, J. (2002) "On the Determinants of Labour Market Institutions: Rent Seeking vs. Social Insurance". *German Economic Review* 3 (2), pp.107-135.
- Alphandery, E. (2012) "The Euro Crisis". Fondation Robert Schuman, Policy Paper no. 240, May-
- Angeloni, I. and Ehrmann, M. (2004) "Euro area inflation differentials". ECB Working Paper No. 388.
- Askenazy, P.; Cette, G. and Maarek, P. (2018) "Rent-Sharing and Workers' Bargaining Power: An Empirical Cross-Country/Cross-Industry Panel Analysis". *The Scandinavian Journal of Economics*. 120(2), pp. 563-596.
- Berlingieri, G.; Blanchenay, P. and Criscuolo, C. (2017) "The Great Divergence(s)". OECD Science, Technology and Innovation Policy Papers, May, No. 39
- Blanchard, O. and Wolfers, J. (2000) "The role of shocks and institutions in the rise of european unemployment: the aggregate evidence". *The Economic Journal* 110, pp. C1-C33.
- Boeri, T. and van Ours, J. (2008) *The Economics of Imperfect Labor Markets.* Princeton: Princeton University Press.
- Bordo, M. D. (1993) "The Bretton Woods International Monetary System: A Historical Overview" In: M. D. Bordo and B. Eichengreen (eds.). *A Retrospective on the Bretton Woods System: Lessons for International Monetary Reform.* University of Chicago Press. pp. 3-108.
- Booth, A. (1995) The Economics of the Trade Union. Cambridge: Cambridge University Press.
- Brandolini, A.; Carta, F. and D'Amuri, F. (2014) "A feasible unemployment-based shock absorber for the euro area". Banca d'Italia Questioni di Economia e Finanza No.254, November.
- Buiter, W.H.; Rahbari, E. and Michels, J. (2011) "The implications of intra-euro area imbalances in credit flows". CEPR Policy Insight no.57, August
- Calmfors, L. and Driffill, J. (1988) "Bargaining structure, corporatism and macro-economic performance". *Economic Policy* 3(6), pp. 13–61.
- Checchi, D. and Lucifora, C. (2002) "Unions and labour market institutions in Europe". Economic Policy 35, pp.361-408.
- Ciminelli, G. and Furceri, D. (2017) "A New Database of Employment Protection Legislation". http://www.structural-reforms.eu/workshops/session3/Ciminelli-Furceri-2017-New-Database-of-Employment-Protection-Legislation.pdf
- D'Adamo, G. and Rovelli, R. (2015) "The role of the Exchange Rate Regime in the process of Real and Nominal Convergence". *Journal of Macroeconomics* 43, pp. 21-37.
- D'Adamo, G. and Rovelli, R. (2018) "Patterns of inflation in the EU: The role of domestic labor market institutions". Unpublished.
- Diaz del Hoyo, J.; Dorrucci, E.; Heinz, F.F. and Muzikarova, S. (2017) "Real convergence in the euro area: a long-term perspective". ECB Occasional Paper Series No.203. December.
- De Grauwe, P. (2006) "What Have we Learnt about Monetary Integration since the Maastricht Treaty?". *Journal of Common Market Studies*, 44 (4), pp.711-30.
- De Grauwe, P. (2016) *Economics of Monetary Union*, Oxford: Oxford University Press, 11th ed.
- Delors, J. (1989) "Report on Economic and Monetary Union in the European Community" (Delors Report). Office for Official Publications of the European Communities, ISBN 92-826-0655-4.

- Dornbusch, R. (1976) "The Theory of Flexible Exchange Rate Regimes and Macroeconomic Policy." *The Scandinavian Journal of Economics*. 2, pp. 255-75.
- Egert, B. (2007) "Real convergence, price level convergence and inflation in Europe". *Bruegel Working Paper* N° 2007/02.
- European Central Bank (2005) "Monetary policy and inflation differentials in a heterogeneous currency area". *Monthly Bulletin*, May, pp.61-77.
- European Commission (1990) "One market, one money. An evaluation of the potential benefits and costs of forming an economic and monetary union". *European Economy*, no. 44, October.
- European Commission (2017a) "Reflection Paper on the Deepening of the Economic and Monetary Union". COM(2017) 291 of 31 May.
- European Commission (2017b) "A Roadmap for Deepening Europe's Economic and Monetary Union". December. http://europa.eu/rapid/attachment/IP-17-5005/en/EMU%20Roadmap.pdf
- Friedman, M. (1953) "The Case for Flexible Exchange Rates". In M. Friedman, *Essays in Positive Economics*, University of Chicago Press, pp.157-203.
- Hall, R.E. (1980) "Employment Fluctuations and Wage Rigidity". *Brookings Papers on Economic Activity*, 1, pp.91-123.
- Hansen, A.H. (1944). A Brief Note on "Fundamental Disequilibrium". *The Review of Economics and Statistics*, 26(4), pp.182-184
- Horn, H. and Svensson, L.E.O. (1986) "Trade Unions and Optimal Labour Contracts". *The Economic Journal*, 96(382), pp.323-241.
- Juncker, J-C, Tusk, D; Dijsselbloen, J;, Draghi, M. and Schulz, M. (2015) "Completing Europe's Economic and Monetary Union" (The Five Presidents' Report). European Commission, June 2015.
- Lane, P.R. (2012) "The European Sovereign Debt Crisis". *Journal of Economic Perspectives*, 26(3), pp.49-68.
- Mundell, R. (1961) "A Theory of Optimum Currency Areas". *American Economic Review* 51(4), pp. 657-665.
- Obstfeld, M. and Taylor A. (1998), "The Great Depression as a Watershed: International Capital Mobility Over the Long Run," in M. Bordo, C. Goldin, and E. White (eds.), *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century*, U. of Chicago Press, pp.353-402.
- Obstfeld, M. (2012) "Does the Current Account Still Matter?". NBER w.p. 17877, March.
- Sinn, H.W. (2012) "Target Losses in Case of a Euro Breakup". CESIfo Forum 4, pp.51-58.
- Werner, P. (1970) "Report to the Council and the Commission on the realization by stages of economic and monetary union in the Community" (Werner Report). Supplement to Bulletin 11-1970 of the European Commission.