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**Working Paper**

## The "uncovered inflation rate parity" condition in a monetary union

FMM Working Paper, No. 28

**Provided in Cooperation with:**

Macroeconomic Policy Institute (IMK) at the Hans Boeckler Foundation

*Suggested Citation:* Acocella, Nicola; Pasimeni, Paolo (2018) : The "uncovered inflation rate parity" condition in a monetary union, FMM Working Paper, No. 28, Hans-Böckler-Stiftung, Macroeconomic Policy Institute (IMK), Forum for Macroeconomics and Macroeconomic Policies (FMM), Düsseldorf

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# FMM WORKING PAPER

No. 28 · June, 2018 · Hans-Böckler-Stiftung

## THE “UNCOVERED INFLATION RATE PARITY” CONDITION IN A MONETARY UNION

Nicola Acocella<sup>1</sup> and Paolo Pasimeni<sup>2</sup>

### ABSTRACT

The uncovered interest rate parity condition lies at the heart of the "impossible trinity", stating that the three objectives of fixed exchange rates, free capital flows, and independent monetary policy cannot be pursued simultaneously. We argue that although monetary unification does indeed eliminate the tension between exchange rates and nominal interest rates, it does not solve the problem of the intrinsic instability of the system. By eliminating the intra-area exchange rates (with a single currency) and interest rate differentials (with a single common policy rate set by the common central bank), the problem of instability is simply transferred to inflation rate differentials, what we call the (impossibility of the) "uncovered inflation rate parity condition" in a monetary union. The analysis of the actual divergences and imbalances in the EMU, then, suggests that failure to respect the "uncovered inflation rate parity condition" in a monetary union may lead to increasing economic and political tensions. Thus we conclude with the application of the Rodrik's political trilemma to the EMU, which epitomises the existential challenges that the EU faces nowadays.

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# The “uncovered inflation rate parity” condition in a monetary union<sup>1</sup>

Nicola Acocella<sup>2</sup> and Paolo Pasimeni<sup>3</sup>

## Abstract

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Keywords: Monetary Union, interest rate, exchange rate, inflation differentials, political trilemma.

JEL: E42, F33, F41, F42.

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<sup>1</sup> We are grateful to Giuseppe De Arcangelis and Luciano Milone for their useful comments and suggestions. Obviously, we retain full responsibility.

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## ***1. Introduction***

Before the creation of the Economic and Monetary Union (EMU), monetary policies in Europe were confronted with the attempt to find an equilibrium between coordination and national interest. The progressive removal of barriers to capital flows exacerbated the tensions between national monetary policies, by increasing their interdependence. In open economies with increasing capital flows national central banks could no longer manage domestic interest rates.

The relation between interest rate and output in an open economy is strictly dependent on the exchange rate (Fleming, 1962; Mundell, 1963). If monetary cooperation evolves towards a system of fixed (or quasi-fixed) exchange rates, free mobility of capital implies that interest rates in different countries cannot be independent any more. This was the foundation of the so-called impossible trilemma, or impossible 'trinity'.

In other words, monetary policies could not be independent in a fixed exchange rate mechanism with free capital movements, since the three objectives cannot be pursued simultaneously. This trilemma has explicitly determined the configuration of the international financial architecture in the post Bretton Woods era, and its validity has also been empirically confirmed (Aizenman et al, 2013).

The paper is organized as follows. The next two sections illustrate the uncovered interest parity condition and the consequences of the ensuing impossibility of the uncovered inflation parity in a monetary union such as the EMU. Section 4 deals with inflation differentials before and after admission to the EMU of the member countries and compares them with those in the USA in terms of different indicators. In addition, it shows how failure to achieve nominal convergence triggered a divergence in real convergence. The final section derives the policy implications of the failure to respect the uncovered inflation parity condition, requiring the coordination of structural and fiscal policy at a central level. This has also important

political implications, due to the incompatibility between self-determination at a nation-state level, democratic politics and full economic integration.

## ***2. The uncovered interest rate parity condition***

The reasoning underlying the impossible trinity is based on the uncovered interest rate parity condition, which states that, in the absence of a risk premium, the difference in interest rates between two countries is equal to the expected change in the exchange rate between the countries' currencies. It says that the nominal exchange rate will appreciate if the domestic interest rate rises, or if the future expected exchange rate rises. It will fall if the foreign interest rate rises. If this parity does not exist, there is an opportunity to make a profit through arbitrage, but free capital flows make sure the condition is respected almost instantaneously.

The uncovered interest rate parity condition is illustrated by the following formula, by referring to a price quotation system of the exchange rate:

$$(1) \quad i_h = i_f + \frac{E^e - E}{E}$$

where  $i_h$  and  $i_f$  are the domestic and foreign interest rates,  $E$  is the current spot exchange rate and  $E^e$  is the expected one. Then, the equation can be rearranged to show the equalization between interest rates differential and expected change in the exchange rate:

$$(2) \quad i_h - i_f = \frac{E^e - E}{E}$$

This condition is of particular relevance when examining the case of a durable (credible) system of fixed exchange rates. In that case, the expected and the current exchange rate

between two currencies must be the same, by definition:  $E^e = E$ , but this implies that also the domestic and the foreign interest rate must be equal<sup>4</sup>.

In other words, if credible fixed exchange rates are to be maintained, nominal domestic interest rates – at least interbank rates – cannot differ from foreign ones as a result of independent monetary policies. If they differed while capital movements are free, there would be large capital movements towards (from) the countries with higher (lower) interest rates/rates of return. This necessarily causes the exchange rate to shift (up with an inflow, down with an outflow).

Thus, in a monetary union the combination of free capital movements and independent monetary policies is incompatible with a regime of fixed exchange rates – or with the prospect of exchange rates credibly remaining fixed. On the other hand, if fixed exchange rates and interest rate equalization (i.e., a single monetary policy between different countries) are guaranteed, either capital movements ought to be somewhat controlled or other policies should be implemented to get rid of inflation rate differentials, in order to maintain the (credibility of the) regime<sup>5</sup>.

The combination of free capital movements and independent monetary policies was particularly relevant in Europe during the years of the European Monetary System (EMS), and in particular at the time of the German reunification. The system of fixed exchange rates forced other countries to follow the German monetary policy managed by the Bundesbank (Eichengreen and Wyplosz, 1993)<sup>6</sup>. At the time of the German reunification, in particular, fiscal policy was expansionary to meet the costs of the new Länder. This threatened price stability and the Bundesbank implemented a contractionary monetary policy. The effects were

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<sup>4</sup> The two interest rates may only differ due to the presence of a “risk premium” due mainly to political risk, linked to specific characteristics of the two economies.

<sup>5</sup> A similar conclusion has been reached by Obstfeld, Ostry and Qureshi (2017) with reference to emerging market economies.

<sup>6</sup> Eichengreen and Wyplosz (1993) model the attitude of Germany as a leader after re-unification and the effects of this on the crisis of the EMS of 1992-93.

a rise in German interest rates, capital inflows from other EMS countries and depreciation, in particular of the Italian lira and the British pound. Limits to depreciation were reached, which finally compelled Italy and the UK to exit the system.

On the basis of the experience of the EMS, the theory of the “impossible trinity” set the foundation for the EMU<sup>7</sup>. As the three objectives mentioned above cannot be pursued at the same time, an international system has to opt for one of three policy options:

- a) fixed exchange rates and free capital and goods flows, with no independent monetary policy in the different countries;
- b) independent monetary policies and free capital flows, with potentially flexible exchange rates;
- c) fixed exchange rates and independent monetary policies without free capital movements.

The establishment of the EMU reflects the choice of the first policy option. Creating a single currency and establishing a common central bank and free capital movements, a single monetary policy would satisfy the uncovered interest rate parity condition.

We argue that the establishment of the EMU did indeed eliminate the tension between exchange rates and nominal interest rates, but did not solve the problem of the intrinsic instability of the system. By eliminating the intra-area exchange rates (with a single currency) and nominal interest rate differentials (with a single common policy rate set by the ECB), the problem of instability was simply transferred to real interest rates (Vaubel, 1978)<sup>8</sup>, given the inflation rate differentials between the member countries.

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<sup>7</sup> The trilemma was applied to the EMS by Padoa-Schioppa (1982), who spoke of an impossible quartet (the fourth element being free trade), and was popularized by Krugman (1987, 1999).

<sup>8</sup> Vaubel (1978) suggested that since the several conditions for the optimality of a currency union are hardly measurable in a direct and unambiguous way (see also Robson, 1987) they could be better synthesized by the real exchange-rate criterion as an "unambiguous indicator of the economic desirability of currency unification" (p.323).

### 3. The uncovered inflation rate parity condition in monetary union

The well-known Fisher equation, which defines the relationship between nominal and real interest rates, states that:

$$(3) \quad i^N = i^R + \frac{p^e - p}{p} = i^R + \pi^e$$

where  $i^N$  and  $i^R$  are nominal and real interest rates, respectively, and  $\frac{p^e - p}{p} = \pi^e$  is the expected rate of inflation. The Fisher equation is then valid for both the domestic and the foreign interest rates, and can be substituted in the equation derived by the uncovered interest rate parity condition.

If we assume that purchasing power parity (PPP) holds, and by substituting (3) into (2), we finally obtain the following identity (4), which states that the difference between interest rates is linked to the inflation rates differential:

$$(4) \quad i_h^N - i_f^N = i_h^R + \frac{p_h^e + p_h}{p_h} - i_f^R - \frac{p_f^e + p_f}{p_f} = i_h^R + \pi_h^e - i_f^R - \pi_f^e = \frac{E^e - E}{E}$$

Equality of nominal interest rates across countries is ensured by the common monetary policy, which is consistent also with the absence of the exchange rate. Then, including this condition and rearranging we obtain:

$$(5) \quad i_h^R - i_f^R = \frac{p_f^e + p_f}{p_f} - \frac{p_h^e + p_h}{p_h} = \pi_f^e - \pi_h^e$$

Divergences in price dynamics, implying differences in real interest rates, determine imbalances that can only be avoided by reducing those divergences<sup>9</sup>. In other words, for a monetary union to be stable, price dynamics in the participating countries must tend to be equal. The uncovered interest rate parity condition, instead of disappearing in the monetary

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<sup>9</sup> The influence of these divergences on the average price inflation of the EMU and, thus, on the ECB policy are irrelevant for our purposes.



union, simply translates into differences between real interest rates equal to the opposite of differences in inflation rates, what we call the "uncovered inflation rate parity condition".

This condition spells out the old idea that real exchange-rate movements are a kind of synthetic indicator of the optimality of currency unification among different economies (Vaubel, 1978).

When the uncovered inflation rate parity condition is not satisfied, and there are divergences in the inflation rates of the participating countries, with a single nominal policy rate set by the common central bank, there are two consequences. On the one side, divergences reflect in a current account imbalance. On the other, by implying higher real interest rates in lower inflation countries and lower real interest rates in higher inflation countries, they promote higher investment in the latter, a rise in credit demand and capital inflows from the former, fuelling imbalances in the capital account<sup>10</sup>. The more capital flows to those countries, the more the inflationary pressure rises there, in a vicious circle, which can increase divergences<sup>11</sup>. Obviously, the two imbalances are symmetric. The issue of which one of the two is the driving force might then be worthless. However, in empirical terms, econometric evidence strongly indicates that the credit boom derived from capital movements from the core to the periphery acted first, causing net capital inflows and current account deficits in Europe's periphery (Lane, McQuade, 2013<sup>12</sup>). This could be justified by a reactivity of capital movements higher than that of trade flows.

A single monetary policy setting a nominal interest rate for the whole area cannot be tailored on diverging price dynamics of the participating countries, and then real interest rates cannot move according to the requirements of different domestic conditions.

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<sup>10</sup> Lane, McQuade (2013) find a positive correlation between net capital inflows and domestic credit.

<sup>11</sup> See Sinn (2010), Lane and McQuade (2013), Hale and Obstfeld (2014), Gabrisch and Staehr (2015), Kollmann, Ratto, Roeger, in't Veld and Vogel (2015), Storm and Naastepad (2016).

<sup>12</sup> They conclude as follows: 'Our analysis confirms that the current account balance is a misleading indicator in understanding the relation between international capital flows and domestic credit growth, in view of the striking differences in the co-variation of domestic credit growth with net debt flows and net equity flows' (p.20).

Once some countries with structurally different business cycles, diverging inflation rates and free capital movements agree on a single money, there are no mechanisms that can ensure equalisation of inflation rates in the short-medium run. Real interest rate differentials generate destabilising capital inflows or outflows, which, in turn, reinforce the incentives to cross-border capital flows.

A long-run mechanism could work, tied to the classical theory predicting that capital moves from richer to poorer countries (whose capital per worker endowment is lower) acting through productive investment. The classical theory of endogenous currency areas (Frankel and Rose, 1998; 2002) suggested that currency unification would ex-post bring the economies closer, in terms of factor mobility, mutual openness, diversification of trade, and eventually common fiscal risk sharing. These criteria are not suitable to be summarized by a single measure and thus the co-movement of these indicators with the real exchange-rate cannot be analysed. However, since the latter are better spelled out by the proposed condition of uncovered inflation parity, we can test the actual validity of the endogenous currency area proposition by tracking the convergence or divergence of inflation rates in the EMU.

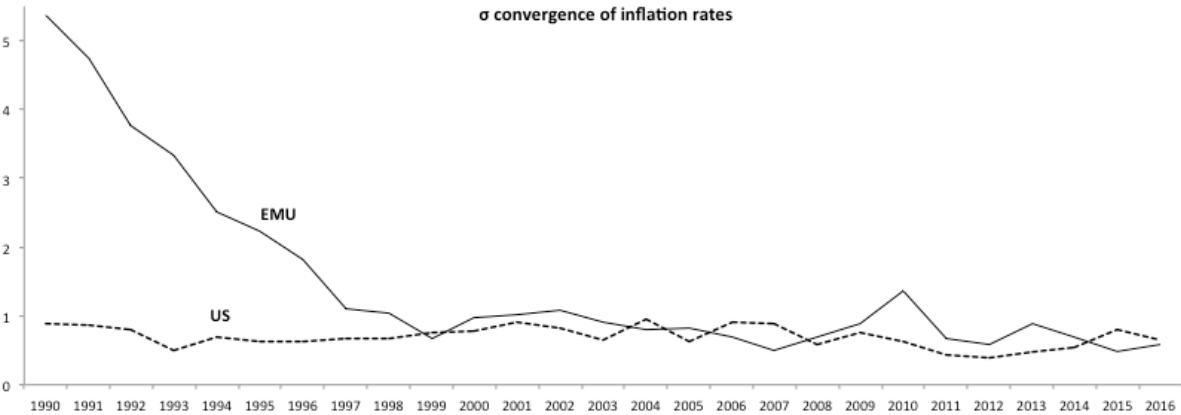
#### ***4. Convergence and divergence in the EMU***

In the run-up to the establishment of the monetary union, a marked process of convergence took place among all the countries that had decided to enter the EMU in 1995-1996. Peripheral countries, in particular, which originally did not meet the requirements for admission, implemented contractionary monetary and fiscal policies as well as wage and incomes policies, in order to bring their inflation rates down to the levels of the core. In fact, they succeeded in lowering their inflation rates and government deficits. The reason why they did so is that they expected to gain a prize out of EMU membership (with expected benefits higher than costs). These expectations affected the conduct of the government and large firms.

After admission, there were no similar expectations and policies became less geared to control inflation, while nominal interest rates began to converge; inflation rose, practically in all countries, but in particular in peripheral ones: by 2001 inflation differentials had doubled compared with 1999.

A long-run view of the standard deviation of inflation rates among the 12 countries that composed the EMU at the beginning shows that, starting from the seventies, for about two decades inflation differentials were extremely high. The exceptionally rapid and effective process of convergence, though, took place in the nineties, when in the run up to the accession to the EMU structural adjustments in "high inflation countries" took place. An international comparison with inflation rate differentials among US states shows that this process of convergence in the run up to the monetary unification culminated precisely in 1999, when the countries forming the EMU reached the same level of convergence of inflation rates as the US states.

**Figure 1:  $\sigma$  convergence of inflation rates among EMU12 countries and US states (1990-2016)**



Source: Own calculations on data from US Bureau of Labor Statistics, IMF WEO and OECD.

Argyrou, Gregoriou and Kontonikas (2007) tested the real interest parity in the EMU in the period up to 2005 and found heterogeneity in the long-run convergence process of national real interest rates to the EMU (weighted) average. On the one side, there was convergence in

the run up to the EMU, as peripheral countries implemented many policies in order to fulfil the admission requirements. On the other, convergence was not ensured after admission and only "core" countries converged, while the "periphery" diverged. This is consistent with the idea that overall the EMU lacks mechanisms ensuring inflation rates– therefore real interest rates – convergence.

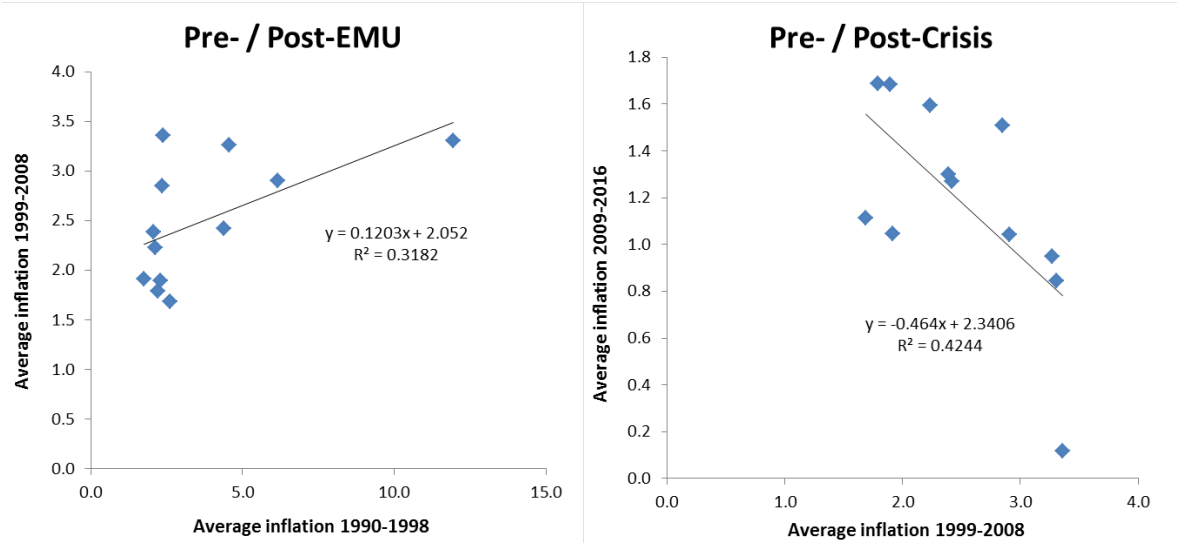
The theory of endogenous currency areas didn't really apply to the EMU, although the preparation of the monetary union did have an important effect in stimulating real convergence among future partners. The crisis, however, triggered in 2008 a process of real divergence in the EMU, which threatened the sustainability of the currency union.

The observation that dispersion of inflation rates among EMU countries was reduced to a level similar to the one in the US is not sufficient to state that convergence was achieved. In fact, imbalances in a monetary union are also be created by small divergences in inflation rates, persistent for long periods for specific subsets of countries. What matters, then, is not only the absolute level of dispersion in the currency area, but also the "randomness" or the "persistence" of the relative positions. In other words, given that relative inflation differentials are what determines imbalances, particularly in a monetary union, we should test whether countries with relatively lower or higher inflation tend to be always the same, or not.

In fact, if we plot the average inflation rates of the 12 countries which formed the EMU before and after the creation of EMU. We see two things: on the one side, the overall average rates between 1990 and 1998 were of a bigger order of magnitude compared to those after the establishment of the EMU, but before the crisis, signalling an overall reduction of inflation in the area; on the other side, however, those countries which had higher (lower) inflation before the establishment of the monetary union, tended to have higher (lower) inflation rates relative to the others also afterwards (fig. 2, left diagram).

By contrast, in comparing the same average inflation rates by country before and after the crisis (fig. 2, right diagram), in particular those between 1999 and 2008 and the averages between 2009 and 2016, we see a completely different pattern: the inverse relation tells us that as a consequence of the crisis, those countries with higher (lower) average inflation rates shifted to lower (higher) rates relative to the others.

**Figure 2: Average inflation rates before EMU, during the first half of EMU, and after the crisis**



Source: Own calculations on data IMF WEO.

Thus, persistence in inflation rates differentials after 1998 contributed to the explosion of external imbalances, in the absence of exchange rate flexibility, whereas, after the crisis, the countries which had higher inflation in the previous period suffered more from the crisis and/or reacted by means of domestic policies influencing their relative inflation rates<sup>13</sup>.

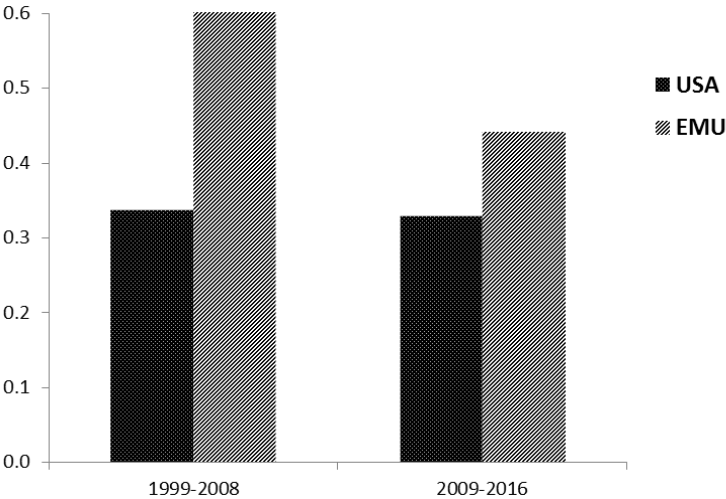
One way of measuring more precisely the degree of persistence in inflation rates differentials is by calculating the differences between the *average* inflation rates of each country experienced *in the whole period after 1999*. This provides more detailed information than the  $\sigma$  convergence of *annual* inflation rate, as the average inflation rates embody persistence of

<sup>13</sup> Whether the crisis facilitated or hampered structural policies aiming at reducing imbalances is, in fact, an open issue (see Milone, 2017).

higher or lower relative inflation in each country offered by fig. 1; at the same time it allows for a more precise quantification and for an international comparison.

In the first decade of EMU, between 1999 and 2008, differences of inflation rates calculated in this way were indeed persistent, with some countries having higher-than-average or lower-than-average rates throughout the entire period. In other words, the variation was not random, as the standard deviation of average rates proves: in the EMU this was almost double than in the US (see fig.3). Throughout this period, the average annual inflation rate in Ireland, Greece, or Spain was constantly above target (even higher than 3%), while in Germany it was persistently below target (at 1.6%). In the US the areas of San Francisco (CA) and Boston (MA) had extremely different rates of inflation each year, but their average throughout the period was virtually the same, because differences were not persistent.

**Figure 3: Standard deviations of annual average inflation rates in the USA and in the EMU in 1999-2008 and 2009-2016**



Source: own elaborations on US BLS and Eurostat data.

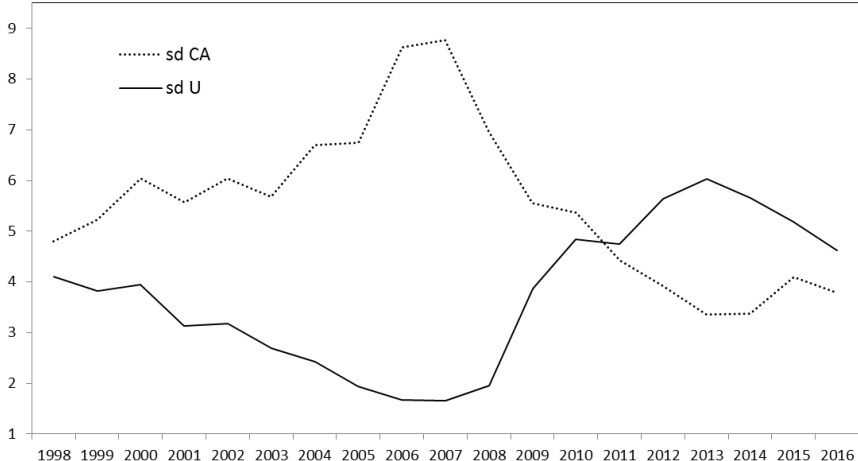
The difference in dispersion of average inflation rates is clear in the first decade of the EMU before the crisis: the standard deviation for the EMU was 0.621 while for the US was almost half, at 0.337. A variance comparison test confirms that this difference is statistically

significant (Pr of Ha ratio = 0.0045). In the following period, after the crisis, as suggested by the second chart in figure 2, the dispersion of average inflation rates in the EMU decreased substantially. The standard deviation for the EMU becomes 0.441 while for the US is 0.329; this difference, however, loses statistical significance (Pr of Ha ratio = 0.1052).

In the post-crisis adjustment period, although the overall divergence shown in fig.1 has increased in the EMU, its persistence in terms of the indicator used in fig.3 has somehow been reduced. Even if it is still higher than in the US, the gap with the pre-crisis level has lowered, possibly as an effect of the crisis that has involved both core and peripheral countries into deflationary dynamics.

The pre-crisis focus on nominal convergence hid underlying problems with real convergence: inflation differentials accumulated and transpired into a persistent divergence in the real exchange rate (Johnston and Regan, 2016). The post-crisis adjustment has triggered a slow process of structural convergence, which has only slightly improved apparent real convergence (Buti and Turrini, 2015). The specular relation between dispersion of current accounts and unemployment rates across the monetary union indicates so. However, real convergence is still far from being achieved and the convergence that appears to have taken place may be the ephemeral effect of the crisis.

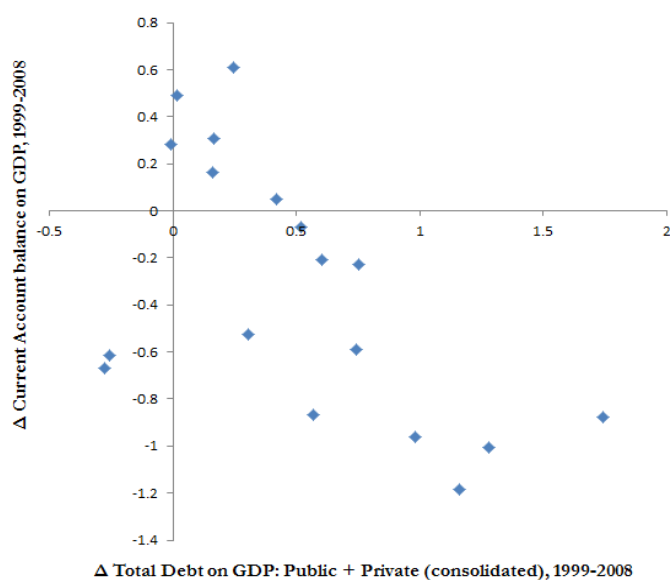
**Figure 4: Divergences in current account and unemployment rates in the EMU (1998-2016)**



Source: update based on Pasimeni (2015).

There are two possible concurring explanations for that: one focuses on the behaviour of deficit (or peripheral) countries, the other focuses on the behaviour of surplus (or core) ones. The interaction of both certainly determined the final outcome. A distinction can be drawn between the growth strategies of member countries: an ‘export-led’ growth model in the core and a ‘credit-led’ growth model in the periphery (Stockhammer and Onaran, 2012); the two were closely interdependent (Hein, 2012):

**Figure 5: Credit-led vs export-led growth models in the Euro Area, 1999-2008**



Source: own calculations on IMF and Eurostat data.

The two different but interlinked growth models reinforced each other, generating persistent divergences in inflation and real exchange rates (Johnston and Regan, 2016): wage moderation and deflation in the co-ordinated market economies of the core generated an excess of savings over investments (Stockhammer, 2011; Bibow, 2012), which were then channelled through growing financial integration to higher inflation countries in the periphery, fuelling asset bubbles (Fernandez-Villaverde et al, 2013; Acocella, 2014, 2016)



that in turn reinforced the inflationary pressure in these economies, and the overall divergence in the currency area.

Once capital flows supporting this mechanism suddenly stopped, as a consequence of the financial crisis, the need for adjusting intra-EMU disequilibria in the balance of payment was addressed by internal devaluation in deficit countries, requiring ‘structural reforms’ and contractionary demand policies, without implementing specular actions in core countries, therefore exacerbating the asymmetries and imposing an overall deflationary bias on the area.

This analysis has led some authors to argue that the lack of adequate supervision in deficit countries led to misallocation of capital inflows, therefore fuelling excessive asset bubbles and creating inflationary pressure (García-Santana et al. 2016; Gamberoni et al, 2016). Others, instead, have seen in the deflationary policies conducted by surplus countries the main reason for the building up of the imbalances (Bofinger, 2015; Johnston and Regan, 2016).

Both points of view suggest in a way or another that a central European authority should be able to impose corrections, therefore challenging policy preference of some member states. The apparently only technical problem of inflation rates differentials leads, therefore, to political problems, through economic imbalances and divergences.

### ***5. Policy implications***

The EMU is a currency area characterised by a single common monetary policy, but separate national fiscal and structural policies. It is clear that, in order for this currency area to work without generating unsustainable imbalances, the uncovered inflation rate parity condition must be respected. If it is not, macroeconomic imbalances will necessarily develop, whose later absorption then poses a drag on growth for the whole area.

Currency zones as such do not solve the problem of international (or regional) payments imbalances. The reason for this is that a number of policies and institutions differ as between the different member countries; if these are left free of making use of them differently, in an uncoordinated manner, imbalances can last and even be exacerbated. A common currency does not eliminate the need for internal adjustments or the limits deriving from implementation of different country policies. These make the situation fragile and any financial stress can disrupt the precarious equilibrium, putting pressure on relatively higher-inflation countries that must attract international capital flows to balance their trade deficits. Developments after the financial crisis have plentifully shown that.

The question then becomes how the difference in the inflation dynamics can be best kept in check and which institutional level is the appropriate one to address this challenge. The uncovered inflation rate parity condition calls for a coordination of national structural and fiscal policies, for a single monetary policy to work without amplifying imbalances. In this perspective, the need for another common policy lever in addition to the monetary one arises: to avoid misalignments and the need for corrections, a central authority should be equipped to ensure or enforce stronger coordination of national policies, therefore potentially challenging policy preferences of national governments.

For this reason, if coordination among national policies proves difficult to achieve, the problem of asymmetries and imbalances in a monetary union cannot be solved in the absence of new common institutions (Johnston and Regan, 2016). Increased competition may reduce inflation in higher inflation countries, but this effect may not be powerful enough to guarantee sustainable growth convergence. Respecting the parity condition implies keeping constantly under control the price dynamics of each single participating country and achieving a quasi-perfect coordination of national policies, to identify, prevent and correct persistent inflation differentials. This requires intervention into the evolution of economic structures at national

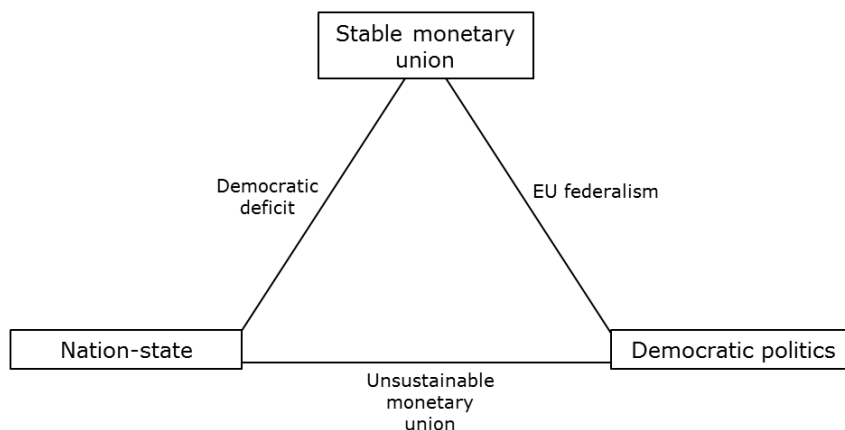
level, by stronger coordination of wage developments in each country as well as of labour and product market regulations. It also requires coordinating all national fiscal stances, in a differentiated, but permanent, way.

One should also consider the strong implications of the financial cycle, which is generally longer and wider than the business cycle and is closely associated with systemic banking crises, close to its peak (Borio, 2014). When financial cycles are not synchronised across countries, another layer of complexity is added to these. Moreover, the same international financial cycle is likely to have important idiosyncratic effects on different countries (Rey, 2015). Some have even suggested the incompatibility of national responsibility for financial policy, international financial integration and financial stability (Obstfeld, 2015). Therefore, national macro-prudential policies become another important area requiring stronger coordination.

In other words, for the EMU to work effectively, a supranational body would need to be extremely intrusive, taking decisions on matters which are at the core of the political process, and inevitably eroding and constraining the prerogatives at national level, thus involving issues of democracy. The process of top-down economic policy coordination would inevitably touch upon the most politically salient areas of national policies (Leino and Saarenheimo, 2017). This poses an important problem of compatibility between the sustainability of the monetary union and the exercise of the democratic prerogatives at a national level.

When boosting standards and ensuring democracy together with self-determination within the nation-state are desired, a trilemma arises, as nation-state self-determination, democratic politics and full economic integration are mutually incompatible (Rodrik, 2007; 2011; 2017). The uncovered inflation rate parity condition, then, leads us to the application of Rodrik's trilemma to the EMU.

**Figure 6: The political trilemma of the economic and monetary union**



Source: adapted from Rodrik (2007).

If we deem democratic politics and full economic integration to be basic, nation-state sovereignty should be reduced: unified markets and even more a monetary union need supranational governance. A larger role for self-determination of the nation state, instead, requires some limit either to integration or to democratic choices. Full economic integration would require dropping either democratic choices within nation states or stronger governance at a higher level; then political unification and governance should also be added. This includes EMU action for dealing with country inflation rates, e.g., through structural policies, and some kind of control of capital movements<sup>14</sup>.

Building a stable and sustainable monetary union, legitimised by a democratic process of policy making, would require a move towards a European federation, something that is currently openly opposed and ruled out by many constituencies, under the concern that decisions on key value judgments can only be made legitimately within fairly homogeneous communities (Leino and Saarenheimo, 2017).

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<sup>14</sup> Freedom of capital movements is one of the founding tenets of EMU, but there are various tools that can at least diminish their reactivity, e.g. by establishing a common deposit insurance.

Preserving democratic choices and policy making at national level would make it impossible to reach that level of quasi-perfect coordination of key areas of economic policy making to allow the uncovered inflation rate parity condition to be satisfied, therefore the monetary union to be stable and sustainable. A historical review of currency crises shows that persistent inflation differentials are consistently associated with a high likelihood of a currency union dissolution (Nitsch, 2005).

Pursuing the top-down coordination of national policies, even in all sensitive areas, and bypassing the electoral process in order to fulfil the condition, would exacerbate the problem of democratic legitimacy. The political trilemma of the economic and monetary union synthesises the existential problems the EU faces, and the uncovered inflation rate parity condition is at the core of them.

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## **Impressum**

**Publisher:** Hans-Böckler-Stiftung, Hans-Böckler-Straße 39, 40476 Düsseldorf, Germany

**Contact:** [fmm@boeckler.de](mailto:fmm@boeckler.de), [www.fmm-macro.net](http://www.fmm-macro.net)

FMM Working Paper is an online publication series available at:

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**ISSN:** 2512-8655

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