	conference	

5 December 2011

The euro crisis and the new impossible trinity

Jean Pisani-Ferry¹

Paper prepared for the AEEF Conference "Impact of Eurozone Debt Crisis on East Asian Countries",

Seoul, 8-9 December 2011²

¹ Bruegel, Brussels. Email: <u>jean.pisani-ferry@bruegel.org</u>

² This papers draws on a presentation made at the Madrid Moneda y Crédito Symposium on 3 November 2011. I am very grateful to Silvia Merler for excellent research assistance.

1. Introduction

Since the euro crisis erupted in early 2010, the European policy discussion has put emphasis on its fiscal roots. Beyond short-term assistance, reflection on reforms has focused on the need to strengthen fiscal frameworks at EU and national levels. The sequence of decisions and proposals is telling:

- The EU has already adopted a new legislation that reinforces preventive action against fiscal slippages, sets minimum requirements for national fiscal frameworks, toughens sanctions against countries in excessive deficit, and hardens enforcement through a change in the voting procedure.³
- In October 2011 the heads of state and government of the euro area decided to go further and committed themselves to adopting constitutional or near-constitutional rules on balanced budget in structural terms, to basing national budgets on independent forecasts and, for countries in an excessive deficit procedure, to allowing examination of draft budgets by the European Commission before they are adopted by parliaments. A few weeks later, in November 2011 the European Commission put forward proposals for new legislation requiring euro area member states to give the Commission the right to assess, and request revisions of, draft national budgets before they are adopted by parliament.
- Speaking in the European Parliament in early December, ECB President Mario Draghi asked for a "new fiscal compact" which he defines as "a fundamental restatement of the fiscal rules together with the mutual fiscal commitments that euro area governments have made" so that these commitments "become fully credible, individually and collectively".⁵
- Finally, chancellor Merkel of Germany and president Sarkozy of France are called on 5
 December 2011 for a new European treaty that would include legally binding limits to excessive deficits and automatic sanctions for countries breaching the rule.⁶

³ These provisions are part of the so-called "six-pack", a set of legislative acts resulting from proposals made by the European Commission and from the report on economic governance in the EU prepared by Hermann Van Rompuy, the president of the European Council of heads of state and government. The" six-pack" was adopted by the Parliament and the Council on 16 November 2011.

⁴ See the "Euro Summit Statement" of 26 October 2011.

⁵ Speech by ECB president Mario Draghi, 1st December 2011.

⁶ Joint press conference, 5 December 2012.

The question is, are the Europeans right to see the strengthening of the fiscal framework as the main, possibly the only precondition for restoring trust in the euro? Or is this emphasis misguided? It is striking that several other problems that emerged in the euro crisis are almost absent from the policy discussion at senior level. Real exchange rate misalignments within the euro area and current-account imbalances are largely considered of lesser importance, in spite of evidence that the neglect of developments on this front played a major role in the build-up of tensions within the euro area. Credit booms and the perverse effects of negative real interest rates in countries where credits to the non-traded sector gave rise to a sustained rise in inflation were the focus of policy discussions in the aftermath of the global crisis but these issues have largely disappeared from the policy agenda. The role of capital flows from Northern to Southern Europe and their sudden reversal are merely discussed by academics and central bankers.

To address the issue I start in section 2 by reviewing evidence on the link between fiscal performance and market tensions. I then turn to presenting in section 3 why the crisis has revealed a more fundamental weakness in the principles underpinning the euro area. In section 4 I discuss options for the way out. Policy conclusions are briefly presented in section 5.

2. Is fiscal discipline the issue?

It is undoubtedly true that the euro area in its first ten years suffered from a lack of fiscal discipline, that from the standpoint of sustainability of public finances good times were wasted, and that the credibility of fiscal rules was compromised (Schuknecht, Moutot, Rother and Stark, 2011). Greece notoriously misreported budgetary data and flouted the European fiscal discipline rules. In spite of having committed to avoiding "excessive deficits" and in spite of the thorough monitoring exercised by the European Commission, from 1999 to 2008 six countries out of twelve (excluding the recent additions to the euro area) found themselves in an "excessive deficit" position. And the now-infamous Council decision of 25 November 2003 to hold the excessive deficit procedure for France and Germany "in abeyance" is rightly regarded as having weakened significantly the credibility of the European fiscal framework.

Two observations however lead to caution against an exclusive emphasis on strengthening fiscal discipline through tougher and more automatic enforcement of the rules.

First, behaviour vis-à-vis the rules of the European fiscal framework (the Stability and Growth Pact or SGP) is a rather poor predictor of the difficulties experienced nowadays by euro-area countries. In Figure 1 I plot recent spreads vis-à-vis the German Bund against past infringement of the SGP. In order to avoid the result being biased by political weight (for example a country could have escaped being singled out as being in infringement because of political clout within the Council of Ministers,

which votes on sanctions and the steps leading to them), I take instead the number of years since the European Commission recommended declaring the country in excessive deficit until it recommended abrogating the excessive deficit procedure.⁷ It is apparent that there is no relationship between the two: countries like Ireland and Spain that were never found in infringement of the rules suffer from large spreads whereas Germany and the Netherlands, who were found guilty of it, enjoy remarkably low rates. This suggests caution against the simplistic view that a thorough enforcement of the rules would have prevented the crisis.

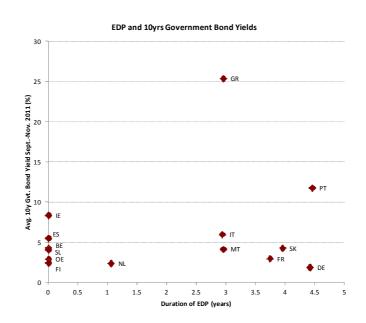


Figure 1: SGP Infringements (1999-2008) and Current Bond Yields (Sep-Nov. 2011)

Source: European Commission, Datastream, Bruegel calculations

The second piece of evidence is that several countries in the euro area are experiencing elevated costs of government borrowing in spite of being in a much sounder position than the US, the UK or Japan. Calculations by the IMF (2011) suggest that future adjustments facing non-euro area countries are of the same order of magnitude than those euro-area countries in trouble are confronted to (Figure 2). Yet the US, the UK and Japan are not experiencing significant difficulties in raising funds on the bond market.

4

⁷ This is a formal process and all data relative to the Excessive Deficit Procedure are available from the European Commission's website.

Figure 2: Required 2010-2020 budgetary adjustments, selected countries

Source: IMF Fiscal Monitor, September 2011. The bar represents the adjustment in the cyclically-adjusted primary balance that is required to reduce the debt ratio to 60 per cent of GDP in 2030, assuming a constant CAPB between 2020 and 2030. The calculation assumes a uniform interest rate-growth rate differential.

As observed by Paul De Grauwe (2011), the comparison between Spain and the UK is particularly telling. The two countries face broadly similar fiscal challenges (Figure 3), yet at the end of November 2011 Spanish 10-year bond rates were 6.5 per cent against 2.3 per cent in the UK. This comparison is prima facie evidence that it is not the fiscal situation per se that explains tension in the euro area government bond markets. Or, to put it slightly differently, at the same level of deficit and public debt euro area member countries are more vulnerable to fiscal crises than non-euro area countries.

General Government Gross Debt (%GDP) General Gov. Net Lending/Borrowing (%GDP) 90 80 70 -2 -4 -8 40 -10 30 -12 United Kingdom 2002 2003 2004 2005 2006 2007 2008 2009 2010 2001

Figure 3: Government deficit and public debt in Spain and the UK, 1995-2013

Source: AMECO database and European Commission forecasts of November 2011

3. The new impossible trinity

To understand what makes euro-area states more fragile it is best to start from the basic principles upon which the European currency is based. Three are especially relevant: the absence of coresponsibility over public debt, the strict no-monetary financing rule and the combination of free

capital movements and national responsibility for supervising and, if needed, rescuing banking systems.

No co-responsibility over public debt

Governments in the euro area are individually responsible for the debt they have issued and it is even prohibited for the Union or any of the national governments to assume responsibility for the debt issued by a member country. This principle, known as the 'no bail-out clause', is enshrined in the EU treaty, whose relevant article (Art. 125) deserves to be quoted in full: "The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project. A Member State shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project".

The rationale for this provision was to set the rules of the game clear and ensure that markets would price sovereign risk accordingly. Unlike in the US where the no bail-out principle emerged from history (Henning and Kessler, 2011), the aim was to provide from the start incentives to governments to abide by fiscal discipline. For ten years, from 1999 to 2008, markets in fact did not differentiate euro-area borrowers significantly. Anecdotal evidence suggests that there was a widely held perception that in case of problem the principle would in fact not be enforced. It is only when the Greek crisis erupted and markets realized that if might have to default on part of its debt that perceptions changed and the sovereign risk began to be priced in the bond market (Figure 4).

-

⁸ Shortly after Greece joined the euro in 2001, rating agencies upgraded its status to upper investment-grade levels. According to Sara Bertin, then Greece analyst at Moody's, this was done "on the belief that Greece was now part of the euro zone and that nobody was ever going to default". See Julie Creswell and Graham Bowley, "Ratings Firms Misread Signs of Greek Woes", The New York Times, 29 November 2011.

35
30
25
20
15
10
6, see the s

Figure 4: Yields on 10-year government bonds, selected euro-area countries, 1995-2011

Source: Datastream

Strict no-monetary financing

The second principle is the strict prohibition of monetary financing. Art. 123 of the EU treaty states that "Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States (hereinafter referred to as 'national central banks') in favour of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments".

This article can be read as a prohibition of institutionalized fiscal dominance in the form of explicit agreements between a government and a central bank similar to the Fed-Treasury agreement of 1942 which set the central bank the goal of maintaining "relatively stable prices and yields for government securities". The ECB still has the possibility of buying government bonds on the secondary market and actually it made use of it with the launch of the so-called *Security Markets Programme* in May 2010, first to purchase Greek and Portuguese bonds and later, in August 2011, to purchase Italian and Spanish bonds (for a total amount of about €200bn at end-November 2011). But the provision is indicative of a broader philosophy of strict separation between fiscal and monetary policy and the purchase of government securities makes the ECB visibly uncomfortable.

Furthermore, the ECB does not have a strong financial stability mandate that could justify intervention to prevent turmoil on the bond market. Its mandate is only to "contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of

-

⁹ See for example Woodford (2009).

credit institutions and the stability of the financial system" (Art. 127-5). The reason given by the ECB for the launch of the Security Markets Programme was in fact not the preservation of financial stability but rather the prevention of disruptions in the proper transmission of monetary policy decisions.

In this respect the ECB is a very special type of central bank in comparison to other monetary institutions that are not constrained by the prohibition of purchases of government bonds and that have been given a significant financial stability mandate. Such central banks can be seen by markets as ready to embark on very large scale bond purchases if required in the name of financial stability. This is not the case of the ECB.

National banking systems

The third important principle is that whereas the euro area is integrated monetarily, banking systems are still largely national. To start with, states are individually responsible for rescuing banks in their jurisdiction and banks still exhibit strong home bias in the composition of their sovereign debt portfolios. As a consequence, states are highly vulnerable to the cost of banking crises — especially when they are home of banks with significant cross-border activities. In 2010 total bank assets amounted to 45 times government tax receipts in Ireland and the same ratio was very high in several other countries (Figure 5).

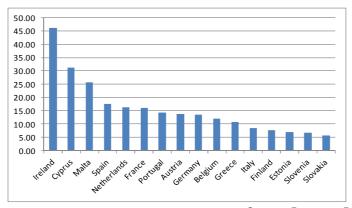


Figure 5: Total bank assets to government tax receipts ratio, 2010

Source: Eurostat, ECB, Bruegel calculations

The consequences of this situation became apparent when Ireland had to rescue its banking system after it had suffered heavy losses in the credit boom of the 2000s. Ireland at the end of 2007 had a 25 per cent debt-to-GDP ratio and it was deemed a fiscally super-sound country. By the end of 2010 its debt ratio had reached 96 per cent and the country had had to file for an IMF-EU conditional assistance programme.

By the same token bank holdings of government debt are heavily biased towards their own sovereign (Figure 6). This home bias is apparent in most euro-area countries and it implies that whenever the sovereign finds itself in a precarious situation, banks are weakened as a consequence. This for example happened in Greece where banks are relatively strong but are heavily vulnerable to the risk of default of the Greek sovereign.

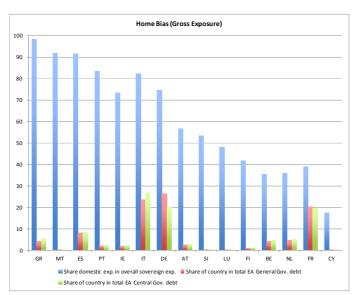


Figure 6: Indicator of home bias in bank holdings of government debt, 2010

Source: EBA, EUROSTAT, Bruegel calculations

The coexistence of these three principles makes the euro area special. It also makes it fragile, for two reasons. First, adverse shocks to sovereign solvency tend to interact perversely with adverse shocks to bank solvency. Second, the central bank is constrained in its ability to stem self-fulfilling debt crises. This situation compares unfavorably to that of the US, where (a) banks hold very little federal debt; (b) the federal government has no responsibility for state debt; (c) the federal government, not state governments, is responsible for rescuing banks, and; (d) the Federal Reserve would be able intervene to prevent the escalation of sovereign bond yields.

Summing up, the euro was imagined in the late 1980s in response to what was known as Mundell's trilemma, according to which no country can enjoy at the same time free capital flows, stable exchange rates and independent monetary policies. Twenty years later the euro area faces another trilemma between the absence of co-responsibility over public debt, the strict no-monetary financing rule and the national character of banking systems (Figure 7). Now as then the question is, which of the constraints will give in.

Figure 7: The new trilemma



4. Which way forward?

The euro area has not yet made a clear choice as regards its strategy to escape the trilemma. A popular idea is that the way out is to embark on budgetary consolidation and reach debt levels low-enough to ensure that state solvency is beyond doubt. It is indeed undisputable that public finances have to be brought under control and that this requires sustained budgetary consolidation. The question is whether this strategy is likely to deliver at a close-enough horizon. The already mentioned IMF simulations (Figure 2) suggest that this is unlikely: to reach in 2030 a 60 percent of GDP debt ratio, several countries have to implement adjustments of unprecedented magnitude amounting to 5 to 10 per cent of GDP in France, Spain and Portugal and exceeding 10 per cent of GDP in Greece and Ireland). Furthermore, 60 per cent of GDP is a very arbitrary threshold. On the basis of the recent experience, especially of Spain and Ireland, it might well be that the 'debt intolerance' threshold is significantly below 60 per cent of GDP. This would postpone the landing on safe territory even further and make the corresponding scenario even less realistic.

If the reduction of public debt to safe levels is a desirable but distant goal, the euro area is left with three possible options corresponding to the three vertices of the triangle.

Break the banking crisis-sovereign crisis vicious circle through reforming the banking system

It has been known for long that because it rules out the possibility of inflating away, monetary union necessarily increases the risk of sovereign default. In the same way countries that borrow in foreign

_

 $^{^{\}rm 10}$ These calculations were made before the 26 October agreement on Greek debt reduction.

currency are more prone to default, a country that borrows in a currency that it does not control is also more prone to default. This was indeed the very rationale behind the prohibition of excessive deficits and the surveillance of national budgetary policies. Long before the facts, scholars like Paul De Grauwe or Barry Eichengreen and Charles Wyplosz had described how a sovereign crisis in the euro area would spill over onto the banking system and the other sovereigns.

Until very recently, however, bank and insurance regulation overlooked this logic. Exposure to sovereign was considered safe and there were no limits to exposure to a particular sovereign. Banks and insurers were not given incentives to diversify. As a consequence a large part of sovereign bonds were held by banks (Table 1). Together with the strong home bias (Figure 6 above), this behaviour resulted in exposing banks heavily to the risk of default of their own sovereign.

Table 1: Breakdown of government debt by holding sectors (percentage of total), selected countries, 2010

Country (Public Institutions incl. National Central	Domestic Banks	other fin. institutions	Non-Banks	Non-Residents
country (Bank)	Domestic Danks	viller IIII. IIIstitutions	NOII-Dailes	won-residents
Greece	2.8	18.3	11.8	2.3	64.8
Ireland	1.1	13.8	2.1	0.3	82.7
Portugal	0.8	22.4	5.8	7.8	63.3
Italy	3.6	26.2	13.9	12.7	43.5
Spain	3.5	28.3	7.9	22.4	38.0
US	46.9	2.3	12.0	7.6	31.2
UK	19.8	10.8	29.0	10.0	30.4

Source: IMF, national source, Bruegel calculations

This situation is in stark contrast with that of other economies where public debt securities are mostly held outside the banking sector. In the US, bank holdings represent merely 2.3 per cent of federal debt outstanding. A case can therefore be made for reforming prudential regulation in order to make sure that sovereign securities are not treated as risk-free and in order to limit exposure to a single sovereign. The same would to a large extent apply to insurers.

Several caveats must however be introduced:

 First, this amounts to a fundamental transformation of the financial systems of euro-area countries. These are mostly bank-based systems (rather than market-based systems) and banks were used to considering the government bond as the ultimate safe asset. A different treatment of the government bond would entail a chain of transformations of major significance. • Second, the often-made comparison with the US is largely misleading. The default of California, the largest US state, would be a relatively minor financial event as its total debt amounts to less than one per cent of US GDP. By contrast the default of Italy, the country with the largest debt in the euro area, would be a major shock whatever the distribution of Italian bond holdings because its debt amounts to 18 per cent of euro-area GDP (Figure 8). In fact even Ireland, which ranks number 10 in the euro area by size of the public debt, weights more than California for the size of debt as a proportion of the monetary area's GDP. No financial tinkering will make the default of a medium-sized euro-area member a minor financial event.

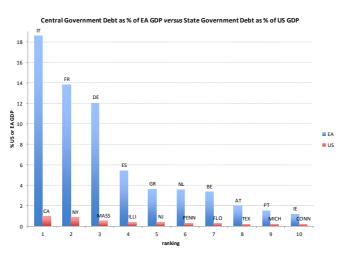


Figure 8: Relative size of state/country public debts, US and euro area

Source: Eurostat, US Census, Bruegel calculations

- Third, the threat currently is that this transformation process takes place precipitously at an accelerated pace. Since banks were asked to disclose their holdings of government debt as part of the "stress tests" required by the European Banking Authority and since they were requested to value all their holdings at market value, bankers in the euro area have accelerated disposal of government securities, which they now see as reputationally damaging as well as a source of earning volatility.
- Fourth, governments have every incentive to resist this move. As noted by Carmen Reinhart (2011), periods of public deleveraging have historically been accompanied by financial repression, which is exactly the contrary to what the envisaged transformation is about.

It may therefore be desirable to change the status of government debt in the financial system of the euro area but it would be a mistake to assume that this can be an easy process.

The other side of banking reform would be to move both the supervision of large banks and the responsibility for rescuing them to the European level. This would help reduce the vulnerability of states to banking crises. This reform would require creating a fiscal capacity at European level, in a first step through assigning to the European Financial Stability Facility the responsibility of backstopping national deposit insurance schemes and in a second step through creating a European Deposit Insurance Corporation. Marzinotto, Sapir and Wolff (2011) propose to have it backed by giving the euro area the right to levy taxes within the limit of 1 or 2 per cent of GDP. If exclusively devoted to this end, a limited tax capacity of this sort would suffice.

Give the ECB the role of a lender of last resort for sovereigns

The second solution is to give the ECB the role of a lender of last resort vis-à-vis the sovereigns. As for a central bank vis-à-vis the commercial banks this would not amount to expecting from it that it makes an insolvent country solvent. Rather, the ECB could either lend for a limited period to a sovereign at a rate that is above the risk free rate but below the rate the sovereign has to pay on the market; or, as in the Gros-Mayer (2011) proposal, it would provide a credit line to a public entity (the European Financial Stability Facility or EFSF in the Gros-Mayer proposal) in order to leverage its capital and help it reach significant-enough firepower. Either way, the ECB would help put a floor on what sovereigns have to pay to borrow on the market and it would thereby stem self-fulfilling debt crises. In a way, ECB support would serve as a deterrent and it could well be that states would never have to draw on it.

There have been intense discussions in the euro area about this approach, which was advocated by many experts, endorsed by several European governments, including France, supported by the US, but resisted by Germany. The ECB has in fact taken a step in its direction with the launch of the Security Markets Programme but its action has not been demonstrably effective, in part because it acted half-heartedly. There are speculations that it could move more decisively if governments adopt and implement the "fiscal compact" Mario Draghi has spoken of.

As a permanent device, the 'lender of last resort for sovereigns' approach however raises a number of difficulties. First, the ECB does not have an explicit mandate for it. Changing the mandate to include financial stability would raise considerable difficulties as it would require unanimous agreement (of the 27 EU members). Second, beyond the mandate a key reason why the ECB is uncomfortable buying government paper is that unlike the Fed when it buys US treasury bonds or the Bank of England when it buys gilts, such a move inevitably involves it into distributional politics. Should it incur losses on its bonds portfolio (not an abstract possibility since the ECB has already

incurred losses on its purchases), it would have to request from its shareholders the injection of additional capital, thereby becoming the vehicle of a transfer in favour of the country benefitting from the purchases. Third, the ECB does not have the right governance for deciding on such actions. Within its governing council all governors of national central banks have the same vote, unlike in a shareholders-based organization. A coalition of small-country governors could thus theoretically trigger intervention in favour of their countries at the expense of the larger countries which would contribute the bulk of recapitalizations.

None of these arguments is determinant enough to prevent action in situations of emergency. But taken together they suggest that there are significant obstacles to giving the ECB an equivalent role to those played by other major central banks.

Establish a fiscal union

The third solution is to create a fiscal union among the members of the euro area. This is an old proposal, indeed a very old one as it was part of the Werner report of 1970, the first blueprint for creating a monetary union in Europe. At the time it was thought, essentially on stabilization and distribution grounds, that a monetary union could only be sustained if accompanied by the creation of a federal budget. When the euro was created, however, it was not accompanied by any increase in the (very small) EU budget.

The fiscal union idea has now come back in very different clothes. The question policymakers have been debating since spring 2011 is not whether to increase public spending at euro-area level, but rather whether there should be both a tighter common fiscal framework and a mutual guarantee of at least part of the public debt. Instead of keeping each country sole responsible for its own debt, as enshrined in the current treaty, debt would be issued in the form of "Eurobonds" benefitting from mutual guarantee (they would technically be joint and several liability of all participating states). As a quid pro quo, states would lose the freedom to issue debt at will (subject only to ex post sanction in case of infringement of common rules) and they would accept to submit their budgets to ex ante control. Should a draft budget fail to respect common principles, it could be vetoed by partner countries before entering into force.

Different variants of Eurobonds have been proposed, from the original Blue Bond/Red Bond proposal of Delpla and von Weizsäcker (2010) to the Redemption bonds of the German Council of Economic Experts (2011) and the Eurobills of Hellwig and Philippon (2011). The European Commission (2011) has produced its own version of them, dubbed "stability bonds". What these proposals have in common is that they all envisage the creation of a class of assets benefitting from the joint guarantee

of participating governments. In the case of default by one of them the guarantee would be called and the other governments would assume the corresponding liability. This would make these assets both super-safe and representative of the euro area as whole. They would also be liquid because of the large size of the corresponding market. It is therefore expected that overseas investors would find them attractive.

To move to a system of Eurobonds and ex-ante control would represent a major step in the process of European integration. It would require a major revision of the treaty to substitute to the current "no-responsibility principle" a different principle based on the combination of solidarity and ex ante control. Although widely discussed, the idea has this far met the resistance of the German government on the ground that Eurobonds could only come at the end of the process of political integration. There is a logic in this view because a system of ex ante control and veto, without which no Eurobond could be lastingly stable, requires sufficient legitimacy at European level to oppose a parliament's vote on the budget. Only political integration can confer this legitimacy. German reluctance is therefore understandable, especially in view of France's refusal to contemplate federalist solutions.

No easy option

The three options I have outlined are mutually compatible but neither is an easy one. Economic, legal and political obstacles make all three difficult and this explains why Europe is agonizing over reform choices. It has possibly got closer to the Eurobonds solution than to the other two ones, but even it involves overcoming significant hurdles.

5. Conclusions

The euro area is fighting for survival and its leader have given any possible indication that they intend to do "whatever it takes" to save it. Yet their discussions and the search for solutions are based on a partial diagnosis that puts excessive emphasis on the lack of enforcement of the existing fiscal rules. True, poor enforcement has been one of the causes of current difficulties but it is by no means the only one, not even the most important one. Europe's fiscal obsession has deep roots in the history of Economic and Monetary Union but to look at the problems through the fiscal lens only is a recipe for disappointment. The European leaders should be well advised to take a broader view and contemplate reforms that would address the inherent weakness of the euro area that was revealed by the crisis. There are various possible options for escaping the new impossible trinity of no-coresponsibility over public debt, strict no-monetary financing rule and national banking systems.

One at least has to be chosen. Not to chose any risks keeping the euro area in a state of dangerous fragility.

References

De Grauwe, Paul (2011)

Delpla, Jacques, and Jakob von Weizsäcker (2010)

Gros, Daniel, and Thomas Mayer (2011)

German Council of Economic Experts (2011)

Hellwig, Christian, and Thomas Philippon (2011)

Henning, Randy, and Martin Kessler (2011)

International Monetary Fund (2011), Fiscal Monitor, September

Marzinotto, Benedicta, André Sapir and Guntram Wolff (2011)

Schuknecht, Moutot, Rother and Stark (2011)

Woodford, Michael (2009), "Fiscal Requirements for Price Stability", *Journal of Money, Credit and Banking 33/3*, pp. 669-728.