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EURO CRISIS

THE TEN ROOTS OF THE EURO CRISIS

ZSOLT DARVAS*

On 9 December 2011 euro area leaders once again gathered in an attempt to find a comprehensive solution for the euro area sovereign debt and banking problems – but once again they failed to convince markets. Why is it so hard to overcome the current crisis? The answer is that the euro area has deep-rooted problems and for the most pressing ones no solution has been offered so far.

Let me raise ten important issues – the first four ones relate to pre-crisis developments, while the other six relate to issues highlighted by the crisis.

First, the rules-based Stability and Growth Pact failed, resulting in high public debt in Greece and Italy at the start of the crisis. Recent agreements, including the 9 December agreement, try to fix this problem with strong fiscal rules enshrined in national constitutions and an intergovernmental treaty with quasi-automatic sanctions. These institutions, if implemented, could help once the current crisis is solved, but are not sufficient to resolve current worries. For example, the situation could just be made worse if Italy had to pay a fine now.

Second, there was a sole focus on fiscal issues – and a consequent neglect of private-sector behaviour. This resulted in unsustainable credit and housing booms in countries such as Ireland and Spain, and the emergence of structural imbalances, such as high current account deficits and eroded competitiveness. A new procedure, the so called ‘Excessive Imbalances Procedure’, was introduced with the aim of assessing private sector vulnerabilities and helping the countries to design remedies. Yet adjustment within the euro area could take a decade or so and hence quick improvements are not expected.

Third, there were no proper mechanisms to foster structural adjustment. Some countries, such as Germany, were able to adjust within the euro area on their own (i.e. Germany’s competitiveness improved considerably during the past 15 years), but others, such as Italy and Portugal, were not. The new ‘European Semester’, a yearly cycle of mutual assessment of fiscal and structural issues was introduced in 2010. This also aims to foster adjustment. This is useful, yet the jury is still out on its effectiveness.

Fourth, there was no crisis-resolution mechanism for euro area countries and therefore the euro crisis came as a surprise without any clues about what to do about it. For troubled sovereigns some temporary arrangements were made: bilateral lending from euro area partners to Greece and the setting up of two financing mechanisms, the EFSF (European Financial Stability Facility) and the EFSM (European Financial Stability Mechanism). The European Stability Mechanism (ESM), the permanent rescue fund with firepower of 500 billion euros, will likely be introduced in mid-2012. In the current circumstances having a euro area rescue fund is a useful innovation, even though in other federations, such as the United States, similar funds do not exist. However the firepower, even if augmented with IMF lending (the December summit committed to beef up IMF resources by 200 billion euros), is not really sufficient for big economies like Italy and Spain.

Fifth, the national bank resolution regimes and the large home bias in bank government bond holdings imply that there is a lethal correlation between banking and sovereign debt crises. When a government gets into trouble, so does the country’s banking system (e.g. Greece), and *vice versa* (e.g. Ireland). This problem could be best addressed with a banking federation, whereby bank resolution and deposit guarantee would be centralised, which would also require centralising regulation and supervision. A Eurobond, i.e. pooling sovereign bond issuances into a common bond for which participating countries would be jointly and severally liable, would help to break this lethal link. But Eurobonds would require a much stronger political union between member states.



* Bruegel, Brussels.

Unfortunately, neither the banking federation nor the Eurobond is on the negotiating table.

Sixth, there is a strong interdependence between countries – much stronger than we envisioned during the good years before the crisis. The fall of a ‘small’ country can create contagion and the fall of a ‘large’ country lead to meltdown. Italy, for example, cannot be allowed to go bankrupt, because it would bankrupt the Italian banking system, which in turn would melt down the rest of the euro area banking system through high-level interlinkages, and would also have disruptive effects outside the euro area. The best cure, again, would be the banking federation and the Eurobond.

Seventh, the strict no-monetary financing by the European Central Bank/Eurosystem means that euro area governments borrow as if they were borrowing in a ‘foreign’ currency. This is because a central bank can in principle act as a lender of last resort for the sovereign, i.e. print money and buy government bonds (as the Federal Reserve, the Bank of England or the Bank of Japan did during the crisis). While the ECB has also started such a programme, it is extremely reluctant to do this and has said (so far) that these operations will remain limited. Lack of a lender of last resort for sovereigns is not a big problem when debt is low. For example, in the United States the Federal Reserve does not buy the debt of the states of California, New York, etc., but buys only federal bonds. Even though California has been in deep financial trouble for the past three years, its eventual default would not have caused major disruption to the US banking system. The reasons are that the debt of the State of California is small, about 7 percent of California’s GDP (local governments in California have an additional 13 percent debt); moreover, this debt is not held by banks, but mainly by individuals. But Italy would be a game changer in Europe. The remedy to this problem is clear: setting up a stronger political and fiscal union which could provide the basis for changing the statutes of the ECB. In that case, the ECB need not purchase more government bonds; just signalling that it could purchase may help. But again, while there are pressures on the ECB to purchase more right now, there are no real discussions about what kind of political and fiscal integration should make such a role desirable.

Eighth, there is a downward spiral in adjusting countries, i.e. fiscal adjustment leading to a weaker economy, thereby lower public revenues and additional fis-

cal adjustment needs. It is extremely difficult to break this vicious circle in the absence of a stand-alone currency. In the United States, the automatic stabilisers, such as unemployment insurance, are run by the federal government, which also invests more in distressed states – but in Europe we do not have instruments that could play similar roles and there are no discussions about them.

Ninth, there is a negative feedback loop between the crisis and growth not just in southern European adjusting countries, but in all euro area countries. The funding strains in the banking sector, the increasing credit risks for banks due to weakening economic outlook, and the efforts to raise banks’ capital ratios may lead to a reduction in credit supply. But reduced credit availability would dampen economic growth further. Without effective solutions to deal with the crisis, growth is unlikely to resume.

Tenth, the current crisis is not just a sovereign debt and banking crisis, but a governance crisis as well. The response of European policymakers has been patchy, inadequate and belated, and they have thereby lost trust in their ability to resolve the crisis. Some observers have concluded that agreeing on a comprehensive solution is technically and politically beyond reach.

What are the scenarios in the absence of a truly comprehensive package? Until Italy and Spain can issue new bonds on the primary market, which they could do even after the 9 December summit, the current muddling-through strategy could continue. Italy and Spain’s current borrowing cost of 6–7 percent per year is high, but if these rates persist only for a limited period, they will not necessarily lead to an unsustainable fiscal position. The new governments of these countries could impress markets, leading to a gradual decline in interest rates. In the meantime the ECB can keep banks afloat. Yet even in this muddling-through strategy, a miracle is needed to revive economic growth, especially in southern Europe. But if markets were to decide against buying newly issued bonds from Italy and Spain, the pressure for a really comprehensive solution would be irresistible.

Downsizing the Eurozone into an OCA or Entry into a Fiscal Transfer Union

FRITZ BREUSS*

Last chance to stabilize the eurozone

Since May 2010, three member states of the eurozone have already been supported by the EU rescue measures due to their indebtedness: Greece since May 2010, Ireland since November 2010 and Portugal since May 2011. The most critical candidate is Greece. While the situation in Ireland and Portugal appears to be stabilizing after the implementation of austerity measures, the Greek drama is continuing. The worsening of the economic and political situation in Greece during 2011 forced the partner countries of the eurozone (shortly after the July 2011 package was announced) to strengthen the rescue measures at two consecutive Euro Summits (in October and December) in the hope of making the preliminary 'last' attempt to fix the eurozone crisis. Although Greece was the target of prime importance, the danger of contagion to other EU periphery countries (e.g. Italy) was increasingly a case that deserved attention.¹

When talking about the current crisis, one should be aware of the fact that there is no 'euro crisis' but a sovereign debt crisis in some of the periphery eurozone countries, in particular in Greece. The recession of 2009 triggered the debt crisis. Since the outbreak of the crisis in early 2010, the euro-dollar exchange rate has remained relatively stable in a band of 1.30 to 1.50.² One reason can be seen in the fact that the euro has increasingly gained power and established itself

as the second world currency. In the last ten years, the euro increased its share in global foreign exchange reserves from 18 to 27 percent. Inversely, the share of the US dollar shrank from 72 to 60 percent. Further diversification of China's huge foreign reserves and hence a shift from dollars to the euro could further support the value of the euro in spite of the current financial turbulences (see Breuss, Roeger and in't Veld 2009).

At the December Euro Summit (see Euro Summit 2011B), the Heads of State or Government (HoSG) of the euro area made a 'final' attempt to combat the sovereign debt crisis by agreeing measures to move towards a genuine '*fiscal stability union*' (or an embryonic '*fiscal union*') in the euro area (see also below). Besides these longer-term reforms aimed at enhancing economic policy coordination in the EU, some immediate strategies to strengthen the stabilisation tools were also announced at the earlier October Euro Summit as short-term actions to address the current financial market tensions (see Euro Summit 2011A). These include:

- *Increase the firepower of the European Financial Stability Facility (EFSF).*³ An optimisation (leveraging) of the resources of the extended EFSF, without expanding the guarantees underpinning the facility to have a credit capacity of 440 billion euros (by October 2011 approved by all parliaments of the 17 euro member states). The leverage effect should be up to 4 or 5, which is expected to yield around 1 trillion euros. The terms and conditions of the two concrete 'leverage' options (insurance solution with 20–30 percent insurance quotas and establishing a special purpose vehicle fund) were worked out in detail by the EFSF and had been agreed by the Eurogroup on 29 November



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¹ According to simulations with the IMF Global Projections Model (GPM), the macroeconomic impact on Europe in case of an 'earthquake' scenario would be considerable. A large financial shock that spreads to the entire eurozone and a policy response that falls short, would lead to large financial losses in the periphery which, in turn, would result in banking problems throughout the eurozone. Consequently, eurozone growth would fall by 2.5 percentage points relative to the baseline, while global growth would fall by about 1 percent over 2011–12 (see IMF 2011).

² Presently only 17 EU member states are members of the eurozone. Nevertheless, due to a tight tie to the euro (either *via* currency boards or voluntarily), the eurozone has at least four 'shadow members': Bulgaria, Denmark, Latvia and Lithuania. This implies an extended eurozone of 21 member states, leaving out six countries: the Czech Republic, Hungary, Poland, Romania, Sweden and the United Kingdom. These countries are more or less floating their currencies *vis-à-vis* the euro.

³ The EFSF and from 2012 the permanent ESM are new institutional arrangements outside the EU Treaty (in case of the ESM, Art. 136 TFEU was amended). The EFSF is (and the ESM will be) a Luxembourg-registered company owned by eurozone member states according to British Law.

2011. Whether the planned Co-Investment Fund (CIF, which would allow the combination of public and private funding, will get enough response by big international investors (Brazil, China, Japan, Norway, etc.) is an open question. The ECB is ready to act as an agent for the EFSF in its market operations. The EFSF (see Euro Summit 2011B) will remain active parallel to the ESM (European Stabilisation Mechanism) which is to enter into force in July 2012 (instead of July 2013), thus doubling the firepower (440 billion euros plus 500 billion euros).

- *Adjustments to the ESM Treaty:* the decisions taken at the October Euro Summit (see Euro Summit 2011A) concerning Greek debt (a 'haircut' of 50 percent on notional Greek debt held by private investors – primarily banks – should secure the decline of the Greek debt to GDP ratio to 120 percent by 2020, down from presently 186 percent) are unique and exceptional. This is because this 'voluntary measure' proved to be a big mistake because it unsettled the sovereign bond market in Europe. Instead, standardised and identical Collective Action Clauses (CAC) will be included in the ESM. The voting rules in the ESM will be changed to allow a qualified majority of 85 percent in order to include an emergency procedure.
- *Additional financial resources:* euro area member states will consider additional resources for the IMF of up to 200 billion euros in the form of bilateral loans by the national central banks. However, the US government may not support this programme.
- *The latest Greek rescue package:* besides the agreement of a haircut of Greek debt, the eurozone leaders decided at the October Euro Summit that a new EFSF-EU-IMF multiannual programme, financing up to 100 billion euros, will be put in place by the end of 2011, conditional on structural reforms (see Euro Summit 2011A). This package will replace those of July 2011, totalling 159 billion euros (109 billion euros from EFS/IMF and 50 billion euros resulting from the haircut by bank participation). Overall, the new Greek rescue package amounts to 230 billion euros (euro area member states will contribute up to 30 billion euros to the Private Sector Involvement (PSI) package; the haircut amounts up to 100 billion euros; the EFSF-EU-IMF programme amounts to 100 billion euros).
- *Banking rescue packages:* at the October Euro Summit the eurozone leaders also agreed a comprehensive set of measures to raise confidence in

the banking sector by (i) facilitating access to term-funding through a coordinated approach at EU level and (ii) an increase in the capital position of banks to 9 percent of core tier 1 by the end of June 2012 (Euro Summit 2011A). National supervisors must ensure that the banks' recapitalisation plans do not lead to excess deleveraging (to avoid a 'credit squeeze').

Following the proposals by Merkel and Sarkozy, the leaders of the Eurogroup decided to embark on a 'fiscal stability union' by more strongly centralising fiscal policy via a new 'fiscal compact' (see below). Due to the absence of unanimity among the EU member states (Britain vetoed the new measures), the new rules cannot be implemented by primary legislation (reform of the EU Treaties) but must be implemented by an 'international agreement' to be signed in March 2012, again an intergovernmental action (see also Euro Summit 2011B).

By these steps, the hitherto asymmetric economic policy design of EMU (centralized monetary policy combined with a decentralized fiscal policy, coordinated by the Stability and Growth Pact – SGP) is going to become more symmetric. That means that the gap between the philosophy of 'one market, one money' – the basis of EMU – and the normal formula of a functioning monetary union – 'one country, one money' – will be filled in gradually by the newly planned 'fiscal stability union'. Nevertheless, the final goal of a really functioning monetary union, which – on the EU level – would imply a Political Union, still lies far in the future.

A new fiscal compact aims at establishing a new *fiscal rule*, containing the following elements (see Euro Summit 2011B):

- The general government budget shall be balanced or in surplus (like in the SGP); this principle shall be deemed respected if the annual structural deficit does not exceed 0.5 percent of nominal GDP.
- Such a rule ('debt brake') will be implemented in the EU member states' national legal systems at constitutional or equivalent level. The rule will contain an automatic correction mechanism that shall be triggered in the event of deviation.
- The Court of Justice shall verify the implementation of this rule at national level.
- The EU member states shall converge towards their specific reference level according to a calendar proposed by the Commission.

- The EU member states shall report *ex ante* their national debt issuance plans.
- If the Commission recognises that a member state breaches the 3 percent ceiling, there will be automatic consequences unless a qualified majority of euro area member states is opposed.⁴ Steps and sanctions will be ruled by reversed majority voting according to the new Sixpack rules of the SGP-III that entered into force on 13 December 2011. In addition, a numerical benchmark for debt reduction (1/20 rule) for member states with a government debt in excess of 60 percent needs to be enshrined in the new provisions.
- The eurozone leaders will examine the new rules (directives) proposed by the Commission on 23 November 2011 on (i) monitoring and assessment of draft budgetary plans and the correction of excessive deficits in euro area member states and (ii) the strengthening of economic and budgetary surveillance of member states experiencing or threatened by serious difficulties with respect to their financial stability in the euro area (presently the three countries under the rescue umbrella – Greece, Ireland and Portugal; maybe also Italy).
- Euro area governance will be reinforced as agreed at the Euro Summit of 26 October 2011. In particular, regular Euro Summits will be held at least twice a year.

The whole set of new rules in this new ‘fiscal compact’ outside the EU Treaty raises many legal questions (e.g. are automatic sanctions legally binding; which competence is given to the Court of Justice to intervene in national budgets; which role does the Commission play) that should be clarified by the European Commission by March 2012.

Here for the more medium and long-term reorganization of economic governance (sometimes called ‘EU government’ in EMU), a number of measures are already in force or in the pipeline (see Breuss 2011; Buti 2011). This enhanced governance should foster fiscal discipline (by the enhanced SGP within the legal measures in the Sixpack; the European Semester; the intergovernmental agreement of the HoSG in the Euro Plus Pact) and deeper integration in the internal market as well as stronger growth (by the agenda of Europe 2020), enhanced competitiveness (two new regulations concerning the surveillance and correction of macroeconomic imbalances in the Sixpack)

and social cohesion (new targets in the structural policy). Additionally, a European System of Financial Supervisory (ESFS) with three new European Supervisory Authorities (ESAs: EBA, London, EIOPA, Frankfurt, ESMA, Paris⁵) – already in place since January 2011 – should secure better governance of the financial sector in Europe.

The question arises whether all these heterogeneous measures and initiatives on EU level or outside the EU Treaty really meet the needs to cure the causes of the current crisis in Europe. In the following we shall try to confront the causes and cures of the euro crisis in a theoretical framework based on earlier ideas of the ‘optimum currency area’ (OCA) theory.

From an economically optimal to a politically suboptimal EMU

Two major causes – partly interrelated – of the present crisis in the eurozone can be identified:

- *Diverging competitiveness*: competitiveness, measured by relative unit labour costs (ULC) of eurozone countries to the eurozone average, drifted apart in the last decade. Germany and Austria steadily improved the countries’ cost competitiveness since the inception of EMU, whereas in the periphery countries Portugal, Ireland, Italy, Greece and Spain (PIIGS the competitive position) deteriorated.
- *Indebtedness*: public debt increased dramatically in the PIIGS countries, in particular in Greece. When countries surpass the benchmark of ‘sustainability’ spreads on newly issued government bonds (also followed by a downgrading by rating agencies), they are in danger of potential default. In this case only bail-out mechanism by the eurozone partners can avoid default.

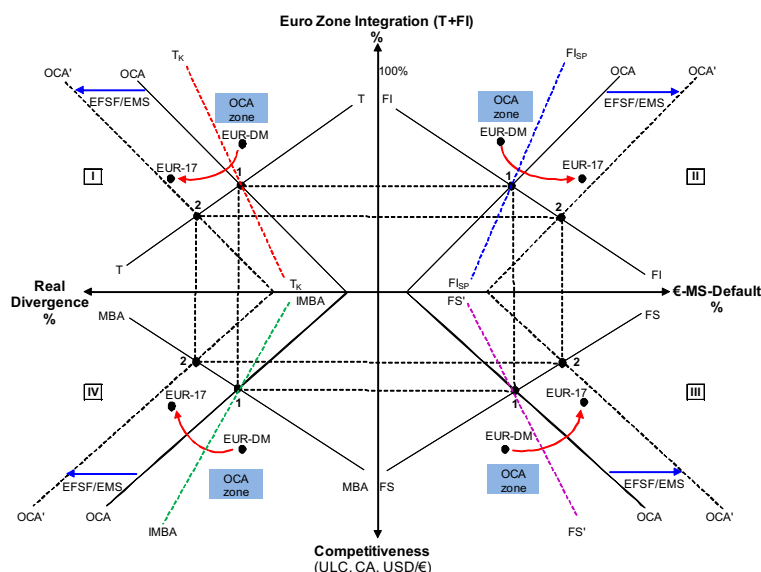
The implications of these two causes of the present eurozone crisis may be discussed with the help of Figure 1, a generalization of the usual graphical treatment of the traditional and/or endogenous OCA theory (see Breuss 2006). The generalized OCA theory of Figure 1 consists of four quadrants with interrelated states of integration in an economic OCA and its deviations due to the shocks of the present crisis in the eurozone. The combination of

⁴ The ‘automatic’ sanctions would, however, require a change of Article 126 TFEU that determines the excessive deficit procedure. If a eurozone member state breaches the rules, sanctions could have no legal basis.

⁵ EBA = European Banking Authority; EIOPA = European Insurance and Occupational Pensions Authority; ESMA = European Securities and Markets Authority.

Figure 1

EUROZONE – FROM AN OCA TO A FISCAL TRANSFER UNION



Source: Author's conception.

the numbers 1 in the four quadrants defines equilibrium of an economic OCA. Those of the numbers 2 describe a situation of the present politically created eurozone which can only survive by embarking on a fiscal transfer union.

Quadrant I (upper left side) represents the relationships between real divergence (or alternatively, the increasing failure to form a 'European business cycle' because the economies of the eurozone member states become more and more heterogeneous) and trade integration (T) in the eurozone.

- (i) First we have the *European Commission's optimistic view of EMU*. There is a downward sloping line (TT) because as trade integration (T) increases, the degree of economic divergence between the eurozone countries declines. The upward sloping line (OCA) says that more divergence makes EMU more costly (or the costs surpass the benefits). More trade integration reduces these costs. Thus, an increase in real divergence must be compensated by more trade integration to make benefits surpass the costs of EMU. Points on the OCA line are combinations of divergence and integration for which EMU has zero net gains. In the upper area of quadrant I we find countries that, in economic terms, would be sustainable candidates for EMU (the OCA zone). In hindsight, one must confess that only a small group of countries would belong to the OCA zone. The fact that the EU had, for

political reasons, created a large EMU instead of an economically sustainable OCA was emphasized by several studies before 1999. The small OCA would have consisted of the countries belonging to the former DM bloc (EUR-DM: Austria, Belgium, France, Germany, Luxembourg and the Netherlands) and eventually also Finland. In any case, the present composition of the eurozone with 17 member states (EUR17) does not form an OCA. Many members of the politically formed EMU were not able to adapt to the new situation of a single currency by increasing their ULC. They could not compensate for the loss of the instrument of currency depreciation, formerly used often to improve competitiveness.

In Figure 1, EUR17 therefore lies outside the OCA zone. In this context, one must also state that the forecasts made by the so-called endogenous OCA theory seem to be falsified by the eurozone performance of the last decade. The hope has been disappointed that membership in the eurozone and the promise of increased intra-eurozone trade would automatically lead to less heterogeneity and hence to an urgently needed 'European business cycle'.

- (ii) Second, *Krugman's pessimistic view of EMU* could have dominated the most recent performance of EMU. This view is represented by the upward sloping T_k line. According to Krugman (derived from experience in some regions of the United States), more trade integration could lead to more specialization and hence to increasingly removing countries from the OCA zone. Besides the lack of adjustment, this argument could somehow explain the drifting apart of competitiveness in the eurozone. Empirical evidence is scarce, however. Indirect evidence may be found in most recent regional studies (see EU 2011A and 2011B), which identify the periphery countries of the EU as extremely vulnerable concerning globalisation as they are supplying products in international trade with RCA values concentrated in agricultural products and low-tech categories.

Quadrant II (upper right side) represents the relationship between potential default of eurozone countries

(€-MS default) and financial integration (FI) in the eurozone. This quadrant represents the second cause of the present eurozone crisis.

- (i) First there is the *optimistic view of EMU*. The line (FI) is downward sloping because, as financial market integration (FI) increases, the probability of eurozone countries' sovereign defaults declines. The upward sloping line (OCA) says that the more eurozone countries are moving towards default, the more the costs of EMU surpass the benefits. An increase in the number of eurozone countries being in sovereign default must be compensated by increased financial integration. In the upper area of quadrant II we find countries that, in financial and fiscal terms, are sustainable candidates for EMU (the OCA zone). Again, the former DM bloc (EUR-DM) countries would belong to this area, whereas the present EUR17 group lies outside the OCA zone. One reason may be that the low interest rates after entering EMU has led to a misallocation of funds and to debt-financed spending in the private and public sectors. Due to lax control by EU institutions and hence the disregard of SGP rules, some eurozone member states have accumulated debt-to-GDP ratios far above the sustainability level – not least Greece.
- (ii) Second, we can also interpret the present crisis with a *pessimistic view of EMU*. In the aftermath of the recession of 2009 and after the declaration that Greece had faked its fiscal statistics (for the second time), the spreads of government bonds (*vis-à-vis* German 10-year bonds) exploded and – simultaneously – Greek bonds were downgraded by the rating agencies. The process started with Greece and was followed by the other PIIGS countries. Whereas during the 'fair-weather' period of EMU (from 1999 to 2007) the government bonds of all euro area countries exhibited near-zero spreads, they started to diverge in 2008, implying different default risks. Before the start of EMU, the spreads of the PIIGS had also diverged considerably, mainly due to exchange rate risks. The situation of a weakly integrated financial market (in particular concerning government bonds) is represented by the upward sloping FISP line. In the so-called 'fair-weather' phase of EMU, banks financed budget deficits of eurozone member states under the pretext that all government bonds (those of Greece and Germany alike) would have the same risk. These financing activities were reinforced by the fact that under Basel II (and also under Basel III)

rules, government bonds must not be secured with core tier 1 capital.

The eurozone crisis has brought to light the fact that the present composition of the EUR17 group is (at least economically) not an OCA. In order to come to grips with this situation one can follow two options: (i) either the eurozone is re-dimensioned, i.e. some of the problem countries temporarily leave the eurozone⁶ or (ii) a fiscal transfer union is started. In the first case, eurozone members will re-introduce their national currencies and improve their competitiveness by depreciation. After having reformed their economies and having reduced their public debt, they could re-join EMU. In the second case, the EUR17 zone becomes a permanent fiscal transfer union, which was not intended in the Maastricht Treaty, manifested in the 'no-bail out' clause of Article 125 TFEU. The several rescue plans for Greece (not to forget those for Ireland and Portugal) indicate that politically the most likely outcome is the fiscal transfer union.⁷ Initial steps in this direction were made by the announcement of creating a 'fiscal stability union' (see Euro Summit 2011B). In Figure 1, the bail-out actions of the eurozone member states *via* EFSF/ESM would shift the OCA line towards the left (in quadrant I) and to the right (in quadrant II) to the new OCA' line. If that were the political intention, the present EUR17 group would also belong to the OCA zone.

Quadrant III (lower right side) represents the relationship between potential default of eurozone countries (€-MS default) and competitiveness. An improvement of the latter may come about by reducing unit labour costs (ULC) and hence improving the current account (CA) and/or by depreciating the euro against the US dollar or other currencies.

- (i) First we deal with the *optimistic view of EMU*. There is a downward sloping fiscal stability line (FS), i.e. the situation where eurozone member states would follow the SGP rules. Sovereign default can be mitigated or overcome by increasing competitiveness and hence stimulating economic

⁶ For the time being, the Lisbon Treaty (Article 50 TFEU) only allows an exit from the EU and hence also from the eurozone but not an exit solely from the eurozone. Therefore we would need a new Article 50a TFEU which allows the temporary exit only of the eurozone.

⁷ In a future 'new EU' with a revised EU Treaty one could also think of a 'fiscal transfer union' consisting of the ESM (which could be transformed into a European Monetary Fund – EMF) to intervene temporarily in acute debt problems and a permanent 'fiscal federalism' à la the United States and Canada which automatically balances budgetary disequilibria between eurozone member states during the business cycle.

growth. The upward sloping line (OCA) says that the more eurozone countries are moving towards default the more the costs of EMU will surpass their benefits. Increasing competitiveness can compensate fiscal unsustainability. In the lower area of quadrant III there are countries that would be, in competitiveness and fiscal terms, sustainable candidates for EMU (the OCA zone). Again we see a switch from the former DM bloc countries (EUR-DM) belonging to the OCA zone to the present EUR17 country group which is outside the OCA zone with a high potential of default (the outlier is Greece) combined with low competitiveness.

- (ii) Second, we can interpret the present crisis situation with a *pessimistic or realistic view of EMU*. In spite of the implementation of the SGP in 1997 and its first reform in 2005, there were always some countries (in 2003–2004 France and Germany did not comply with the SGP rules) that did not fulfil the rules of the SGP. In the ‘fair weather’ period of EMU (1999–2007) this did not very much hamper the eurozone because the rates on government bonds of all eurozone member states were pretty much the same. Only since the recession of 2009 has public debt exploded and hence also the spreads of government bonds – in particular in the PIIGS. The usual suspects with debt-to-GDP ratios far above the 60 percent benchmark were always Belgium, Greece and Italy. Belgium was able to reduce its ratio from 114 percent in 1999 to 84 percent in 2007. After the crisis it increased again to an expected 99 percent in 2012. In Italy, the debt-to-GDP ratio was 114 percent in 1999 and was then reduced to 103 percent in 2007. After the crisis it increased again to an expected 120 percent in 2012. Greece entered EMU in 2001 with faked fiscal figures and a debt-to-GDP ratio of 104 percent. Whereas other countries reduced their levels during the ‘fair weather’ period of EMU, in Greece the debt-to-GDP ratio increased to 107 percent in 2007. Since then it has exploded and will reach 199 percent in 2012/2013. The violation of the SGP rules in eurozone member states over time is represented by an upward sloping fiscal non-sustainability line (FS⁸). Even improvements in competitiveness are associated with an increased probability of debt levels that are not sustainable.⁸

⁸ After the recession of 2009 in 23 EU member states, excessive deficit procedures (EDP) were initiated by the European Commission (Greece was excluded as a special case); only in four countries – Estonia, Finland, Luxembourg and Sweden – no EDP was necessary. In 22 out of the 23 EU countries the EDPs were stopped temporarily because of the present crisis.

Quadrant IV (lower left side) closes the general picture of the extended OCA theory. It represents the relationship between real divergence and competitiveness.

- (i) First we start with the *optimistic or natural view of EMU*. There is a downward sloping macroeconomic (international) balance line (MBA), i.e. all combinations of real divergence and competitiveness which lead to a balanced current account. Real divergence can be overcome and/or improvements towards a ‘European business cycle’ can be realised by increasing competitiveness. The upward sloping line (OCA) says that the more economies of the eurozone countries drift away from what would be a ‘European business cycle’, the more the costs of EMU surpass the benefits. Increasing competitiveness can offset real divergencies. In the lower area of quadrant IV we have countries which would ideally form an EMU because their economies move together and they are competitive (OCA zone). Again we see a switch from the former DM bloc countries (EUR-DM) belonging to the OCA zone to the present group of EUR17 countries which lies outside the OCA zone.
- (ii) Second, there is again the *pessimistic or realistic view of EMU* if the years since the recession of 2009 are considered. In some countries the real divergence cannot be overcome even through increasing competitiveness (due to the Krugman effect of specialization). This is represented by the upward sloping macroeconomic (international) imbalances line (IMBA). Two new directives of the Sixpack are targeting the imbalance problems in the eurozone. Macroeconomic imbalances have been neglected so far, although they are the second major reason – besides indebtedness – of the current eurozone crisis.

As already discussed in the context of quadrants I and II, we are confronted with the basic question: do we go back to the roots of (economic) OCA criteria that would involve a re-dimensioning or downsizing of the eurozone or must we come to live in a fiscal transfer union in the future? The present rescue activities speak a clear language: the second option is the most probable. In Figure 1 the bail-out actions of the eurozone member states *via* EFSF/ESM shift the OCA line towards the right (in quadrant III) and to the left (in quadrant IV) to the new OCA’ lines. By this political will the present EUR17 group would also belong to the OCA zone, artificially and politically but not economically.

Europe à deux vitesses due to the eurozone crisis

The 'Greek crisis' is a superb example of the validity of the 'butterfly effect' in the chaos theory: the indebtedness of a small country (the flap of a butterfly's wing on the Acropolis) holds the whole eurozone hostage (sets off a Tornado in Europe). Although the economic weight of Greece, measured by its share of eurozone GDP (2.5 percent) and by its intra-eurozone trade potential (1.5 percent) is negligible, the debt crisis in this country has profound implications for the eurozone. Firstly, because European banks financed the Greek public debt and secondly, the financial (bond) market integration poses the risk of contagion by other PIIGS countries. Ireland (due to its banking problems after the Lehman disaster) and Portugal had already to be rescued by assistance of EFSF, EU and IMF. Italy and Spain have problems in financing their public debt because of increasing spreads for their bonds and because now the rating agencies are taking a keener view on the fiscal performance of these countries.

In addition to its economic and financial implications in Europe, the debt crisis in the eurozone has had already considerable political collateral damage. In six eurozone countries (Greece, Ireland, Italy, Portugal, Spain and Slovakia) either the national parliaments were dissolved and/or the heads of state (prime ministers) had to resign. In Greece and Italy overwhelmed politicians have been replaced by technocrats. Academic economists have become prime ministers.

In light of the feeble and instable political environment in Greece and Italy after the collapse of the governments, the future of the eurozone is gloomy. It appears that there are only two extreme options:

- (i) *A breakdown of the eurozone*: this scenario could materialize if a large founding member state like Italy were penalized by the financial markets by excessively high interest rates on government bonds which would make it impossible to refinance the public debt. In this case even the leveraged EFSF would be too weak to bailout Italy. If Italy falls, the eurozone in its present composition is dead. A reduction to the EUR-DM zone would become plausible.
- (ii) *Two-speed Europe or two Europes*: this scenario is most likely and a consequence of the numerous bail-out activities starting with the Greek crisis, then continuing with the rescue measures in case of Ireland and Portugal. Due to the urgency, many

actions of the eurozone partner countries were *ad hoc* and outside the EU Treaty, some are designed within the EU Treaty and will improve economic governance of the EU in the future.

In any case, the future strengthening of European integration will now take place within the eurozone, widening the gap between ins and outs. The eurozone crisis made it necessary to act quickly (intergovernmental) and *ad hoc*, and to break many legal taboos. Because the crisis affected one of the eurozone member states, the rescue measures were taken and financed only by the eurozone member states:⁹

- *Bail-outs*: the bail-out activities of EFSF/ESM are and will be executed outside the EU Treaty (only ESM will be sanctioned by an amendment to Art. 136 TFEU). Both bodies are companies organized by British law in Luxembourg. The contracting parties and hence financiers are only eurozone member states.
- *Euro-Plus Pact (EPP)*: the same is true of the Euro-Plus Pact activities of the HoSG of the eurozone. This pact is organized by a gentlemen agreement in a purely intergovernmental way. Members of the EPP are 17 eurozone member states plus six non-eurozone countries.
- *'Euro economic government'*: due to the absence of unanimity (because of Britain's veto) at the December Euro Summit (Euro Summit 2011B), the reform of the EU Treaty had to be circumvented by an 'international agreement' among the 17 eurozone member states which may also be followed by non-euro member states. After this intergovernmental interregnum, the eurozone leaders hope to be able to implement the new rules into primary legislation (a new EU Treaty) later. Again the leaders of the eurozone are starting with a new 'fiscal compact' that should lead to a 'fiscal stability union' with new fiscal rules ('debt brake') implemented in national constitutions, surveillance by the Court of Justice and the right to intervene in national budgetary sovereignty and (quasi)-automatic sanctions. Some elements of this new fiscal pact are already implemented in the reformed SGP within the Sixpack which became effective on 13 December 2011. Also within the budgetary surveillance procedure of the 'European Semester', the direct budget control by EU institutions has already been executed and in some of the PIIGS

⁹ The only forward strategy encompassing all EU-27 member states is 'Europe 2020', a strategy for smart, sustainable and inclusive growth. This medium-term strategy should not least also foster competitiveness in the periphery countries of the eurozone.

the budgetary sovereignty has been reduced even further. In the three eurozone countries under the rescue umbrella – Greece, Ireland and Portugal – the ‘Troika’ (experts of the European Commission, the ECB and the IMF) is monitoring regularly (each quarter) their budgetary plans. That means that these countries are already suffering a loss in their budgetary sovereignty (weakening of the ‘king’s right’ of national parliaments as the Germans like to say). After the G20 summit in Cannes (3–4 November 2011) Italy also stands (preventatively) under the budgetary supervision of the European Commission and the IMF.

Whereas the above mentioned measures are changing the economic governance of the eurozone outside the EU Treaty, hence intergovernmental, the other initiatives in the wake of the Greek crisis target a redesign and strengthening of economic governance (better co-ordination) or sometimes named ‘EU economic government’ by the reform steps in the Sixpack, Europe 2020 and financial supervisions. These activities are covered by the EU Treaty and therefore cover all 27 EU member states. This is the usual Community method. Whether the approach to deal with the current crisis is intergovernmental (this is adequate in the short term because it allows a faster response to the fast acting financial markets) or by the Community method (which is more democratically founded but takes more time to be implemented, all new EU or eurozone activities aim at avoiding a new Greek catastrophe in the future. The price might be a division of the EU into a ‘two-speed Europe’. But in any case, after this crisis we will have a new EU.

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AGREEMENT NEEDED ON LIQUIDITY PROVISION TO RESTORE CONFIDENCE IN THE EUROZONE

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Some eighteen months after the first Greek rescue (May 2010), there is little doubt that the multiple attempts at crisis management in the eurozone have failed to restore confidence. Indeed, following each round of emergency measures agreed by the eurozone summits, to date the situation has deteriorated (see Figure 1 for the widening spreads, over the German Bund, for sovereign borrowing in the eurozone). At the time of writing, contagion had spread beyond Spain and Italy to the core sovereigns, with France close to losing its triple A-rating and even Germany experiencing partial failure in a Bund auction on 23 November. Spreads are also opening up for Austria, Belgium, Finland and even the virtuous Netherlands. Meanwhile, the banking system across Europe is under increasing strain, with term funding all but closed for any bank with significant exposure to distressed sovereign debtors and the interbank market close to seizing up. Deposit withdrawals have surfaced in a number of large banks from the periphery. The euro has started to weaken in foreign exchange markets, narrowing room for a distinction between the eurozone debt crisis and the euro-currency crisis from which some observers drew comfort until recently.

These developments once again raise fundamental questions: what is not working? Why is it that dramatic changes in our policies and institutions within the eurozone are failing to halt the meltdown of confidence? Answers are needed, and fast, because the breakdown of the eurozone now appears a concrete possibility if we continue along this path. Rather than dwelling on the details of specific interventions, this

essay concentrates on the fundamental questions and disagreements before us. Essentially my argument is that political disagreements, rather than any fundamental economic disturbance, are leading us down a very slippery slope.

Reform policies under way

One important strand of opinion, notably in Germany and other northern European countries, maintains that the culprits behind the present crisis are lax fiscal policies and excessive debt accumulation by some eurozone member states. Greece, for one, is defaulting on its debt obligations, despite very harsh corrective measures – although its plight has been aggravated by its economy going into free fall as a result and its political system coming under almost unbearable strain in a bid to keep to the austerity course. But the numbers are small and should not endanger the solidity of Europe's banking system, even under extreme hypotheses of debt restructuring.

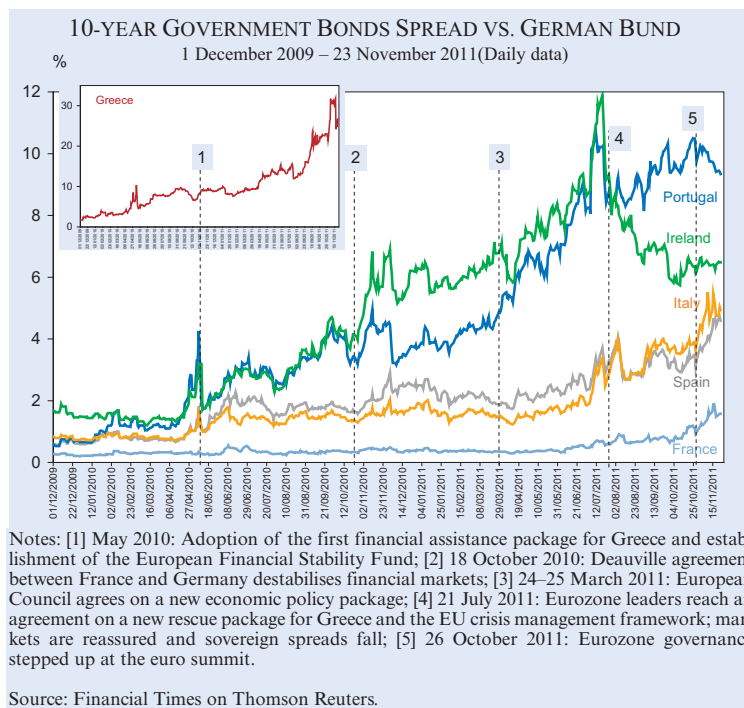
Ireland, Portugal and Spain have adopted or are about to adopt public-sector consolidation measures that have earned good marks from the European Commission, the European Central Bank (ECB) and the International Monetary Fund (IMF). Indeed their sovereign interest rate spreads over the German Bund were all receding – dramatically so for Ireland – up until the latest round of meetings by the euro summit at end-October (see Figure 1).

Last summer, sovereign selling pressures have expanded into Italy, which has a relatively small public sector deficit totalling about 4 percent of GDP in 2011, but a debt-to-GDP ratio of almost 120 percent. The government tried to play for time, but heavy selling pressures convinced it to bring forward budgetary balance to 2013. The limelight of market concerns then shifted to the adverse composition of the consolidation measures, largely based on higher taxes, and the absence of market opening and growth-enhancing measures, which in turn raised doubts about the long-term sustainability of the public debt stock, given Italy's endemic dismal growth and productivity per-



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Figure 1



formance. Since Berlusconi's coalition was unwilling or unable to take steps required, it was ousted from government – once again under heavy selling pressures, with the spread over the Bund climbing to close to 600 basis points. The new 'national unity' Monti government, sworn in at lightning speed, has to date received broad parliamentary support for all measures needed to restore sound government finances and reform the Italian economy. The spread over the Bund has dropped, but it remains near 500 basis points as markets await the new government's decisions.

Currency union has admittedly allowed, or even encouraged, lax financial policies – with Germany and France carrying large responsibilities, having suspended in 2003 the excessive deficit procedure that should have been opened on themselves. These policies subsequently came to haunt all of us as financial markets re-priced sovereign risks. However, budgetary consolidation seems well underway in all 'sinning' countries, together with long-awaited structural reforms. As shown by Figure 2, IMF forecasts to 2016 suggest that after increasing in the aftermath of the 2008–09 financial and economic

crisis, sovereign debts are now expected to stabilise at manageable ratios to GDP in all of the eurozone countries except Greece, even though slow growth will not allow for rapid reductions. In sum, all available information points to a situation that is coming back under control.

Stronger economic governance in the eurozone

Meanwhile, economic governance in the eurozone has been strengthened to unthinkable degree in terms of both substance and enforcement procedures. The Broad Economic Policy Guidelines of Article 121 TFEU are now assisted by legally binding enforcement procedures, while the European Semester ensures

ex-ante coordination of economic policies and time-consistent decision-making processes in the member states and the European Council. The excessive deficit procedure has been reinforced in both its preventive and corrective arm and now includes fresh constraints on growth of public expenditures and operational criteria for public debt reduction. There is also a new procedure, also legally-binding and supported by sanctions, for the correction of 'excessive economic imbalances', explicitly targeting competitive imbalances and their underlying causes. The Euro-Plus Pact details the enhanced policy commitments of eurozone

Figure 2



member states to budgetary stability, structural reforms and market opening. Eurozone members are required to strengthen their budgetary frameworks with the adoption of multi-year planning, top-down decision-making procedures and independent evaluation agencies. Many members have even indicated their intention to introduce balance-budget rules into their constitutions.

The European Commission has been given independent powers to signal emerging deviations from agreed policy guidelines, and to make recommendations to the Council on the opening of formal procedures, extending to the sanctions phase, which the Council can only reject or weaken with 'reverse' qualified majorities. A recently proposed regulation will require eurozone member states to present their draft budgets at the same time each year and, before national parliaments decide on them, give the Commission sufficient time to assess them and, if need be, ask for revisions when it considers that the draft budget violates the Stability and Growth Pact.

Some still consider these improvements insufficient and would like even stronger safeguards against policy slippages, possibly including the attribution of direct executive powers to eurozone bodies (to be identified) to modify policies within national domains. And yet, even leaving aside legitimate pre-occupations regarding the progressive expropriation of national sovereign powers – which at some stage will clearly require the establishment of new legitimising controls at eurozone or Union level by means of treaty changes – there is little doubt that we now live in a different world where policy constraints on the member states of the eurozone are effectively binding, which is also due to additional coercion resulting from heightened financial markets scrutiny.

However, far from abating, market pressure on the eurozone still seems to be increasing. At the same time this pressure does not seem to be affecting countries with large deficits and rapidly rising debt outside of the eurozone, like the United States and Britain, not to mention Japan, which has mountainous public debt, totalling almost 200 percent of GDP, but seems to have no problems in placing its paper on the markets. Similarly, it is difficult, to understand why many countries with a smaller debt/GDP ratio than Germany within the eurozone like Austria, Finland or the Netherlands, for example, must pay a positive spread over the Bund on their government issues.

In the end, one only arrive at the conclusion that the eurozone suffers from some 'special disease' that makes financial markets fret even if policies seem on the right track everywhere. Of course, if this were indeed the case and a special disease did exist, it is also possible that the financial markets may be forcing us onto a path of excessive deflation, which may eventually frustrate all efforts at budgetary consolidation – Greece *docet*.¹ This warning raises the question of the euro or, rather, the way we manage our common currency.

The foreign currency syndrome

The fundamental difference between a country that is a member of a monetary union and a country that has its own currency is that the former needs the permission of an institution that it does not control to increase liquidity, say to compensate for an outflow of liquidity through the banking system or to stabilise the government bond market, for example, while the latter does not. To each of the EMU members, for all practical purposes, the euro is like a foreign currency, since no one enjoys access to the euro printing press. As a consequence, eurozone member states are exposed to currency runs that are triggered when confidence in the ability to meet foreign-currency obligations is shaken by an exogenous shock or by unconvincing policies. Such a system can switch rapidly from 'fair weather', where foreign currency risks are underpriced, to 'bad weather' where risks become overpriced. In the second scenario, the explosion of financing costs can make fears of a run self-fulfilling.

Switching from 'fair weather' to 'bad weather' is not an entirely unpredictable event. A further feature of monetary union is that one monetary policy must fit all – regardless of divergent prices and wages, productivity, public spending and taxation, and market openness. When a country with higher inflation and structural rigidities joins a monetary union, it typically finds itself awash with liquidity, since real interest rates become negative and credit is cheap. Of course, real exchange rates subsequently appreciate and business competitiveness suffers, leading to rising unemployment; but abundant credit encourages the country to postpone adjustment and preserve inefficient jobs with public money. Public spending rises as a result and the public-sector deficit widens, while

¹ Latin for 'teaches'.

politicians will thrive on distributing subsidies and protection to broaden electoral consensus.

Lax financing conditions may prevail for quite a long time, as financial markets continue lending to divergent countries to gain higher nominal returns. Sooner or later, however, the process is bound to come to a halt, as growing external and public-sector deficits come to be seen as unsustainable. Then one day, typically as a consequence of some exogenous shock, investors flee, liquidity evaporates and the divergent country finds itself unable to refinance its debts in private markets at acceptable prices, as was the case with Greece and Portugal.

A variant of the model is one whereby the economy in the divergent country experiences a real-estate boom and rapid economic expansion, leading to unsustainable private indebtedness, while the public sector seems in good health. Here again, however, the real-estate boom must end at some time, and, when house prices start falling, many of those private debts cannot be serviced, to the point where financing institutions are threatened with insolvency. In such cases the government may feel obliged to step in and rescue the banks, turning unsustainable private debt into dangerously high government debt, as happened to Ireland and, to a lesser extent, Spain.

Thus, lax and divergent national policies do carry responsibility for the sudden switch in confidence. However, financial markets do not tend to adjust smoothly, but rather by jumps, and they tend to overshoot. Even countries that did not run divergent policies or, at any rate, maintained manageable exposures in 'fair weather', may find themselves unable to manage them after the shift to 'bad weather'.

These events lead to a reassessment of outstanding risks for the entire union, with an extra ingredient: namely, the fact that national banking systems have in the meantime become highly interconnected – with 'core' country banks extending excessive credit to divergent country banks and governments. Thus any doubts regarding the sustainability of sovereign obligations in divergent countries are readily transformed into doubts over the sustainability of the banking system in the core, stable countries.

Confidence in financial markets is a fickle commodity that can evaporate quite rapidly unless investors can be reassured that a liquidity crisis will not be allowed to develop into a solvency crisis that spreads

from one member of the monetary union to another. This is precisely what has happened in the eurozone since Greece was first bailed out in May 2010.

Liquidity support and debt restructuring

A confidence crisis spreading contagion even to the 'sound' part of a monetary union can be stopped by an abundant supply of liquidity from the central bank or by a common fund performing the same service but incorporating policy conditionality, with resources lent by the central bank or raised in the capital markets. In all likelihood, a suitable combination of both is currently needed. Failure by the euro summit to agree on a strong and effective rescue fund has stiffened the ECB, which fears that losses on its holdings of distressed sovereigns may one day force it to turn to national governments for capital, and thus lose its independence.

However, two stumbling blocks have so far impeded adequate liquidity support. The first impediment is the fear that liquidity will reduce pressure on 'sinners' to adjust. All assertions that the sinners are now mending their ways, under much strengthened common economic governance arrangements, have so far failed to convince the capital markets – even if, as I mentioned, policies have turned in the right direction everywhere. Some will not be satisfied until the union is assigned direct powers to intervene and change national policies whenever these deviate from their policy commitments. However, everyone should be aware that even the best policy course will need time to produce its effects; in the meantime, adequate financing flows must be maintained, or adjustment policies will fail to prevent a currency run.

The second ingredient in the unfolding drama is the intermingling of liquidity support and fiscal transfers, which inevitably arises if some of the countries under life support become insolvent and thus require debt restructuring. In this regard, Germany is adamant that liquidity support can never entail fiscal transfers – which would breach the 'no bail-out' provision of the Treaty (e.g. Article 125 TFEU) – and has on this account maintained strong pressure on the ECB to limit its open market operations in support of distressed sovereigns.

In reality, if adjustment works, there is no reason why liquidity support should be turned into fiscal transfers. To the extent that confidence is hit by fears of

insufficient liquidity, the simple act of restoring adequate liquidity would stop the run and make insolvency, and the need for fiscal transfers, unlikely. On the other hand, if there is a collapse of liquidity, fiscal transfers may become inevitable at least to rescue own (German) banks, following the chain-collapse of all other sovereign debtors in the union.

Germany has also insisted that the private sector should share the burdens of any debt restructuring. As a result of disastrous communications, private sector involvement (PSI) has become a promise of losses on all outstanding eurozone sovereign exposures, without sufficient differentiation. Thus investors have started to shy away from most eurozone sovereigns; even Germany has been affected. A cursory look at Figure 1 will confirm that contagion really started following the Franco-German announcement in Deauville in October 2010 that PSI would be part of any financial assistance programme.

Two further jumps in the spreads are clearly associated with the July and October 2011 meetings of the euro summit, as the announcements of rising ‘haircuts’ on Greek debt combined with inadequate liquidity support for the other distressed debtors succeeded in convincing investors to get rid of eurozone sovereigns as rapidly as possible.

Conclusion

The eurozone has proven collectively unable to ring-fence the Greek problem to date and to raise credible liquidity walls around the other distressed sovereigns. Meanwhile, the costs of adjustment in divergent countries are ballooning thanks to rising interest rates and falling activity, heralding further budgetary cuts and further deflation. The euro summit has to go back to the drawing board and overcome its political disagreements on how to proceed. Straitening policies in all the member states will not suffice; there is also a need for an adequate provision of liquidity – as large as needed to stop the on-going currency run. If this cannot be agreed upon, the eurozone will break up, creating gigantic economic dislocations as a result.



NOT A GOOD FIT: THE EUROPEAN BANKING AUTHORITY'S NEW CAPITAL REQUIREMENTS AND THE EFSF

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Introduction

At present, Europe pursues four different approaches to contain the debt crisis. First, countries with excessive ratios of debt to GDP are to implement policy reforms that – in the medium term – should reduce their debts. Second, a leveraged version of the European Financial Stability Fund (EFSF) has been set up. It is supposed to provide liquidity to Italy and Spain for at least a few months should their refinancing conditions deteriorate further. Third, the European banking authority (EBA) is pushing banks to increase their capital ratios as early as 2012. Fourth, the ECB is continuing to buy government bonds on the secondary market in order to lower their interest rates and maintain their liquidity.

The first measure can only yield positive results in the medium term. The other three measures are intended to prevent a severe banking crisis in the short run. In principle, each of these three measures is suited to prevent the worst consequences of a complete drying out of GIIPS sovereign debt markets. A leveraged EFSF could provide liquidity to Italy and Spain for some time while those countries work on their credibility. The same holds for the ECB's interventions on the secondary market. A substantially higher equity endowment of banks would instead help to avoid the worst consequences of possible debt restructuring programmes.

However, authorities currently attempt to undertake all three measures at the same time. In this paper we

argue that the attempts to lever the EFSF do not agree with the new capital requirements of the European Banking Authority (EBA). The most likely outcome will be that the ECB will have to significantly increase its activities on the secondary market for government debt or that the European states have to increase their contributions to the EFSF.

The EBA's plans

At the European summit of 26 October 2011 it was decided to leave it to the European Banking Authority to draft a text for an initiative to raise capital requirements in the EU. The EBA released its recommendations on 8 December 2011.

The new capital requirements are the following. First, those institutes which are affected by the initiative should achieve a core tier 1 capital ratio of nine percent by June 2012. Second, additional capital buffers have to be introduced to cope with possible losses from exposures to government debt in the eurozone. The size of these buffers is determined by banks' exposure to central and local governments of the European Economic Area (EEA) countries. The difference between market prices and the current balance sheet valuations determines the required additional capital buffer. To avoid banks' immediate sell-off of government bonds, the capital buffer is to be calculated on the basis of September 2011 data (European Banking Authority 2011a).

As almost all major banks are exposed to eurozone sovereign risk, the overall minimum capital ratio – according to this new regulation – will be above 9 percent. In October 2011 the EBA estimated that an additional 106.4 billion euros will be needed to fulfill the new core tier 1 capital quota. The additional capital buffers were estimated to add up to 40.6 billion euros (European Banking Authority 2011b). However, these were just initial EBA estimates. The final numbers and additional data were initially expected to be released in mid-November. It was then later announced that the data will be published by the end of November. In December the data was finally

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released with an overall shortfall of 114.7 billion euros and a capital buffer of 39.4 billion euros (European Banking Authority 2011d).¹

According to the EBA, the new requirements shall mainly be achieved by an increase of equity endowments and the reinvestment of profits. Accordingly, the EBA is appealing to banks to reduce dividend and bonus payments.

The EBA additionally requires banks to seek approval by their national supervisory authorities of their plans on how to fulfill the new capital requirements as of 20 January 2012. The national supervisors shall in turn consult with the EBA (European Banking Authority 2011a). This procedure shall prevent extensive deleveraging. Hence, national supervisory authorities are likely to only approve plans if they believe that these will not restrict the national credit supply too much.

Incentive problems of the capital initiative may increase spreads

The EBA's preferred solution is that banks acquire the new capital on the financial markets. However, the current state of the market situation may make this difficult. There is a limited willingness to invest in assets that are tied to default risks in the GIIPS countries. The EBA's critical position with respect to dividend payments is another potential obstacle for banks to get access to new capital.

The required capital buffers will lead to a great demand for new capital by banks with high GIIPS exposures. The GIIPS countries themselves will have to compete with European banks for that capital. This will make it more difficult for those countries to raise credit.

Banks have the option to reduce their country-specific risks by selling government bonds. According to the currently announced regulation, this would not change the size of the required capital buffer. However, selling GIIPS bonds should enable banks to get access to groups of more risk-averse investors.

Some of the recent measures and announcements of EU leaders have been characterized by a very short

time horizon. The EBA seems to continue this trend. The news agency Reuters reports that there have been discussions within the EBA about changes to the terms of the capitalization initiative (Reuters 2011b). Furthermore, according to banking circles, the data templates, used for the determination of the final capital shortfalls, requested information on additional risks that was not part of the previous queries. Therefore, banks cannot preclude the possibility that the rules will be adjusted once again along the way. In the end, the current amount (and not the value of September 2011) of sovereign exposures could be used as a reference for the shortfall of bank capital. This creates additional incentives for the banks to divest themselves of government bonds.

Limits of governmental capital injections

The question of the proper origin of new capital for the banking system was already discussed during the negotiations on the revision of the Basel capital requirements (Basel III). The fear to overwhelm the markets by too fast an introduction of new rules led to a gradual implementation of the requirements over a period of five to ten years (Basel Committee on Banking Supervision 2011).

The currently planned capitalization of the European banks differs from that approach. Although it may be argued that the capital market would have expected the banks to strengthen their capital base faster in any case, it is questionable whether the markets would have forced such a quick introduction by mid-2012. According to a Citigroup study, the European banks have already raised new capital of more than 270 billion euros since the end of 2008 (Citigroup Inc. 2011). Therefore, the banks are likely to need new sources of capital for a further private sector capitalization.

As an alternative, EU governments could provide part of the missing capital. Some proponents of this approach refer to the governmental capital injection of American banks after the collapse of Lehman Brothers in 2008. However, one key difference between the EBA capitalization and the US recapitalization is that the latter was carried out at a time when the US public debt was not yet in the focus of financial markets. Against this background, it may be difficult for some countries to fund the missing shortfall of capital. As an *ultimo ratio* the funds of the EFSF could be used for this. However, this would mean that

¹ The sovereign buffer does not fully contribute to the shortfall if the banks have already free capital above 9 percent core tier 1 ratio.

less capital were available to guarantee new government bonds.

If there is not enough private capital available in the markets and if the resources of the EFSF are not to be exhausted for bank capitalization, the affected banks will ultimately have to scale back their lending business. This would reduce the risk-weighted assets and thus reduce the EBA capital shortfall. National supervisors are primarily required to safeguard their national financial systems. Hence, one may assume that banks will reduce their lending, especially outside their home markets. This would lead to a certain re-nationalization of capital markets. The shortage of the supply of credit could also affect the real economy because of the risk of a credit crunch. As a result, the capital buffer in particular could have a pro-cyclical effect. The purpose of such a buffer should be that banks can make use of it in times of crisis to enable them to continue to lend. For that purpose it has to be established in advance of a crisis.

The ‘voluntary’ renunciation of private creditors and hedging strategies

The so-called voluntary renunciation by banks as holders (creditors) of Greek government bonds causes additional difficulties. From the perspective of the banks it will be difficult to understand that banks, which hold Greek government bonds and hedged this position through a credit default swap (CDS), do not get any compensation, because they are giving up their claims against Greece voluntarily. Why should banks believe in a possible insurance approach of the EFSF if the legal occurrence of a clear credit event is prevented? In the end, a similar approach might be used for other countries and the 20 to 30 percent coverage would not be paid because the insured event (the official default of the country) has not occurred.

In addition, it may be attractive for the banks to divest themselves of sovereign bonds, as these bonds are worth more in the hands of non-private investors. When this consideration is shared by many banks, this will further reduce the market price of the bonds. One can argue that, in the case of Greece, the divestment of sovereign bonds from the banks’ balance sheets would make a haircut less problematic. Nevertheless, the case of Greece could constitute a precedent in the view of the banks, which could help to explain the current sales of Italian bonds.

Analogously, one can explain a reluctance of the banks when it comes to sign newly issued government bonds. There is a risk that the issuers could change the conditions of the bonds afterwards. This risk may discourage banks from continuing to operate public finance business at its current level.

The voluntary renunciation has also an effect on potential private investors in banks. In making their investment decision they will now focus on the gross positions against the GIIPS-countries on the banks’ balance sheets. The consideration of net positions would be affected by the risk that hedging strategies could be worthless if the credit events do not occur officially.

The EBA capitalization would not be enough in case of an Italian default

At present it does not appear that the European governments are willing to prepare for a haircut of Italy or Spain. But at the same time the provisions of the EBA speak a different language, as the capital buffers are calculated based on the exposure to sovereign debt from these and other countries. This is not a good signal for investors.

Moreover, the EBA’s estimated aggregate capital shortfall in Europe of about 100 billion euros (provisional numbers) would not be enough to cover significant losses. In a scenario of a further dramatic worsening of the European debt crisis it is likely that this capitalization is not sufficient to prevent a systemic banking crisis. This is because the buffer would not react to the falling asset market prices due to an escalation of the situation.

It is extremely difficult to determine the aggregate losses of the banking system and thus the recapitalization that would be required for restoring the capital base in a situation with several simultaneous haircuts in the periphery of the eurozone.² One reason for these difficulties is that the ownership of government bonds changes continuously. Another reason is that in such an extreme situation the feedback effects from the real sector back to the banking system are difficult to estimate.

The IMF estimates a magnitude of approximately 200 billion euros for the losses of European banks in

² When the state recapitalizes a distressed bank, the losses of the bank are in general larger than the losses of the state because the state receives assets in exchange of at least part of its investment (see also Hau and Lucke 2011).

the event of a more severe debt crisis. Another 100 billion euros of losses could arise due to spillover effects within the banking system (IMF 2011). In similar scenarios, Credit Suisse expects a capital shortfall of 220 billion euros (Credit Suisse 2011), while Goldman Sachs expects 298 billion euros (Reuters 2011a).³

If there is a political request for an increase of bank capital, it should be sufficiently large to avoid bank failures, even if the debt crisis leads to haircuts in more than one country. The previous figures indicate that the approach of the EBA is half-hearted.

Every year, international bonds and notes with a volume of about 2–2.5 trillion euros are issued in the eurozone. The total volume of government bond issues is much smaller. Against this background it is clear that the additional capital demand that would be triggered by an appropriate recapitalization of the European banks is substantial. Whether raising this amount is possible in times of a recession and a general economic and banking crisis is an open question.

Clear signals are needed

It makes a difference whether regulators ask banks to increase their capital before a crisis or during a crisis. In the absence of a crisis this policy is useful to strengthen investor confidence in the banking system. However, to demand an increase of banks' capital during a crisis may signal a high risk of significant write-downs and may trigger additional assets sales.

Investors' reluctance to co-finance the EFSF indicates that a leveraged EFSF will only work if investors can expect Europe's governments to definitely avoid a haircut in Italy and Spain. If, instead, the EU governments send an unclear signal by leveraging the EFSF and simultaneously increasing banks' capital requirements, banks' investors will not rule out further haircuts for country in the eurozone. Accordingly, investors may find an investment in the EFSF too risky.

³ According to calculations that are based on assumptions in Hau and Lucke (2011), Müller (2011) arrives at even higher aggregate losses of the European banking industry of up to 500 billion euros in the case of a simultaneous default of all GIIPS states. However, this value is based on the relatively high indirect losses in the banking system (25 percent of the tier 1 capital) that were assumed in Hau and Lucke (2011). States' recapitalization losses are much smaller (65 billion euros). This value does not take into account state-owned bad banks that create additional direct losses. Acharya *et al.* (2011) derive capital requirements of a similar order of magnitude.

European leaders have to state clearly why an increase in banks' capital is desired at this time. They have to identify the countries for which a default is ruled out and those for which a default cannot be ruled out. The EBA's statements regarding this point are not suited to resolve the current uncertainty in this matter.⁴ It is also not clear why a capital buffer, which is not needed, should actually reassure investors. Moreover, the currently demanded capitalization would not be enough to cover the losses which would obtain if Italy, Spain, Portugal, Greece and Ireland would all be subject to a haircut.

One should not try to simultaneously prepare the EFSF for a large-scale support program for Italy and to prepare banks for a possible Italian default. This policy may be one of the reasons why risk premia for Italy have increased substantially in October and November 2011.

It is also necessary for the EBA to make its capital requirements transparent and reliable in order to avoid additional adverse effects. At this stage, the EBA, the national governments and the national regulators can still make an effort to reduce the short-term burden imposed on their banks by the EBA's recent recommendations. Europe should definitely exclude an Italian default and give the Italian government time to implement further policy reforms. The ECB can contribute to the functioning of the EFSF by continuing not to rule out further interventions in the secondary market.

Summary

The eurozone's governments have to decide whether they want to provide liquidity to Italy through the EFSF or whether they prefer to prepare the European banking system for an Italian default. Doing both at the same time is difficult and may further increase the risk premia of Italy's bonds.

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EMU AT CROSSROADS

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The European Monetary Union (EMU) is certainly in a crisis. There can be no doubt that the recent rescue plans and packages of the past months were necessary to stabilize the euro area and the financial markets in the short run (Bundesbank 2011). However, it remains questionable whether this rescue path will lead to a sustained framework of economic governance in the EMU. There is a huge danger that the EMU will follow the wrong path – i.e. that of a short-run rescue philosophy (The Economist 2011). We argue that the consequences of following the current short-run policy will lead to a future break-up of the EMU. Learning the lessons from sovereign debt crises, in other words, identifying the failures before this crisis emerged, is essential to the process of building a new and sustainable European economic governance framework.

The current rescue philosophy of helping indebted countries with guarantees on the one hand and demanding strict austerity on the other hand is merely appropriate as a short-run stabilization of EMU. However, this rescue strategy does not address the structural problems and improper incentives of participating countries in the medium and long run. There is a substantial danger that policymakers will follow the wrong stabilization policy because of political path dependency. This short-run policy response might create even more moral hazard and free-riding, thereby putting the whole EMU at risk. A solution to its structural problems requires an answer to the question of why the EMU is in such a mess?

The monthly frequency of new stabilization packages for Greece, or even the entire banking system, illustrates that the EMU is at a crossroad. The past and present problem is the existing weak and non-credible

economic governance framework, and more specifically, the ineffectual enforcement of existing rules on fiscal discipline. There have been hardly any officially defined consequences in cases where countries violated fiscal rules since the foundation of the EMU in 1999. Strengthening economic governance with respect to fiscal discipline and strict conditionality is necessary to sustain European Monetary Union. Even the recently proposed economic governance reforms like the Euro-Plus Pact, the Reform of Stability and Growth Pact (SGP), European Semester, European Strategy 2020, and the European Stability Mechanism (ESM) are not far-reaching enough to tackle all of present and future structural problems (Herzog 2011).

A long-run stable and sustained economic governance framework needs two arms: firstly, a more depoliticized enforcement mechanism for breaching countries, and secondly, immediate and tough consequences for countries that do not comply with the defined (*ex ante* conditions of) fiscal rules. In the past year the European economic governance framework has changed dramatically. A new rescue net called the ‘European Financial Stability Facility’ (EFSF) has been created for all EMU countries. This has led to fewer incentives for each member state to bear the consequences of its own fiscal policy decisions. Despite the fact that the EFSF requires countries under the rescue umbrella to implement austerity measures, this umbrella simultaneously enforces moral hazard. Furthermore, what is to be done with countries that do not comply with the rules or implement the required austerity measures?

In a nutshell, we must establish a new balance between the ‘rescue’ incentive structure, on the one hand, and fresh demand for stricter fiscal discipline and tougher *ultimo ratio* sanctions, on the other. Since the first reform discussion on the Stability and Growth Pact in 2005, there have been demands for either an automatic enforcement or cession of sovereignty to an independent EMU body. This paper argues that, in extraordinary cases of fiscal cheating over a period of more than four years, an automatic



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ultimo ratio option is required for those countries: either to lose sovereignty or be excluded.

What is wrong with European economic governance?

The bad news is that all of the European economic governance safeguards to date – the Maastricht Criteria, the Broad Economic Policy Guidelines (BEPGs), and the Stability and Growth Pact – have had little to no effect over the past decade. Since the foundation of EMU economic governance in the 1990s, there has definitely been room for improvement in several areas: (i) the selection process of economically and fiscally sustainable member countries was not binding and strict enough, (ii) the economic coordination processes were rather weak and have proven totally ineffective, (iii) the enforcement of the Stability and Growth Pact has not worked in political practice, and (iv) the lack of an exchange rate mechanism in the euro area, which typically provides a disciplining mechanism for countries, has generated a lack of fiscal discipline (free-riding), and has failed to inspire any further efforts towards structural economic reform. On the contrary, the existing framework and the recent rescue nets have promoted free-riding and moral hazard.

For the past decade overall EMU governance has been weak and policymakers did not see any need to improve it. In the end, euro area policymakers have accepted nearly every potential member state that attempted to achieve the five Maastricht or Convergence Criteria (European Commission 2011). Even at the time of the EMU foundation in 1999, almost no country was in line with all of the thresholds of the Maastricht Treaty. The same applied to Greece in 2001. Moreover, the entrance criteria are no guarantee for convergence within the EMU. In the past decade, we have witnessed growing divergence in terms of competitiveness, as well as growing inflation and growth differentials. All this indicates the failure of the existing economic governance setting and probably also points to a weak selection process.

The so-called ‘Broad Economic Policy Guidelines’ were just an alibi for policymakers without any effective function and sanction. Despite the goal of coordinating social and labor policy in Europe, no credible incentive and/or enforcement mechanism was put in place to achieve this goal. However, the idea of a common goods and capital market requires a certain degree of coordination – some even argue in favor of

comprehensive harmonization. In hindsight the movement towards coordination or harmonization in terms of fiscal policy was fairly invisible. Most reforms, on the other hand, strengthened national sovereignty and national exceptions.

The financial crisis and the sovereign debt crisis illustrate this reality: financial markets are international, but their regulation is effectively national. The fact that some people say ‘banks are international in life, but national in death’ (Goddhart 2009), is neither true in a monetary union nor in an interconnected world. The case of Ireland taught us that the costs of bank bail-outs are not just born by Irish taxpayers, but by all European taxpayers. This illustrates the need for European coordination in terms of both economic and financial regulation/supervision on a supranational level. Moreover, the cases of Greece, Portugal, Italy and Spain illustrate the need for structural reforms in social and labor policies. There is simply no other way to regain competitiveness in a monetary union. Hence, some coordination of these policy fields is essential to EMU. Let us consider simple example: politicians in all countries, and particularly those with a weak competitiveness structure, have to learn that 70 percent of national inflation is caused by excessively high wages (ECB 2009 and 2011) and one reason for the latter is wage indexation rules. Furthermore, it is hard to explain to people in highly competitive countries why they must work until they are 65 or 67 years old, while people in troubled countries have a legal retirement age of 60. All this does not generate European solidarity or the requisite willingness to pay in emergency cases. We definitely need greater coordination in all economic policy areas.

The Stability and Growth Pact, which was implemented to discipline fiscal policy within the EMU, was a clear effort to move in this direction. However, political unwillingness and improper institutional design made the pact difficult to enforce. Since its implementation in 1997 there have double-digit violations of the Stability and Growth Pact, none of which gave rise to appropriate sanctions. Hellwig (2011) rightly concluded that: “the lack of credibility of the Stability and Growth Pact was identified as a problem [long before]. Therefore it seemed likely that, at some point over the medium run, we would come across a problem like the one that Greece has posed over the last year”. Since the adoption, and particularly during the reform discussion of the SGP in 2005, economists have proposed over a hundred alternative ways of improving the existing Stability and Growth Pact

(Fisher *et al.* 2006). There was, however, no political will to do so!

Now it is time to learn the lessons of the past and change improper political ideology and strategy in Europe. Apart from the Stability and Growth Pact's weak institutional design and its enforcement problems, there are further unseen issues: the Pact does not focus enough on long-run debt sustainability and the 60 percent of GDP debt limit. Both issues did not trigger any sanctions. The fact that Ireland did not even appear on the radar screen of the SGP illustrates the Pact's weaknesses and potential for optimization.

Finally, the lack of an exchange rate mechanism in EMU has destroyed the international competitiveness of important industries in some European countries. Usually, the loss of competitiveness affects the exchange rate, but in a monetary union with irrevocably fixed nominal exchange rates that disciplining mechanism does not work. Eichengreen and Hausmann (1999) showed that normal state lenders distrust such governments and therefore refuse to lend in the country's currency. If Greece and Portugal had possessed their own currency, they could have devalued it now. However, both would not have been able to borrow in their own currencies without the common euro in the first place. This illustrates another reason for the lack of fiscal discipline. The common currency and missing exchange rate mechanism reduced the incentives for economic reforms, and especially wage restraints, in the euro area. Moreover, (financial) market participants have learned quickly – particularly in the case of Ireland, Greece, Portugal and recently Spain, Italy and France – how to gamble with national EMU member states and in the end the whole euro area.

Altogether the inexistent economic governance framework and the rescue procedures during the sovereign debt crises have led the EMU down the wrong path. This constellation put all national governments and the EMU at risk. To resolve the current crisis, we have to look for new solutions and innovative institutional rules. Otherwise the EMU's very existence is at risk. The majority of economists are convinced that the EMU is economically necessary in a globalized world and good for the welfare of all citizens. However, if citizens want to have a steady and sustained monetary union in the future, policymakers must proceed with new rules to safeguard the economic success and unprecedented price stability of the EMU.

What next? Master plan and policy recommendations

EU policymakers are still far from finding the right way out of the sovereign debt crisis and towards a long-run sustainable framework. The good news is that there is an appropriate solution, and after implementing new rules the European Monetary Union will no longer be in danger!

Below I develop a kind of master plan to re-establish stability within the EMU. In general there are two options. Both options, however, do not work unless the credibility of the existing framework can be re-established and enhanced. Option A constitutes a fundamental change to the existing policy framework of EMU. This option would insist that EMU member states abandon a substantial part of their national sovereignty over fiscal policy. This would require immediate, fundamental legal changes on a European and national level. The recent judgment by the Constitutional Court in Germany has more or less eliminated this option for the near future (Bundesverfassungsgericht 2011). A European state is not possible within the current German constitution and it would require major changes in law. Let us labour under no illusions: the path towards adopting this option is long, difficult and calls for the broad support of all of the citizens in all euro area member states. An approach featuring a European state with a European government responsible for a budget is currently not a realistic solution. The political will for doing so is not available, popular support is lacking and there is no blueprint for proceeding along that path.

More realistic, however, is option B. This is based on strengthening the fiscal incentives for sound fiscal policy within the current framework. Option B requires a return to plus an enhancement of the fundamental principles of a monetary union:

- Each member state has to bear the consequences of its own fiscal policy decisions,
- Market interest rates are the disciplining mechanism of unsound debt policy,
- Automatic enforcement mechanisms of the rule-based framework (Stability and Growth Pact),
- Implementing new mechanisms to avoid growing differentials in terms of growth, inflation, current account etc., and
- *Ultimo ratio* punishment options for notoriously unsound countries.

The key philosophy of option B is that countries bear the full responsibility of their own policy decisions in

combination with a rule-based and decentralized framework. Consequently, it represents a return to a strict no-bail-out clause (Article 125 of the Treaty on the Functioning of the European Union). Moreover, the European Central Bank (ECB) must go back to its primary objective of price-stability and has to abide by the prohibition of monetary financing (Article 105 and 123 of the Treaty on the Functioning of the European Union).

Such a rule-based framework, together with pressure from the financial markets, would be able to preemptively discipline fiscal policy in the euro area. Hence, the basic idea of the current rule-based approach is not dead (Issing 2011; Weidmann 2011). What makes it weak and almost dead, is the past and current implementation of the rules, especially the weak enforcement and political discretion involved in EMU economic governance. The combination of domestic fiscal responsibility with automatic control mechanisms *via* rules and markets would be as efficient as a European State from an institutional economic view. Both enhance financial stability and the stability of EMU.

Both options offer sustainable solutions from an economic point of view. However, the first option is unrealistic and the second also calls for major changes within the existing framework. A combination of both options, however, i.e. sharing the risks of unsound fiscal policy and retaining national sovereignty over fiscal policy, is also doomed to fail as we can see from the short-run rescue strategy. Such a policy would undermine the incentives for sound fiscal and economic policy even further, thus achieving the opposite of stabilizing the EMU.

The timing of the next reform steps and policy changes is critical to regaining stability within the EMU. Hence, we have to discuss the essential policy proposal to stabilize the EMU according to option B. The new economic governance framework must be strengthened and extended in several ways. The following new elements need to be implemented in the near future:

Proposal 1: *define ex ante conditionality for all participating EMU member countries.*

The major underlying policy problem of the rescue packages during the sovereign debt crisis and the financial crises is moral hazard. To tackle this problem, we need consistent incentives to maintain sound

public finances and more conservative approach to risk exposure – in short, lower debt levels. We therefore propose a turnaround of the EMU incentive structure. If a country is selected as member of the EMU, it must agree to abide by all criteria and rules on accession and regularly thereafter. I would call this ‘*ex ante conditionality*’, which defines mandatory conditions for all countries participating in the EMU. These conditions are: sound public finances, (i.e. in line with the deficit and debt threshold of SGP and a balanced budget in the medium term), conservative wage policy, and economic reforms to enhance economic growth and finally competitiveness. Any violation of these criteria or rules should immediately trigger sanctions because the mandatory conditions of EMU are breached – like the *conditionality* of austerity plans in the current rescue packages – to achieve a sustainable EMU.

At present the conditionality (of austerity plans) is unfortunately implemented too late. In fact, we do not demand conditionality until after a crisis has prevailed. Every country, however, has benefited from the EMU since the beginning, without following the necessary rules in terms of fiscal policy. Therefore, the existing governance framework sets the wrong incentives at the wrong time. We must make the conditionality of EMU membership countries *ex ante*. This will be more efficient, less procyclical and avoid moral hazard. It clearly illustrates to all members of the EMU that membership requires sacrifice and fiscal discipline on a daily basis. If a country fails to perform accordingly it is fair to punish or sanction it right from the beginning. However, the sanctions we need in such a new framework should be stricter and, at best, enforced automatically (see proposal 3 below).

A further advantage of *ex ante* conditionality is the continued existence of cultural difference in attitudes towards sound fiscal policy and price-stability within the EMU. To further adjust and smooth European attitudes and solidarity, the effective functioning of those incentives and mechanisms is essential. This enhances economic growth and competitiveness. Today, for example, wage setting mechanisms are quite different in Europe. This issue is part of the current competitiveness problem.

Proposal 2: *reform the Stability and Growth Pact: (i) introduce immediate sanctions for violations of the deficit and debt threshold and the goal of a balanced budget in the medium term and (ii) improve enforce-*

ment either with an automatic or a vote and reputation mechanism.

The Stability and Growth Pact (SGP) needs to be strengthened further in two directions. Firstly, an excessive debt level should trigger sanctions as a deficit violation of today. Similarly, a violation of long-run sustainability, defined as a balanced budget in the medium run, should also call for sanctions too. Secondly, we have to improve enforcement of the SGP which remains weak. There are two options: either autonomic sanctions or reduced sovereignty in the case of a breach. The last idea refers to a vote and reputation function developed by Casella (2001) and Herzog (2004b and 2004c). The optional loss of sovereignty, but only in case of policy failures, would discipline euro area member countries even more than today's measures. Such an intrinsic punishment of sovereignty losses outweighs the current extrinsic incentives of monetary sanctions (Herzog 2004a). Moreover, this sanction idea is not pro-cyclical on the budget and avoids today's moral hazard incentives. In sum, even the recent reform proposal of the Stability and Growth Pact, expressly consented by the European Parliament on 28 September 2011, is not enough to implement the urgently needed, long-run incentives elaborated in my proposal.

Moreover, an automatic mechanism or a vote and reputation mechanism goes much further than the new 'inverse majority' voting rule (Herzog 2011). It is the only fair mechanism in a supranational monetary union under fiscal-monetary interaction and national fiscal policy. As long as a country is in line with the European rules and principles, especially in fiscal policy, its sovereignty remains 100 percent national. However, as soon as a country breaches the SGP, it must give up some sovereignty to the supranational level because 'unsound' national policy triggers – in the worst case – negative externalities for other EMU countries. The current sovereign debt crisis illustrates these negative externalities in terms of financial market instability, new mistrust in the banking sector, further speculation over public debt in other countries and overall exchange rate speculations against the euro currency. Hence countries have full sovereignty and voting power if they are in line with the founding principles of the EMU, whereas unfulfilled founding principles will lead to reduced sovereignty rights and voting power for the concerned countries. This sanction mechanism is economically efficient, fair and necessary to ensure the long-term stability of

EMU. An automatic mechanism is fairly similar. However, an automatic sanction procedure goes even further than a vote and reputation mechanism because there will never be any political discretion. The concept of European fiscal government goes further again than automatic sanctions. In this scenario even the sound countries lose their national sovereignty at all times. This is an evident violation of the subsidiarity principle in Europe. Furthermore, a vote and reputation function is a better complement to the idea of the guiding principles of *ex ante conditionality* in proposal 1.

The proposal of a voting and reputation function is a kind of *ex ante* conditionality in case of policy failures. Consequently, it almost imitates – in the case of a breach – an automatic sanction mechanism. The breaching countries only have little or no voting power and are therefore unable to block decisions on a supranational level. The SGP will not work as long as the policymakers, whose job it is to enforce them, are not motivated by economic incentives or the political power to do so. A transparent incentive to align with the deficit and debt criteria will also enhance the credibility of economic governance in the future, because every country will know in advance that any violation will trigger a significant loss of sovereignty.

A recent proposal by Lauk and Wiesheu (2011) argues in the same direction. They propose linking voting power in the ECOFIN council with the official ratings of a government. Only countries with a triple AAA rating should have the right to vote. This implements both a market control instrument and a sound incentive structure. However, I would argue that this singular link is not a good idea because we further bow to the rating agencies. The judgment of a rating agency can be, and has not always been true and timely enough. Think about the situation with Greece and Italy. The downgrade of Greece and Italy came far too late. Moreover, such ratings are sometimes biased too. Therefore, the judgment of rating agencies is just one step towards evaluating sound countries. Other criteria must include: deficit and debt levels, stringency of the national debt rule, the competitiveness level of a country, its potential growth rate and its national price stability.

Furthermore, in the past decade even the European Commission has failed in its official role as a guardian of the treaty. The Commission failed during all enforcement processes and the SGP reform in 2005.

The Commission has not improved the enforcement mechanism during the reform discussion and has not protected the no-bail-out clause in the recent sovereign debt crisis. To tackle the weaknesses of the current Stability and Growth Pact, it needs – without any hesitation – a stricter enforcement process, less political impact and discretion and, finally, more automatic processes.

Proposal 3: *either sovereignty loss or a principle of exclusion is needed, in case of unsound fiscal policy. This ultimo ratio threat makes sound fiscal policy priority 1 and finally helps to avoid moral hazard.*

Due to the specific constellation of fiscal-monetary interaction and the rescue umbrella incentives of the EFSF and later on the EMS, we need some new final incentives to promote sound fiscal policy. Firstly, we recommend an absolutely strict no-bail-out clause and only in special, rare cases do we allow the EMS to take up a kind of lender-of-last-resort function. This, however, is combined with even stricter austerity conditions. Secondly, for a long-run sustainable monetary union, we also propose to implement the exclusion principle for unsound EMU member states as an ‘*ultimo ratio*’ option. In other words, countries violating fiscal rules for more than four years in a row either lose fiscal sovereignty completely or have to leave the EMU. After fulfilling the criteria of *ex ante* conditionality and all required fiscal criteria, a country will either regain national sovereignty, or, in case of its exclusion, be given the option to rejoin the EMU under specific constraints.

Proposal 4: *democratizing European economic governance.*

The new rules (regulations) and/or institutions of European economic governance must serve the purpose of democratizing fiscal policy. This means serving each national citizen best by maintaining a national policy system and only integrating supranational coordination in special cases. However, if a country fails to consolidate the public budget or to enhance domestic competitiveness, the supranational level should increasingly take responsibility for this specific country. Under normal circumstances, we recommend an environment where fiscal policy is applied effectively on the national level to promote national needs. This should enhance the welfare of the domestic population and that of neighbor countries and businesses best. Of course, people matter to every economy, which is why in case of sustained fis-

cal policy failures we should enable the fiscally sound countries to decide how to dispose of their taxpayers’ money, as they already do in the national context. Hence, the new rules and principles must serve European citizens, making our institutions more democratic and better prepared to deal with crises and risks. That means taking account of the actual incentives that are created by our existing rules at all times.

For the past decade, the European Commission and other institutions have missed the point of fiscal discipline and the need for economic coordination. This is due to three factors: bad institutional design, a lack of any political will and the limited capabilities of supranational institutions. Does this mean that the European regulatory framework will always fail? No! That is tantamount to saying that there should be no referee in a football game, because he is inherently less capable of playing the game than the players are. In fact, the referee is a key element in all games – in football and in the EMU. Only with a referee can the best players show their real talents. Thus, figuratively speaking, referees and good rules prevent countries from playing roughly and unfairly by supporting fair-play for the best or most competitive countries.

Conclusions

The European Monetary Union will not fail and the integration process will not be reversed if policymakers implement stricter and more consistent rules, as well as new incentives promoting more sustainable solutions. Our proposed mechanisms will create a well-founded EMU in the long run. Policymakers have to learn that Europe, and particularly fiscal policy in a monetary union, is continuously hard work. This has been shown by all historical monetary unions over the past 200 years (Theurl 1992).

First and foremost, we have to get rid of the arbitrariness of fiscal rules and economic governance. Democratizing European economic governance means paying attention to all European taxpayers during economic crises as well as under normal circumstances. Hence, the lesson is not necessarily to become an ear of the political union or a ‘European Government’, but to refine, extend and enhance existing rules and complement these supranational rules and institutions with better enforcement procedures, economic incentives and sanctions.

We must design – similarly to our proposals – the rules in a way that they serve the people best and promote growth as well as competitiveness. Democratizing European economic governance does not impose clumsy rules, barriers or restrictions which reduce people's welfare. Current policymakers have the opportunity to learn the lessons and implement the outlined recommendations. They have to put together the right incentives to make the European Monetary Union really irrevocable (Duisenberg 2004), otherwise a failure of the EMU is sadly only a matter of time, as shown by the history of supranational monetary unions.

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EURO CRISIS OR FISCAL CRISIS: LOOKING FOR THE RIGHT DIAGNOSIS AND THERAPY

MAREK DABROWSKI*

The perspective of new global crisis?

The world economy and, in particular, Europe, seems to enter the new phase of serious macroeconomic and financial turbulences which, most likely, will result in an output slowdown. It remains to be seen whether this slowdown¹ will evolve towards a second 'dip' similar to that of the second half of 2008 and first half of 2009. Very much depends on the right diagnosis of the current troubles and right therapy.

Unfortunately, the public discussion on both causes of the crisis and potential remedies are sometimes misleading and overdramatize policy choices which does not help in taking right decisions. It is driven by short-term interests of financial market participants who want to minimize their potential losses and look for another generous bailout at the expense of taxpayers, media hunt for breaking news, and politicians wanting to remain on the top of events and be heard by the media.

In addition, most governments are reluctant to adopt sufficient long-term corrective measures, which may involve high political costs in the short run. As the crisis is currently centered on the euro area and European Union the reforms shall also involve some changes in the EU/EMU institutional design, including, additional transfer of political power from a national to Union's level. This makes things even more complicated as the issue of national sovereignty remains sensitive in several EU member states. On top of this, there is no intellectual consensus on both crisis origins (a common currency project vs. unsustain-

able fiscal policies) and optimal design of fiscal and macroeconomic management within the single currency area.

Many analysts and commentators speak about the euro crisis but this is not a right diagnosis, at least not yet. A currency crisis can be defined as a sudden decline in confidence in a given currency, leading to a speculative attack against it and resulting in its substantial depreciation. Nothing like this has happened with the euro so far. Instead we observe a sovereign debt crisis in a number of eurozone countries and beyond. However, it may happen that wrong diagnosis and therapy may undermine, at some point, the credibility of the euro as the currency. We will return to this question later in this paper.

Fiscal crisis in advanced economies

In 2010 and 2011 the attention of public opinion and analysts concentrated on the fiscal problems of the so-called eurozone periphery – Greece, Ireland and Portugal, more recently on Italy and Spain. However, as can be seen from Table 1, dramatic increase in public debt to GDP ratio was recorded in most EU member states and other major developed economies.

In 2010, according to the IMF WEO statistics, the gross public debt of 12 out of 17 members of the Economic and Monetary Union (all but Estonia, Finland, Luxembourg, Slovakia and Slovenia) exceeded a 'Maastricht' limit of 60 percent GDP, and the same situation concerned 2 non-EMU members of the EU (Hungary and Britain). The threshold of 80 percent was exceeded by 8 EU member states: Belgium, France, Germany, Greece, Hungary, Ireland, Italy, and Portugal. Looking at these numbers, the popular perception that eurozone is divided between the fiscally prudent 'North' and imprudent 'South' looks questionable. Actually, the debt-to-GDP level of Germany and France is not much lower than that of Portugal and much higher compared to Spain. As a result of fiscal deterioration in the largest member states the entire EU debt reached a level close to 80 percent of its GDP

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¹ This contribution has been completed in the first week of December 2011 and reflects author's perception and understanding of macroeconomic situation at this particular point of time.

Table 1
General government gross debt-to-GDP ratio in EU
and other developed countries, 2007–2012

| Country | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|-------|-------|-------|-------|-------|-------|
| World | 62.1 | 65.2 | 75.6 | 79.3 | 79.6 | 80.0 |
| EU | 59.5 | 63.9 | 74.3 | 79.8 | 82.3 | 83.7 |
| EMU members | | | | | | |
| Eurozone | 66.4 | 70.1 | 79.7 | 85.8 | 88.6 | 90.0 |
| Austria | 60.7 | 63.8 | 69.6 | 72.2 | 72.3 | 73.9 |
| Belgium | 84.2 | 89.6 | 96.2 | 96.7 | 94.6 | 94.3 |
| Cyprus | 58.3 | 48.3 | 58.0 | 60.8 | 64.0 | 66.4 |
| Estonia | 3.7 | 4.6 | 7.2 | 6.6 | 6.0 | 5.6 |
| Finland | 35.2 | 33.9 | 43.3 | 48.4 | 50.2 | 50.3 |
| France | 64.2 | 68.2 | 79.0 | 82.3 | 86.8 | 89.4 |
| Germany | 65.0 | 66.4 | 74.1 | 84.0 | 82.6 | 81.9 |
| Greece | 105.4 | 110.7 | 127.1 | 142.8 | 165.6 | 189.1 |
| Ireland | 24.9 | 44.4 | 65.2 | 94.9 | 109.3 | 115.4 |
| Italy | 103.6 | 106.3 | 116.1 | 119.0 | 121.1 | 121.4 |
| Luxembourg | 6.7 | 13.6 | 14.6 | 18.4 | 19.7 | 21.5 |
| Malta | 61.8 | 61.3 | 67.3 | 67.1 | 66.3 | 66.1 |
| Netherlands | 45.3 | 58.2 | 60.8 | 63.7 | 65.5 | 66.5 |
| Portugal | 68.3 | 71.6 | 83.0 | 92.9 | 106.0 | 111.8 |
| Slovakia | 29.6 | 27.8 | 35.4 | 41.8 | 44.9 | 46.9 |
| Slovenia | 23.4 | 22.5 | 35.5 | 37.3 | 43.6 | 47.2 |
| Spain | 36.1 | 39.8 | 53.3 | 60.1 | 67.4 | 70.2 |
| Non-EMU EU members | | | | | | |
| Bulgaria | 18.6 | 15.5 | 15.6 | 17.4 | 17.8 | 20.5 |
| Czech Republic | 29.0 | 30.0 | 35.4 | 38.5 | 41.1 | 43.2 |
| Denmark | 34.1 | 42.2 | 41.8 | 43.7 | 44.3 | 45.8 |
| Hungary | 66.1 | 72.3 | 78.4 | 80.2 | 76.1 | 75.5 |
| Latvia | 7.8 | 17.1 | 32.8 | 39.9 | 39.6 | 40.5 |
| Lithuania | 16.9 | 15.6 | 29.6 | 38.7 | 42.8 | 44.6 |
| Poland | 45.0 | 47.1 | 50.9 | 55.0 | 56.0 | 56.4 |
| Romania | 12.7 | 13.6 | 23.9 | 31.7 | 34.4 | 34.4 |
| Sweden | 40.2 | 38.8 | 42.8 | 39.7 | 36.0 | 32.6 |
| UK | 43.9 | 52.0 | 68.3 | 75.5 | 80.8 | 84.8 |
| Other developed countries | | | | | | |
| Canada | 66.5 | 71.1 | 83.3 | 84.0 | 84.1 | 84.2 |
| Japan | 187.7 | 195.0 | 216.3 | 220.0 | 233.1 | 238.4 |
| US | 62.3 | 71.6 | 85.2 | 94.4 | 100.0 | 105.0 |
| Note: blue fields indicate IMF estimates/forecasts. | | | | | | |

Source: International Monetary Fund, World Economic Outlook Database, September 2011.

and the eurozone – above 85 percent. Outside the EU situation looks even worse with the US gross public debt approaching quickly the level of 100 percent of GDP and Japan's – well above the level of 200 percent.

The debt dynamics have been even more worrying: during the crisis period (2007–2010) the global gross public debt to GDP ratio (including developing countries which perform much better) increased by 17.2 percentage points of GDP. The EU recorded an increase by 20.3 percentage points and the eurozone – by 19.4 percentage points.

The short-term perspective does not look rosy either. According to the IMF forecast of September 2011 in all highly indebted countries except Belgium, Germany and Hungary the situation is going to deteriorate further in 2011–2012 and one must remember that this forecast has been built on relatively optimistic growth assumptions which, most probably, will have to be revised down.

Summing up, as seen in December 2011 the current macroeconomic and financial turmoil has been caused by a widespread fiscal crisis which affected most of the developed world and the largest economies such as Japan, United States, Italy, France, Germany, Canada and Britain. Contrary to popular perception this is not the phenomenon limited to the eurozone periphery and to the eurozone itself. The only factor which is specific to the EMU concerns uncertainty of the debt resolution mechanism, i.e. how the burden of debt restructuring will be eventually shared between the country affected by the debt crisis and their single currency partners and which part of this burden will have to be absorbed by private creditors.

However, the above uncertainty has not resulted from the Treaty itself. The Article 125 of the Treaty of the Functioning of the

European Union is quite clear in this respect: it prohibits any direct bailout of member states. Rather it has been the effect of an *ad hoc* policy of providing the EU member states in trouble with partial rescue packages (very often against the no-bailing-out principle), conducted under the pressure of financial markets to avoid their panic and broader contagion effect.

Why financial markets became so nervous?

The recent change in attitude of financial markets to sovereign debt solvency of many developed countries

results mostly from the rapidly changing global macroeconomic and financial environment. In the pre-crisis period of relatively high economic growth and abundance of cheap finance originating from the surplus savings in Asia and in oil-producing countries lending to governments look relatively safe and attractive. Most countries recorded either gradual decrease or at least stabilization of their debt-to-GDP levels.

The rapid deterioration of the global public debt to GDP level and perspective of slower GDP growth in a medium term means that financing becomes relatively more expensive and difficult to obtain. There is an increasing global competition for scarce financial resources both between private and public sectors (the former being crowded out by the latter) and within the public sector itself. Countries with uncertain macroeconomic and fiscal perspectives are losing to those with a more solid credit reputation. However even those who were considered by financial markets as safe havens not so long time ago have now a good reasons to fear about their credit ratings and debt sustainability perspective. With low growth or no growth in the next few years their debt-to-GDP level will continue to grow rapidly putting their debt solvency perspective under question. As a result, the perception of the 'safe' debt level (or the threshold of debt intolerance – see Reinhart and Rogoff 2009) is changing rapidly leading to massive sovereign rating downgrades and capital outflows from public debt market of individual countries.

This has also an impact on the debt sustainability perspective within the EU and eurozone. In the pre-crisis environment investors might expect that in case of isolated debt service problems, faced by countries with the highest debt-to-GDP ratios like Greece, other EU/EMU members will have enough fiscal room to provide them a rescue package (even if such expectations went against the Article 125 of the TFEU). Now when most of EU countries, including France, Germany and Britain face serious fiscal challenges themselves and there are more candidates for actual or potential rescue this kind of assumption is not justified anymore.

The additional constraints come from continuous financial deleverage in many countries (as result of bursting bubbles in 2007–2008) and from the regulatory reform in the banking sector (especially increasing capital adequacy ratios and liquidity requirements) which make lending more scarce and expen-

sive, other things being equal. If the idea of new banking or financial transactions tax materializes it will add to lending costs even more and will further slow economic growth.

Causes of the sovereign debt crisis

Which factors led to such unprecedented deterioration of fiscal accounts in most of developed countries? The recession of 2008–2009, high costs of financial sector rescue and resulting high budget deficits played, of course, an important role. However, the negative fiscal trends in all major economies started earlier – either at the beginning of 2000s (the United States and most of the EU) or in 1990s (Japan). In case of the United States these were the costs of the war on terror and generous tax incentives aimed to overcome consequences of the dotcom recession in 2001. In case of Japan this was the effect of long stagnation in 1990s, subsequent unsuccessful attempts to reactivate the economy through aggressive fiscal stimulus and costs of banks restructuring after the 1990 financial crisis. Finally, in the EU this was a combination of the slowdown (similar to that of the United States) and relaxation of fiscal discipline in early 2000s.

During the boom years of 2003–2007 policymakers were overoptimistic about the long-term potential growth of their economies and largely forgot about adverse fiscal consequences of forthcoming population aging. They were also misled by the unexpectedly high revenue elasticity of this particular business cycle. In the boom years budget revenue in several countries grew much faster than nominal GDP, a trend which was then abruptly reversed when the 2008–2009 recession started. The nature of these windfall revenues requires a more in-depth analysis.

In the wake of 2007–2009 crisis the costs of financial sector rescue have been largely underestimated and potential of a countercyclical fiscal policy – overestimated. These are the important lessons for the future.

In the globalized economy any fiscal stimulus has tendency to 'leak' outside a given economy.² The cross-border coordination of fiscal stimuli, even within the EU, proves problematic for many reasons (see Dabrowski 2010). In addition, in the environment of

² Unless it is accompanied by protectionist measures. Fortunately, the incidence of protectionist measures during the 2008–2009 recession was limited, especially within the EU.

excessive private and public indebtedness economic agents prefer to increase their net saving rather than spend more. As a result, the potential spending multipliers have been smaller than experienced in the previous business cycles.

More generally, the recent business cycle experience gives a good food for thought about limited practical usefulness of such traditional concepts as the potential output and cyclically adjusted fiscal balance (difficult to be estimated *ex ante* when the business cycle is irregular), internationally agreed definitions of public debt (which do not include unfunded liabilities of the public pension and healthcare systems, and contingent liabilities in the financial sector) or even such popular measure as the debt-to-GDP ratio which tell very little about country's long-term fiscal sustainability, especially in good times.

If one analyzes the political economy dimension of the discretionary fiscal policy, its asymmetrical potential becomes very clear. It is politically easy to provide fiscal stimulus but it is much more difficult to withdraw it. The US experience with tax incentives of the Bush era or the 2008–2009 stimulus package, both intended to be only temporary, are very telling here.

The on-going financial sector reform must aim, among many other things, at diminishing future contingent fiscal liabilities. One of the key issues here is addressing a 'too big to fail' problem, i.e. decreasing the market share and political bargaining power of the so-called systemically important financial institutions (SIFI). The reform should also decrease procyclicality of financial sector regulations.

The remedies which will not work

When the 2008–2009 recession started, many analysts and policymakers, especially those who preferred active countercyclical fiscal policies (actually there was no fiscal room for such policies as we discussed in the previous section), believed in gradual growing out of the debt when the economic situation improves. However, in spite of relatively fast recovery since the mid 2009 it did not happen. And this is not a realistic perspective in the foreseeable future. In the second half of 2011 most of developed economies, and Western Europe in particular, entered the period of a new slowdown, perhaps leading to a new recession in 2012.

Even if the current slowdown/recession will be short-living, the economic growth will not come back to the pace of 1990s or mid-2000s. First, as mentioned before, financial deleveraging and financial sector reform will negatively influence growth potential for quite a long time. Second, there are no new substantial growth impulses similar to those which happened in 1990s (peace dividend after the end of 'Cold' war, economic opening of China, India and the former communist countries, global trade liberalization, ICT revolution). Third, both monetary and fiscal policies which stimulated growth in the mid-2000s will have to be more restrictive now.

Another strategy, i.e., inflating out debt may work only to a limited extent (until financial markets start to charge an inflation-related risk premium) and in those countries which do not have substantial debt denominated in foreign currency.³ However, the negative side effects of such a policy – higher inflationary expectations, building up inflationary inertia, price/wage indexation practices and lower central bank credibility – may be serious, long lasting and devastating for both growth perspective and financial stability.

In case of the eurozone it may involve the additional risk of undermining cross-country political consensus around a common currency. Countries less burdened with a public debt and more committed to price stability may consider paying an inflationary price for inflating out others' debts as economically and politically unacceptable. And they may decide to leave the monetary union even if it involves undermining their export competitiveness (because the new currency of the leaving country will probably appreciate *vis-a-vis* the euro).

The opposite case when the country experiencing debt crisis (like Greece) would like to leave and reintroduce its own (weaker) national currency seems highly unlikely because all its outstanding private and public liabilities would remain denominated in euros. Therefore, exiting the euro would mean an immediate default on both public and most private debt, caused by soaring debt-to-GDP ratios. In today's sophisticated and interdependent economies, devaluation is not so obvious medicine as one would have believed thirty years ago in case of developing countries. Furthermore, such an exit could not happen technically

³ Depreciation of domestic currency which may result from a pro-inflationary policy will increase the debt service burden in both nominal and real terms.

overnight and the very first steps in this direction would already trigger total financial chaos and loss of market confidence not only in an exiting country.

This should be remembered by those who use a threat of kicking out trouble countries from the eurozone as the pressure instrument to discipline them. Such a rhetoric may have unintended and devastating consequences in the form of, for example, panic withdrawal of banking deposits, capital flight, etc.

ECB as the 'lender of last resort' to governments

The high costs of leaving the common currency area for any single member country makes the EMU project more sustainable than its critics and forecasters of its quick demise would like to see. Nevertheless, there are limits of this sustainability. As discussed above, failure of the European Central Bank (ECB) to keep inflation low and euro stable can bring us closer to these limits. This should be taken into consideration by those who advise the ECB to declare unlimited and unconditional purchase of debt instruments issued by the eurozone governments in case of market distress (see e.g. Bofinger and Soros 2011).

The idea that the ECB may serve as the 'lender of last resort' (LOLR) to governments is deeply flawed and based on doubtful theoretical foundations. Central banks can play such a role in respect to commercial banks supplying them with temporary liquidity to avoid depositors panic.⁴ In practice, it is often difficult to distinguish bank's illiquidity from its insolvency (see Goodhart 1987). This is even more true in case of a sovereign debt where market perception of government's solvency is conditional on various *ex ante* assumptions hardly verifiable and subject of multiple equilibria.

Thus calling the ECB to play the role of LOLR on the sovereign debt market means no less than asking this institution to monetize government debt and print money without limits.⁵ This may be the shortest path from the debt crisis Europe is facing now to the gen-

uine euro crisis and collapse of the common currency project.

As for the other forms of bailout, wide-scale ECB's interventions can bring yields on treasury bonds down and improve financial markets' mood for a while. However, apart from their inflationary consequences and undermining ECB's credibility they will create wrong incentives for private investors and encourage moral hazard. The investors who did not hesitate to accept higher risk in exchange for higher yields would receive risk insurance for free.

The solutions which may work

Since the previously discussed remedies are either unrealistic (growing out of debt) or counterproductive (inflationary scenario and ECB involvement) one should consider two other options: fiscal adjustment backed by microeconomic and institutional reforms and debt restructuring. Both are politically and socially painful and both involve substantial negative side effects. However, only these two options offer durable solutions.

Fiscal adjustment, by its nature, addresses the core roots of debt crisis, i.e. allows improving primary fiscal balance and decrease debt service costs. If concentrated on spending reduction rather than on rising taxes and backed by well-designed microeconomic and institutional reforms (for example, rationalizing welfare programs and increasing elasticity of labour market) they may increase a country's growth potential in a medium-to-long run. However, the short-term output and employment costs (and therefore additional negative fiscal shock) are hardly avoidable.

Furthermore, as other developed economies must do the same, one may expect slower global growth in a short term. No substantial demand support can be expected from emerging markets because most of them will have to struggle with their macroeconomic overheating.

In some cases like Greece the debt burden is so high that fiscal consolidation although necessary is not sufficient to return the country's solvency. This is why debt restructuring must be also considered as the part of adjustment package. Obviously, this is a costly solution for lenders and involves other negative side-effects. For example, it may trigger a cross-border contagion on sovereign debt market and in the entire

⁴ This is the consequence of fractional reserve banking system with less than 100-percent reserve requirement and with its imminent mismatch between long-term assets and short-term liabilities.

⁵ The frequent references to quantitative easing (QE) operations conducted by the US Federal Reserve Board, Bank of Japan or Bank of England are incorrect for at least two reasons. First, the above banks purchase government bonds on secondary market (apart from other kinds of financial assets) within the quantitative limits set from the point of view of monetary policy goals. These purchases are neither unlimited nor unconditional. Second, the ECB has also conducted QE operations increasing its monetary base when it has considered necessary from the monetary policy point of view.

financial sector. However, it is sometimes unavoidable. The sooner it is done in an orderly fashion (i.e., through negotiations of all interested parties) the eventual cost of debt restructuring will be smaller. Excluding this option up front, as some governments try to do, is neither realistic nor creating right incentives for both creditors and borrowers. And negotiated debt restructuring or even unilaterally declared ('messy') sovereign default of any eurozone country does not mean breaking up the common currency area. Economic history gives us several examples of sovereign defaults under the gold standard (see Reinhart and Rogoff 2009) or in individual US states (see Gros 2010) which caused neither monetary nor political disintegration.

What kind of fiscal union?

Part of the discussion concerns the reform of EU institutions to increase Union's capacity to deal with the current crisis and minimize danger of its repetition in future. In this context many speak about the necessity to complement the EMU with the fiscal union. However, less clear is what such a fiscal union means in practice.

Definitely, the EMU needs more fiscal discipline on the national level⁶ to minimize the risk of free riding under the umbrella of common currency which has been one of the principal causes of the current crisis. However, fiscal trouble of non-eurozone EU members will also have negative repercussions for both the Union and outside world. Hence, fiscal stability and prudence should be considered as an important European public good and apply equally to all EU members regardless whether they are part of the eurozone or not.

In this context the effort to strengthen fiscal surveillance rules in the Treaty and Stability and Growth Pact and reinforce their both 'preventive' and 'corrective' arms (including automatic and meaningful sanctions) are going in the right direction. The same can be said about attempts to push member states towards enhancing their national fiscal rules and institutions either through constitutional changes or equivalent legislation.

Another step towards strengthening EU fiscal federalism involves building a permanent debt resolution

mechanism on the EU level the European Stability Mechanism (ESM) which will replace the European Financial Stability Facility (EFSF), the temporary mechanism established in May 2010. The ESM is to start its operations in mid-2012.

Ideally, the permanent resolution mechanism should correctly balance punishment for past irresponsible behavior (including the orderly sovereign default/restructuring mechanism), incentives to correct past mistakes and elements of financial aid to smooth the painful adjustment process. It should also relieve the European Central Bank from its current engagement in assisting countries in trouble. It remains to be seen whether the ESM will meet these expectations.

Regretfully, not all proposals go towards strengthening fiscal discipline and eliminating moral hazard and free riding. This refers to the idea of Eurobonds,⁷ which are to be jointly issued/guaranteed by the EMU members. They can lead to weakening fiscal discipline on national level and creating adverse incentives rather than serving fiscal consolidation and avoiding moral hazard. The practice of fiscal federalism in many countries gives an evidence of negative consequences of sharing responsibility for the debt of subnational governments with federal/national authorities.

Some other 'federalist' ideas are interesting but do not necessarily address the challenge created by the sovereign debt crisis. The proposal of harmonizing tax bases and (more controversially) tax rates across the EU should be discussed in the context of functioning of the Single European Market rather than crisis prevention and resolution. The same relates to the proposal that in future the EU budget should be higher than the current 1 percent of Union's GDP. Perhaps it does, but this depends on which additional policy tasks and responsibilities could be transferred from the national to the EU level and whether such a transfer would offer bigger efficiency in their implementation.

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⁷ First time this idea was presented publicly soon after launching the Euro in Giovannini *et al.* (2000) report. Recently the European Commission (2011) analyzed in its Green Paper three potential options of the so-called Stability Bonds.

⁶ The EU runs a balanced budget so the problem of fiscal discipline on the Union level does not exist.

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GREECE: BAIL-OUT PACKAGES, CURRENT ACCOUNT AND FOREIGN DEBT

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1. A chronology of events

Period from 1 January 2001 to 2009

(a) Greece joined the eurozone (EZ) on 1 January 2001. It was the only of the 15 EU countries not to be included in the introduction of the euro on 1 January 1999 due to its failure to meet convergence criteria. 3 EU member states, namely Britain, Sweden and Denmark, had decided not to introduce the euro, meaning that the EZ started with 11 countries. The fact that Greece was allowed to join the EZ just two years later, despite not having met any of the 5 convergence criteria in 1998, shows that the criteria were taken even less seriously in the case of Greece than they were for those countries that joined the eurozone in 1999. The widely expressed view that Greece should never have been allowed to join in the first place certainly seems banal from today's perspective. In preparation for monetary union Greece had reduced its budget deficit from 14 percent to 3 percent between 1992 and 1999. At the time of its accession Greece's government debt ratio was lower than that of Belgium or Italy respectively on their accession. After allowing both of these countries to join in 1999, it was no longer possible to refuse Greece membership on the basis of these criteria. Politicians would have been able to ascertain that Greece most certainly falsified these figures had they wished to do so.

(b) Greece's initial years in the eurozone were highly successful: the country boasted the highest growth rates in the eurozone after Ireland between 2000 and 2005. Its current account deficit as a percentage of GDP dropped. The risk of both inflation and devaluation seemed to disappear upon Greece's accession to

monetary union, meaning that the significant drop in the risk premium on debt instruments issued by the Greek government did not seem unsubstantiated at the time. The argument that the disappearance of risk premiums on Greek securities between 2000 and 2005 constitutes early documentation of the no bail-out clause's lack of credibility is therefore not a compelling one. Warning signals were certainly conspicuous: the exceptionally high growth during the first 5 years of eurozone membership was fired by the drastic drop in nominal interest rates on accession. This process could not be halted. Despite the budget relief ensuing from the fall in interest rates, the budget deficit did not drop, but rose and the government debt ratio along with it. The GDP share of current account deficit almost doubled between 2004 and 2006, only to increase substantially in the following year.

(c) The end of the honeymoon period came in two waves. Firstly, the bankruptcy of Lehman in 2008 increased the awareness of capital market players that not only large, internationally active investment banks could go bankrupt, but that this could happen to industrialised countries too. The newly-elected Greek government of autumn 2009 then made the surprising announcement in October that the budgetary figures submitted to Brussels by the previous government were completely unrealistic. The forecast budgetary deficit for 2009 was not 3.7 percent as reported, but 12.5 percent. In the wake of this announcement spreads between Greek and German government bonds increased surprisingly slowly at first and subsequently at an increasing speed. Half a year later by April 2010, after the rating agencies had downgraded Greek government bonds to junk status, the spread had reached 755 basis points. However, it became increasingly clear that Greece would not be able to refinance its government bonds due in 2010 at these interest rates. State bankruptcy seemed inevitable.

Period from 1 February 2010 to 2011

(a) At the EU summit on 1–2 May 2010 the euro countries decided to support Greece with bilateral, pooled assistance loans. A 1–3 year agreement was reached between Greece and the euro countries



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together with the IMF, whereby the euro countries would provide funds of 80 million euros and the IMF would provide 30 million euros. The fiscal adjustment plan that Greece committed to was supposed to guarantee Greece's return to the capital markets in three years. This agreement effectively annulled the no-bail-out clause of the Maastricht Treaty, which, with the active participation of the German government, constituted the basis of Germany's agreement to abolish the DM and introduce the euro. The European Central Bank subsequently announced that it would henceforth accept Greek government bonds as collateral regardless of their rating. In addition, it began to purchase Greek government bonds in the secondary market. The ECB thereby took over fiscal functions for which it has no mandate. According to their country's share in the bank's basic capital, this move gives the taxpayers of euro countries a share in the losses arising from the amortization of Greek government bonds that have become worthless. Growing spreads for Irish and Portuguese government bonds forced the governments of the euro countries to take further action. A week after the Greece package an agreement was reached on a 750-billion-euro comprehensive rescue fund called the European Financial Stability Fund (EFSF) for all of the other potentially threatened euro countries. The EU contributed 500 billion euros, while the IMF paid in 250 million euros. The sum of 60 billion euros came from the EU budget and the remaining sum of 440 billion euros was provided by euro member states in the form of guarantees. Ireland and Portugal are now receiving payments from these funds.

(b) At the EU summit on 29 October 2011 politicians reflected on the causes of the critical worsening of the situation back in the spring, as well as on the consequences of the bail-out package agreed upon at the time. The German government had called for a sharpening of the stability pact. To this end sanctions were to be made automatic should the rules be broken and violations were to be penalised with a loss of voting rights. Furthermore, provision was made for private creditors to participate in the financing of the bail-out programs and changes to the Treaty were to be made possible. The majority of these demands made by Germany were unsuccessful due to opposition from France and the ECB. Only a minor amendment to the treaty was agreed upon. Article 104 b of the Maastricht Treaty was subsequently changed to enable states to guarantee mutual assistance if the stability of the eurozone were to be threatened without it. The amendment was primarily motivated by domestic pol-

itics, but nevertheless served to safeguard the agreements made in May against which cases were pending in the German Federal Constitutional Court.

(c) At the EU summit of 24 March 2011 in Brussels the expectation that assistance to Greece and the bail-out fund would no longer be required after three years was acknowledged to be erroneous. Follow-up financing for the program of May 2010 due to expire by the middle of 2013 was therefore agreed upon. Instead of another program for a limited time period, however, a permanent bail-out fund was put forward, namely the European Stability Mechanism (ESM). It totals 700 billion euros, of which member states pay in 80 billion euros and make 620 billion euros available as guarantees. Hence the breach of the stability pact's no bail-out clause was not reversed, but perpetuated.

(d) At the EU summit of 21 July 2011 the question of the participation of private creditors, which had been previously requested but refused, was then raised. With the banks as the biggest group of private creditors, 'voluntary' debt relief for Greece totalling 21 percent of outstanding claims was agreed upon.

(e) The last euro crisis summit to date was held on 26 October 2011. Prior to the summit rising spreads on Italian and Spanish government bonds led the ECB to resume its purchase of these bonds, which had ceased in the interim. The crisis now obviously threatened to spread to the large Southern European countries. Furthermore, Greece's attempts at reform were still progressing very slowly, forcing representatives of the 'troika' of the IMF, ECB and EU, whose positive vote was a condition for the payment of successive tranches of credit, to abandon a visit to Greece with no results. This resulted in a renewed need for action. Two groups of decisions were taken to meet this need. *Firstly* the bail-out package was enlarged. This was implemented *via* an increase in the guarantees provided by member states from 440 billion euros previously to 780 billion euros. On the one hand, Germany's total liability *via* the fund thereby increased from 146 billion euros to 211 billion euros; and on the other hand the bail-out package was enlarged *via* 'leveraging'. In line with this leveraging, the bail-out package can collateralise fresh lending to euro countries by third-parties at a rate of 20 percent, which represents a fivefold increase in resources in the worst case. *Secondly*, an agreement was reached with creditor banks on a second round of 'voluntary' debt relief for Greek sovereigns. This debt relief no longer

covers just 21 percent of the country's debts, but now accounts for 50 percent. For Greece this represents total relief of around 100 billion euros. This relief should shore up the sustainability of the debt burden for Greece. According to the Troika's forecasts, the debt ratio should fall from 180 percent to just 120 percent as a result. To safeguard the banks that are holding Greek bonds the latter should be capitalized. Firstly, they should try to obtain the equity required on the capital market. In cases where this is not possible, states should capitalise 'their' banks with budget resources. If this is not possible either, the EFSF has a fund of up to 30 billion euros at its disposal. France's efforts to involve the ECB in the leveraging and debt relief failed in the face of opposition from Germany.

2. Greece's external achilles' heel

Political reactions to events in Greece can be criticised – or praised – from many points of view. I will focus on the country's external trade imbalances. My message is that I see no chance of addressing this imbalance without an exchange rate adjustment and thus without Greece temporarily leaving the eurozone.

2.1 Data

After joining the monetary union Greece's current account developed as shown in Table 1. The first row of this table shows the current account balance in billion euros and the row 2 demonstrates it as a share of GDP, while the third row shows the real growth rate of GDP. The table highlights a dramatic deterioration in the current account between 2006 and 2008, both absolutely and as a share of GDP based on an already high deficit between 2001 and 2005. So the decline began long before the financial crisis and cannot be deemed to result from it. The slight reduction in the deficit between 2009 and 2010 can be attributed to the growth slump between 2009 and 2010. The sum of the

deficits over the entire decade of eurozone membership totals 197 billion euros, which equals an 85 percent share of GDP for 2010 (230 billion euros). Almost the entire year's social product would be required to pay off the country's net external debt run up over 10 years. Just over half of Greece's public debt totalling around 350 billion euros (2010) is thus held by foreigners and the remainder by Greeks. Greece's net external debt of 210 billion euros according to the Bank of Greece at the end of 2010 is only a little higher than this figure,¹ meaning that today's external debt did effectively accumulate over the last decade for the most part.

2.2 Current account, capital account and Target balances

The figure of 197 billion euros is also of interest with regard to the Target debate which Hans-Werner Sinn initiated (Sinn and Wollmershäuser 2011). The Target balances that national central banks have with the ECB reflect the equivalent of changes in currency reserves in the previous par value system. The central bank of a country with a balance of payments surplus i.e. a surplus in the aggregated current account plus capital account experienced an increase in currency reserves, while the central bank of a deficit country experienced a drop in currency reserves. Sinn rightly points to the extremely problematic situation that, in the old system, a country with dwindling currency reserves was forced to correct the situation or take loans in foreign currencies. In the euro system the banks of a deficit country can run up debts with their own country's central bank, which lowers the inclination to make any adjustments. The government of a surplus country could block the purchase of foreign currency by using the flexibility of the exchange rate or appreciating the value of its own currency and thus called the shots. In the monetary union the surplus country does not

¹ See <http://Bank of Greece, Statistics, External Sector, International Investment Position>.

Table 1

Development of Greece's current account (CA), 2001–2010

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| CA in billion euros | – 10.5 | – 10.2 | – 11.2 | – 10.7 | – 14.7 | – 23.7 | – 32.6 | – 34.7 | – 25.8 | – 22.9 |
| CA as % of GDP | 7.2 | 6.5 | 6.6 | 5.8 | 7.5 | 11.3 | 14.3 | 14.7 | 11.0 | 10.4 |
| Real GDP growth rate (%) | 4.2 | 3.4 | 5.9 | 4.4 | 2.3 | 5.2 | 4.3 | 1.0 | – 2.0 | – 4.5 |

Sources: <http://Bank of Greece/Statistics/External Sector/Balance of Payments>;
<http://OECD.StatExtracts/General Statistics/Key Short Term Indicators/Current Account% of GDP>;
<http://epp.eurostat.ec.europa.eu/statistics/National Accounts/Real GDP Growth>.

determine whether to finance deficit countries; on the contrary deficit countries decide to what extent the central banks in surplus countries are to accept claims on the central banks of deficit countries. Article 107 of the Maastricht Treaty, which establishes the independence of ECB bodies from political directives, is untenable in this respect. The Target system provides the ESCB, and especially the ECB Council, resources that are leading to the redistribution of income and wealth between the euro countries. Politicians, not the ECB, should take such decisions. Moreover, the source of Target balances needs to be examined very closely: given that a Target claim can result from a current account surplus or a capital account surplus, but net external claims can only result from current account surpluses, current account and capital balances must be drawn up separately.

If the size of the Greek central bank's Target balance is known, it is possible to deduce from the table above how the Greek net external debt resulting from the aggregation of current account deficits is distributed between the Greek central bank on the one hand and the rest of the Greeks on the other. The latter group is often incorrectly referred to as the private sector. However, this group refers to all nationals, private and public, who must be compared with the central bank.

For Greece Mayer *et al.* (2011) cite a negative Target balance totalling 87 billion euros of the end of 2010. That means that Greece has financed around half of its current account deficit (87/197), the 'currency balance' in other words, *via* its central bank and the ECB, and the rest, or just over half of the total sum, at the gates of the central bank or on the capital market *via* the capital balance. By comparison: since the beginning of monetary union Germany has accumulated a total sum of 1,330 billion US dollars, which converted at the current rate of 1.40 US dollars per euro, totals 950 billion euros. Its positive Target balance recently amounted to 450 billion euros. In this case it is also true that around half of the total net income from trading was accumulated in the form of central bank claims, while the other half represented the increase in net income from trading by all other nationals.

2.3 Relief to date

(a) The measures taken to date to rescue Greece using funds from the EU and IMF fund have mainly target-

ed the public sector. The funds served to enable the repayment of maturing Greek sovereign bonds. The banks were encouraged to write off an initial 21 percent, followed by a further 29 percent of the bonds that they held. Tax increases and spending cuts in the public sector were demanded of Greece itself, to curb the budget deficit and thus the pace of fresh public borrowing. Excise duties were raised, public sector wages were cut and public pension entitlements were capped. All this primarily offers relief for the national budget; the current account is only indirectly and insufficiently affected. A specifically external component is missing from the programmes. What should this look like?

To improve the current account, exports need to be boosted and imports must be curbed. To this end, the level of structure of aggregate demand in Greece needs to be changed in the mid term. Curbing the level of demand reduced domestic demand and imports. A relative price reduction of domestic goods changes the structure of demand and channels demand towards Greek produce, which boosts exports and shrinks imports. Curbing consumption and investment, combined with enforced saving, is part of the first concept, while improved competitiveness is part of the second concept. The corresponding economic instruments are increases in taxation, public expenditure cuts on the one hand and overall economic real wage reductions on the other. In the long-term improvements in supply-side conditions are expedient: productivity increases through human and physical capital enable decreases in unit labour costs even without nominal wage caps, and product innovation *via* direct foreign investment can open up new export markets. Supply-side measures give rise to less social resistance than the use of demand-side instruments. Yet, they take a long time to bear fruits. In the meantime the existing current account deficit has to be financed *via* the external granting of credit. However, as pressure to adapt falls, the chance of a fresh start is being wasted, which is making lenders hesitate. This is the true dilemma of the situation, which requires the use of demand-side instruments with a short-term impact.

(b) It is widely recognized that the instruments used to date are mostly limited to reducing the level of demand and that any improvement in competitiveness under such conditions is unthinkable. The public sector wage cuts decreed may have a beneficial effect in terms of cost reductions, but the public sector does not create any goods that are subject to international

export and import substitution and competition. Companies derive little benefit from these cost reductions. An overall economic wage cut imposed by the state is not compatible with the freedom to set prices. Pressure on wages arising from growing unemployment clashes with social welfare terms and is meeting political opposition. So it is impossible to see where the requisite improvement in Greece's competitiveness could come from. This qualitative argument gains even more weight when quantitative factors are taken into consideration. Sinn (2010) shows that, measured by the GDP deflator, Greece lost 31 percent of its competitiveness versus other euro countries between 1995 and 2009 and 48 percent versus Germany. These dimensions show that wage moderation for a year or two is not enough to restore competitiveness, but that a zero-increase wage policy would be required for decades, not years, to achieve this. Believing that this could be possible is tantamount to indulging in political illusion.

Demand is taking a downturn in Greece, as it did in other countries in a comparable position in the past, for political reasons and more thanks to a downturn in investment than to one in consumption. According to Eurostat figures,² consumption by private households as a share of GDP remained almost constant from 2005 (75.5 percent) to 2010 (75.4 percent), investments as a share of GDP, on the other hand, fell from 20.0 percent to 14.7 percent in the same period. Since today's investments are tomorrow's growth, problems are clearly being postponed. Ultimately, less hope can be placed a growth-based solution to the debt problem in the case of Greece than in that of other countries. Economic growth may indeed decrease public sector debt because growing income leads to higher tax revenues, which reduce budget deficits. However, growing revenues do not have the same beneficial effects on current account deficits. The latter may become smaller with rising income, but can also become larger. The effect depends on the source of the growth. In the case of export-driven growth, the current account will improve, but in the case of internally stimulated growth it will worsen.

In both cases rising national income entails growing imports. In the first scenario export surpluses decrease, while in the second scenario there are import surpluses from the outset. Based on past experience,

the problems financing the current account deficit arising in the second scenario paralyse growth in the short and long-term. However, because Greece – trapped in the monetary union – no longer disposes the instruments to strengthen its price competitiveness, export-driven growth will not arise and current account deficits will persist as a result. In short, there is no chance of a sufficient improvement in Greece's competitiveness while it remains within the monetary union.

3. The exit option

Leaving the monetary union would give Greece the option of achieving economic recovery with rising instead of shrinking employment. The mechanisms are well-known and will therefore only be discussed very briefly here.

3.1 The real balance effect

In the simplest case we model the economy with three simple assumptions: (1) all of relative prices of the goods observed in the model are constant, which is referred to as a one-good world. (2) The country under observation is small on a global scale, meaning that the world market price of the goods produced and consumed is constant. (3) The offer of goods is constant.

Initially the country shows a current account deficit: it consumes more than it produces. Devaluation produces relief: at a given nominal money supply the real money supply drops, because of the devaluation of the local currency which raises the price of goods measured in the local currency. Real demand drops and at a given money supply excess demand and the current account deficit drops. Constant production presupposes that nominal wages comprehensively follow the price increase owing to devaluation, so that real wages remain constant. If the nominal wage were to be fixed, the fall in demand would be compensated for by a short-term expansion of supply with regard to the targeted improvement in the current account. This current account model manages without substitution effects.

3.2 Substitution effects: tradeables and non-tradeables

Substitution effects complete the picture, if we are looking at a two-good world. With tradeable goods (tradeables T), and non-tradeable goods (non-trade-

² http://epp.eurostat.ec.europa.eu/statistics/Consumption_expenditure_of_households_2010 and [http://epp.eurostat.ec.europa.eu/statistics/investment1_2010_\(%_share_of_GDP\)](http://epp.eurostat.ec.europa.eu/statistics/investment1_2010_(%_share_of_GDP)).

ables N), a devaluation induced price increase at a given world market price leads to an increase in the local price of tradeables. Demand shifts to the non-tradeables sector, supply shifts to the tradeables sector. Both on the demand and on the supply side the current account therefore improves.

3.3 Substitution effects, exportables and importables

Excluding non-tradeables, tradeables are split in the model of section 3.1 into the exportable and importable goods types, and new substitution effects take place, albeit of a different nature. If countries specialise in the production of their respective exportables, a devaluation of the local currency at given wage levels and a given money supply should lead to a shift in demand both on the part of nationals and foreigners to domestic goods, with the result that production and employment usually increase as the current account improves.

For a country already in debt in terms of foreign currency, high price elasticity of supply and demand may not suffice to guarantee the normal reaction of the central bank. The improvement in the trade and services balance must be big enough owing to devaluation to over-compensate for the worsening in the balance of income from earnings and investment.

3.4 The formalized form

The simplest Keynesian fixed-price variant of model 3.3 arises from the definitional identity of the open economy:

$$(1) Y = C + I + X - M \text{ and/or}$$

$$(2) H = X - M$$

It is easy to derive that this means:

$$(3) H(Y, A) = X(w) - M(w, Y).$$

In the balance of the goods market stockpiling H , i.e. the excess domestic supply, and net exports $X - M$, i.e. excess demand from abroad, must be equal. Stockpiling depends on national income Y and autonomous expenditure A , while exports X depend on the exchange rate w , and imports M depend on the exchange rate as well as on national income Y . The following applies for the partial derivatives:

$$H_Y > 0, H_A = -1, X_w > 0, M_w < 0 \text{ and } M_Y > 0.$$

With both exogenous variables A and w the reaction of the endogenous variables Y and net exports is affected by changes in data:

$$(4) (dY/dA) = (1/D) > 0$$

$$(5) (dY/dw) = (B_w/D) > 0$$

$$(6) (d(X-M)/dA) = (-M_Y/D) < 0, \\ \text{where } D = H_Y + M_Y > 0$$

$$(7) (d(X-M)/dw) = (B_w H_Y/D) > 0, \\ \text{where } B_w = X_w - M_w > 0.$$

It can be seen that the policy on the level of expenditure, in a contractionary direction in this case in a policy of 'cuts', improves the current account (6), at the expense, however, of downturns in production and employment (4). Devaluation, or expenditure structure policy, on the other hand, directs economic demand towards domestic products and leads to both an improvement in the current account (7) and an increase in production and employment (6).

For this reason IMF packages for countries that are experiencing balance of payments difficulties always include depreciation recommendations. The South-East Asian countries so quickly found their feet again after the financial crisis 1997 for the same reason and this is also precisely why such success will not happen in Greece.

3.5 Stein's contribution

A much more sophisticated model to explain financial crises in general and more strongly geared towards long-term effects, which can be applied to the euro-zone and Greece is offered by Stein in this issue (Stein 2011). In a NATREX model (Stein 1990 and 2006) with stock-flow-interactions he shows the roots of the external debts of countries that are unsustainable in the long-term. He proves that, in the cases of Greece, Portugal and Italy, the public sector caused the crisis with rising government spending; while in the case of Spain and Ireland the private sector must be seen as responsible for triggering the crisis with its soaring expenditure on real-estate. Against this backdrop, he believes that the constraints of the stability pact rules on the public sector are in need of revision.

3.6 Objections

In the context of the demand for Greece to leave the monetary union and a subsequent depreciation of its

currency, it is often argued that the wage increase which usually follows a depreciation tends to make the latter worthless. However, insofar as a real depreciation actually takes place, this could be equally as well achieved within a monetary union with a nominal wage decrease at a given price as *via* devaluation-based rising prices at nominal wages outside the monetary union.

The first argument is to point to experiences in Italy, which, by avoiding wage compensation following the devaluation of 1992 generated the growth in production and exports that finally enabled it to fulfil the Maastricht criteria and secured its acceptance into the monetary union of 1999. There is also the argument that there is no improvement in the current account at the same rate of increasing wages and prices, because the real balance effect still has an impact at a given money supply.

The second argument is to say that a decrease in real wages is more likely to succeed and at a significantly faster pace with a devaluation than with nominal wage adjustments. Devaluation increases the price of tradeables ‘overnight’ and reduces real wages immediately. A real wage reduction, which can be mandated by politicians, is certainly easier for the unions to accept than having to go to their members with lower nominal wage agreements following negotiations with employers. Finally, the old argument of Keynes should also be cited whereby it is not clear with wage negotiations in a specific sector whether other sectors will follow with lower nominal wage agreements, meaning that the sector-based wage reduction can be accompanied by a loss in the macro-economic wage hierarchy. This risk is far smaller with a devaluation-based reduction in real wages. This argument weighs all the more heavily the smaller and more open the economy in question is.

Ultimately, it is argued that devaluation is not a helpful instrument in the case of Greece, because the country does not have sufficient opportunities to diversify either on the export or import side, so that price-induced shifts in demand are not to be expected. This argument is not convincing. Greece has, for example, a broad tourism sector with significant opportunities for growth. In this sector, however, Greece faces stiff competition from Turkey. As a non-member of the monetary union, Turkey always has the option of strengthening the competitiveness of its industries, including tourism, by devaluing its currency. It is therefore not enough for Greece to win back its competitiveness within the eurozone, it has to compete with countries that can devalue – and which have

done so in the past and will do so again. The Turkish Lira has devalued by around 30 percent against the euro since October 2011. Against this backdrop, how can Greece’s tourism sector hope to hold on to its eurozone customers?

4. Conclusion

Ken Rogoff, co-author of the book *This Time Is Different* (Princeton, 2009) which features comments on debt, banking and currency crises from eight centuries, and who must be considered today’s top expert in debt crises, has long-since recommended that Greece take a ‘temporary time-out’ from the eurozone (Rogoff 2011). Otmar Issing, who was a vehement opponent of Greece leaving the eurozone for a long time, is also arguing for Greece to take time-out as a result of the debt relief that has been given, or the change in the rules of play that give other debtor countries false incentives (Issing 2011). It presumably won’t help. The political will of the Euro countries to keep Greece in the monetary union ‘cost what it may’ in the words of EU Commission President Barroso, will not allow Greece to leave. Greece’s interest in leaving the eurozone is being undermined by fear that the financial assistance provided by the euro countries will disappear. The whole situation should it continue will thus lead to growing foreign debt with subsequent debt relief, in other words to a transfer union.

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THE DIVERSITY OF DEBT CRISES IN EUROPE

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The external debts of the European countries are at the core of the current crises. Generally, the crises are attributed to government budget deficits in excess of the values stated in the Stability and Growth Pact (SGP), and the Maastricht Treaty. Proposals for reform involve increasing the powers of the European Union to monitor fiscal policies of the national governments and increasing bank regulation. I explain the inter-country differences in the debt crisis in Europe. The SGP and the EU focused upon rules concerning government debt ratios and deficit ratios. They ignored the causes of external debt ratios in the entire economy that led to a crisis in the financial markets.

My basic questions in the European context are: how were 'excessive/non sustainable' external debt ratios produced in the various countries? Were the crises due to government budget deficits/government dissaving or to the private investment less private saving? What is the mechanism whereby the actions of the public and private sectors lead to an unsustainable debt burden, defined as an unsustainable ratio of debt service/GDP? The answers determine to a large extent how one should evaluate proposals for economic reform, to avert future crises.

The external debt ratio is not a control variable, but is an endogenous variable that is determined by 'fundamentals' in a dynamic manner. The fundamentals are determined by the actions of both the public and the private sectors. I explain this by drawing upon the Natural Real Exchange Rate NATREX model of the equilibrium real exchange rate and external debt – the endogenous variables.

* Brown University, Providence RI. This article is based upon chapter 8 of my forthcoming book, *Stochastic Optimal Control and US Financial Crisis* (Springer Science, 2012). I thank Peter Clark, Serge Rey, Karlhans Sauernheimer, Christoph Fischer and Carl D'Adda for advice.

I start by presenting some relevant basic statistics. They strongly suggest the inter-country differences that caused the debt crisis. The government sector was the main cause in Greece and Portugal. The private sector was the main cause in Ireland and Spain.¹

Basic statistics related to the origins of the crises

Table 1 presents the 'government structural balance' as a percentage of potential GDP (SBGDP). It refers to the general government cyclically adjusted balance adjusted for nonstructural elements beyond the economic cycle. The last row contains the mean and standard deviation in the pre-crisis period 1998–2007. In Greece and Portugal the SBGDP have been on average twice as high as in the euro area, whereas in Spain the SBGDP have been significantly lower and in Ireland they have been similar to the euro area. A difference between Spain and Ireland is that, from 2001–2007, the structural budget deficits in Ireland increased significantly, but were relatively stable in Spain.

Current account/GDP, origins of the external debt ratio

The relevant debt is the external debt, and a crisis occurs when the debt service payments/GDP are unsustainable. The sources of the external debt are current account deficits. Country experiences were different concerning the causes of the current account deficits.

Table 2 describes the current account/GDP in the euro area and in Greece, Ireland, Italy, Portugal and Spain. The net external debt is the sum of current account deficits. The steady trend in government deficits in Greece, Portugal, Italy and Ireland led to a steady trend of current account deficits and external debt. In Ireland and Spain, the rise in the demand for housing/non-tradables since 2004 discussed below were additional factors that appreciat-

¹ Sources for country studies are the reports of the central banks and EEAG (2011).

Table 1

Government structural balance as % GDP (SBGDP)

| | Eurozone | Spain | Ireland | Portugal | Greece | Italy |
|--|------------------|------------------|------------------|-----------------|------------------|------------------|
| 1998 | – 2.03 | – 1.736 | 1.219 | – 3.4 | – 2.86 | – 3.1 |
| 1999 | – 1.6 | – 1.02 | 0.269 | – 3.38 | – 1.89 | – 1.8 |
| 2000 | – 1.969 | – 1.22 | 1.673 | – 4.7 | – 2.68 | – 0.9 |
| 2001 | – 2.676 | – 1.757 | – 1.8 | – 5.5 | – 3.647 | – 3.1 |
| 2002 | – 2.86 | – 1.1 | – 2.757 | – 4.9 | – 4.1 | – 3.0 |
| 2003 | – 3.1 | – 0.976 | – 3.167 | – 4.89 | – 6.03 | – 3.5 |
| 2004 | – 2.98 | – 0.978 | – 2.75 | – 5.2 | – 8.638 | – 3.6 |
| 2005 | – 2.67 | – 1.598 | – 3.756 | – 5.7 | – 6.01 | – 4.4 |
| 2006 | – 2.07 | – 1.275 | – 4.0 | – 3.9 | – 4.9 | – 3.3 |
| 2007 | – 1.83 | – 1.132 | – 7.3 | – 3.4 | – 6.795 | – 1.5 |
| 2008 | – 2.58 | – 4.9 | – 11.26 | – 4.02 | – 11.47 | – 2.7 |
| 1998–2007 Mean (standard deviation) | – 2.38 (0.54) | – 1.28 (0.31) | – 2.24 (2.71) | – 4.5 (0.09) | – 4.76 (2.11) | – 2.81 (1.02) |

Sources: EconStats, IMF World Economic Outlook; Italy, Federal Reserve St. Louis, International Economic Trends, Government budget balance/GDP.

Table 2

Current account/GDP

| Year | Eurozone | Greece | Ireland | Spain | Italy | Portugal |
|------|----------|--------|---------|--------|-------|----------|
| 1998 | | – 2.8 | 0.8 | – 1.2 | 1.6 | – 6.8 |
| 1999 | – 0.59 | – 5.6 | 0.3 | – 2.9 | 0.7 | – 8.8 |
| 2000 | – 1.35 | – 7.8 | – 0.4 | – 4.0 | – 0.5 | – 10.4 |
| 2001 | – 1.06 | – 7.3 | – 0.6 | – 3.9 | – 0.1 | – 10.3 |
| 2002 | 0.66 | – 6.8 | – 1.0 | – 3.3 | – 0.8 | – 8.23 |
| 2003 | – 0.08 | – 6.5 | 0.0 | – 3.5 | – 1.3 | – 6.4 |
| 2004 | 0.78 | – 5.8 | – 0.6 | – 5.3 | – 0.9 | – 8.3 |
| 2005 | 0.02 | – 7.6 | – 3.5 | – 7.4 | – 1.7 | – 10.3 |
| 2006 | – 0.56 | – 11.3 | – 3.6 | – 9.0 | – 2.6 | – 10.7 |
| 2007 | 0.13 | – 14.5 | – 5.3 | – 10.0 | – 2.4 | – 10.4 |
| 2008 | – 1.83 | – 14.7 | – 5.6 | – 9.7 | – 2.9 | – 12.6 |
| 2009 | – 1.24 | – 11.4 | – 3.0 | – 5.5 | – 2.1 | – 10.2 |
| 2010 | – 0.81 | – 10.5 | – 0.3 | – 5.5 | – 3.5 | |

Sources: Federal Reserve Bank of St. Louis, International Economic Trends; Portugal, World Bank.

Table 3

External debt position, end of 2009

| Country | Net external debt/GDP (in %) | General government net external debt/GDP (in %) |
|----------|---------------------------------|--|
| Portugal | 88.6 | 74.4 |
| Greece | 82.5 | 78.9 |
| Spain | 80.6 | 47.3 |
| Ireland | 75.1 | 70.6 |
| Italy | 37.3 | 42.9 |
| Germany | – 21.7 | 48.5 |

Source: Cabral (2010). Negative value is creditor.

ed the real exchange rate and generated the current account deficits.

Table 3 describes the net external debt/GDP and the general government external debt/GDP, as of the end of 2009. The *net* external debt/GDP in column 1 is the key to understanding the crises in Europe. It is

equal to total public and private liabilities to foreigners and public and private claims on foreigners. Column 2 is the general government net external debt/GDP.

Looking at Germany one sees the difference between the two measures. Germany is a net *creditor* concern-

ing the net external debt, whereas it has a general government net debt/GDP similar to Spain and higher than Italy. For Portugal, Greece and Ireland, most of the external debt is accounted for by government debt. However, for Spain the gap between the two is large. Therefore, the exclusive focus upon the government sector is misleading. Italy does not have a high net external debt/GDP.

The low world rates of interest and high domestic economic growth led to a rise in housing prices. In the period 1991–2000 the growth rates in Ireland and Spain were very high, and generated a boom in housing prices. Thus the demand for non-tradables rose, appreciating the real exchange rate – the ratio of domestic/foreign prices – inducing a current account deficit financed by capital inflows and the external debt burden rose.

The capital market assumed that, since these countries are in the euro area, there is neither an exchange rate risk nor a default risk. The capital market treated these countries alike insofar as interest rates were concerned, and did not charge countries a risk premium relative to the rest of the euro area during the period 2000–2008.

Repercussions in financial markets

It is difficult to separate bank debt from government debt when the governments have bailed out banks. The government/taxpayer takes over the role of the debtor. There is reason to combine the two debtors. Table 4 displays the debts of the banks and governments. Debtor is listed in row and creditor in column. The major debtors were Italy, Spain and Ireland. Spain owed 220 billion US dollars to the French and 238 billion US dollars to the Germans. The major

creditors were the French, German and British banks. The major creditors for Ireland were Britain and Germany. Last column is total debt to all countries in addition to those in the table.

When the crises occurred in Greece, Portugal, Ireland and Spain, whether due to the government or the private sector, defaults occurred or were threatened. If Spain defaulted then assets of the British, French and German banks/government declined in value. If the Irish defaulted, the British and German banks/governments were affected. If Italy defaulted, the French and German banks would be affected.

NATREX model of external debt and real exchange rate²

The crucial variable leading to a debt crisis is the net external debt/GDP. It is the sum of current account deficits. The accounting identity is: current account = (private saving less private investment) + government saving. The first term in parenthesis refers to the private sector and the second to the government sector. The *exclusive* focus of the SGP upon the government debt and deficit is misleading – as the recent crises indicated. The case of each country is different.

The external debt is an endogenous variable that depends upon ‘economic fundamentals’. I present the Natural Real Exchange Rate Model (NATREX) concerning the simultaneous evolution of the endogenous variables: the real exchange rate – the ratio of domestic/foreign prices – and the external debt. The ‘fundamentals’ are: (a) the expenditures on non-tradables that may arise from either the government budget bal-

² The NATREX model is based upon Stein (2006, chapter 4).

Table 4

Banks and governments: debtor and creditor by country (in billion US dollars)

| | Greece | Ireland | Italy | Spain | Portugal | Britain | France | Germany | Total debt |
|----------|--------|---------|-------|-------|----------|---------|--------|---------|------------|
| Greece | – | 8.5 | 6.9 | 1.3 | 9.7 | 15 | 75 | 45 | 236 |
| Ireland | 0.8 | – | 18 | 16 | 22 | 188 | 60 | 184 | 867 |
| Italy | 0.7 | 46 | – | 47 | 5.2 | 77 | 511 | 190 | 1,400 |
| Spain | 0.4 | 30 | 31 | – | 28 | 114 | 220 | 238 | 1,100 |
| Portugal | 0.1 | 5.4 | 6.7 | 86 | – | 24 | 45 | 47 | 286 |
| Britain | | | | | | | | | |
| France | | | | | | | | | |
| Germany | | | | | | | | | |
| Total | 2 | 89.9 | 62.6 | 150.3 | 64.9 | 418 | 911 | 704 | |

Source: Fidelity Investments, Strategic Advisers, 2010. Row is debtor and column is creditor.

ance or expenditures by the private sector such as occurred in the house price bubble; and (b) the productivity of the economy that increases the current account, by increasing the output of tradables. In the case (a) the external debt rises from the medium to the long run; and the real exchange rate first appreciates and then depreciates below its initial level. In case (b), the real exchange rate appreciates from the medium to the longer run. The external debt first rises and then declines steadily in the long run to a level below the initial value.

I apply the NATREX model to explain the diversity of debt crises in the European countries. In the empirical part, I explain the relative roles of the different fundamentals in the various European countries.

Equilibrium exchange rates and external debt

The equilibrium real exchange rate and external debt interact in a dynamic manner. NATREX analysis concerns the *equilibrium* real exchange rate and is not the *actual* real exchange rate. The NATREX explains the fundamental determinants of the medium-run equilibrium and the dynamic trajectory of the real exchange rate and the external debt to the long-run equilibrium. In both the medium run and longer run the NATREX equilibrium real exchange rate satisfies equation (1), subject to constraints. The *constraints* are that there is *internal balance*, where the rate of capacity utilization is at its longer-term mean, and *external balance* where the real rates of interest at home and abroad are equal, there are neither changes in reserves, nor speculative capital flows based upon anticipations. The equilibrium real exchange rate is the mean of a distribution, which is based upon real fundamentals. The mean will vary over time due to endogenous changes in capital and external debt, as well as changes in the exogenous real fundamentals. Deviations from this mean are produced by speculative factors involving anticipations, cyclical factors, lags in adjustment, and interest rate differentials. These disequilibrium elements average out to zero. These deviations produce considerable variation but their effects are ephemeral.

The terms in (1) are that investment less saving ($I_t - S_t$) plus the current account is equal to zero. Investment less saving is the non-speculative capital inflow. The current account ($B_t - r_t F_t$) is the trade balance B_t less transfers of interest and dividends $r_t F_t$. The net external debt is F_t and r_t is the 'interest/dividend' rate. The international investment position consists of equity,

portfolio investment and direct investment. The debt F_t is the negative of the net international investment position. Measure investment, saving and the debt as fractions of the GDP.

$$[(I_t - S_t) + (B_t - r_t F_t)] = 0 \quad (1)$$

In the NATREX approach the endogenous current account generates an evolving external debt, which feeds back into the medium-run equation (1). A trajectory to longer-run equilibrium is generated. The dynamics of the debt/GDP ratio F_t is equation (2), where g is the growth rate. The current account deficit is the change in the external debt. The real exchange rate affects the trade balance B in equation (1), and the trade balance affects the evolution of the actual debt ratio in equation (2). There is a dynamic interaction between the endogenous real exchange rate and debt ratio.

$$\begin{aligned} dF_t / dt &= (I_t - S_t) - g_t F_t = (r_t F_t - B_t) - g_t F_t \\ &= (r_t - g_t) F_t - B_t \end{aligned} \quad (2)$$

In the *longer-run equilibrium*, the debt ratio stabilizes at a value that satisfies equation (3). The trade balance B_t is sufficient to finance the interest plus dividend transfer on the debt net of growth $(r_t - g_t)F_t$. A negative debt is net foreign assets.

$$(r_t - g_t) F_t - B_t = 0. \quad (3)$$

The *longer-run equilibrium* real exchange rate R_t^* and debt/GDP ratio F_t^* are endogenous variables that satisfy both equations (1) and (3). They are written as (4) and (5) to indicate that they both depend upon the real fundamentals Z_t .

$$R_t^* = R(Z_t) \quad (4)$$

$$F_t^* = F(Z_t). \quad (5)$$

I call dynamic stock-flow model equations (1) to (3) the NATREX model, which is an acronym for the **N**atural **R**eaL **E**xchange **R**ate. This is a model of *positive economics*. The derivation of the underlying equations is in Stein (2006, chapter 4).

Populist and growth scenarios

The NATREX model is a technique of analysis. The purpose of the model is to understand the effects of policies and external disturbances upon the trajectories of the equilibrium real exchange rate R_t and equi-

librium external debt ratio F_t , which depend upon the vector of fundamentals Z_t . Insofar as the fundamentals vary over time, the equilibrium real exchange rate and external debt ratio will vary over time, as indicated in equations (4) and (5). The logic and insights of the NATREX model can be summarized in two scenarios. Each scenario concerns different elements in the vector Z_t of the fundamentals, and has different effects upon the *equilibrium* trajectories of the real exchange rate NATREX and of the external debt. This analysis will help understand the roles of the government budget deficit and the housing price bubble in generating external deficits. Table 5 summarizes the differences between the two scenarios in the medium and the long run.

The first scenario, called the *Populist scenario*, involves a decrease in the ratio of social saving/GDP. This could occur when (i) the government incurs high-employment budget deficits, lowers tax rates that raise consumption, or (ii) there is a rise in the demand for non-tradable goods/housing. For example, there are low interest rate loans for the production of non-tradable goods. These scenarios represent a rise in the consumption ratio/a decline in the saving ratio, a shift in the S function in equations (1) and (2). These Populist expenditures are designed to raise the standards of consumption/quality of life for the present generation.

The second scenario, called the *Growth scenario*, involves policies designed to raise the productivity of capital and increase the competitiveness of the economy, increase the supply of traded goods.

The stories behind the dynamics are as described by Figures 1 and 2, and Table 5. Curve SI (Figure 1) is saving less investment ($S-I$)(t). It is positively relat-

ed to the real exchange rate because a rise in domestic/foreign prices adversely affects investment (see Stein 2006, chapter 4). The curve labeled $CA(t)$ is the current account function ($B_t - r_t F_t$), which is negatively related to the real exchange rate because a rise in domestic/foreign prices adversely affects the trade balance. Initial equilibrium is $R = R(0)$ and $CA = 0$.

The Populist scenario involves decreases in social (public plus private) saving relative to the GDP. For example, it involves an increase in demand for non-tradables such as housing. External borrowing must finance the difference between investment and saving. The SI function shifts from $SI(0)$ to $SI(1)$. The new equilibrium is at $[R(1), A(1)]$, where $T = 1$ denotes the *medium-run equilibrium*. The real exchange rate appreciates because the price of non-tradable goods rises. The price of tradable goods is determined in the world market. The current account deficit equal to $A(1)$ is balanced by the capital inflow. The debt rises, since the current account deficit is the rate of change of the debt – equation (2). Current account deficits lead to growing debt service payments $r_t F_t$.

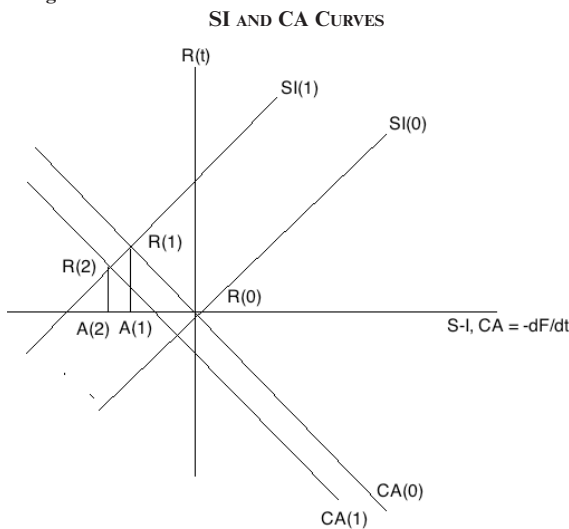
The rise in the debt payments decreases the current account function, shifts the curve CA from $CA(0)$ to $CA(1)$. This Populist scenario is potentially dynamically unstable because the increased debt raises the current account deficit, which then increases the debt further. The exchange rate then depreciates to $R(2)$, and since the current account deficit has risen to $A(2)$, and the debt rises *steadily*. The populist scenario – a rise in the demand for non-tradables – is described in Figure 2 and Table 5. The real exchange rate first appreciates and then depreciates below its initial level. The external debt rises steadily.

Table 5

NATREX dynamics of exchange rate and external debt: two basic scenarios

| Scenarios R = real exchange rate = domestic/foreign prices, rise is appreciation, F = external debt/GDP; initial period T = 0, medium run T=1, long-run T=2. Derivation of all of the equations is in Stein (2006, ch. 4). | Medium run T = 1 | Longer run T = 2 |
|--|--|---|
| <i>Populist</i> Rise in social in social consumption (time preference), rise in high employment government budget deficit, decline social saving, rise in demand for non-tradables | appreciation $R(1) > R(0)$ Debt rises $F(1) > F(0)$ | depreciation $R(2) < R(0) < R(1)$ Debt rises $F(2) > F(1) > F(0)$ |
| <i>Growth oriented</i> Rise in productivity of investment. Rise in growth, rise in competitiveness, increase in trade balance function | appreciation $R(1) > R(0)$ Debt rises $F(1) > F(0)$ | appreciation $R(2) > R(1) > R(0)$ Debt declines $F(2) < F(0) < F(1)$ |

Figure 1

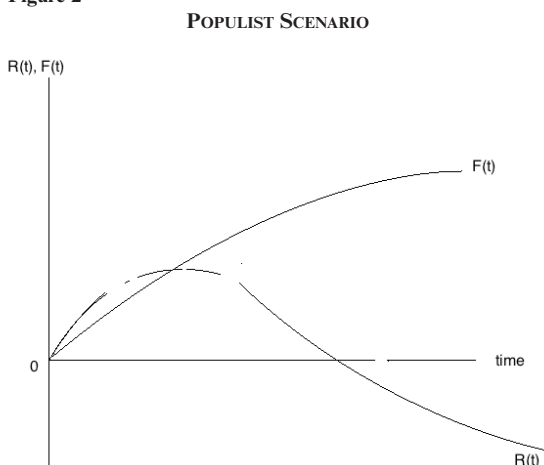


Note: Saving less investment is SI and current account is CA. Decline in social saving shifts SI to SI(1). Real exchange rate appreciates to $R(1)$ and current account declines to $A(1)$. The resulting rise in debt shifts CA to CA(1). Real exchange rate depreciates to $R(2)$ and current account deficit rises to $A(2)$.

Source: Author's conception.

Stability can only occur if the rise in the debt, which lowers net worth equal to capital less debt, reduces social consumption/raises social saving. Thereby, saving less investment rises. *Long-run equilibrium* (denoted by $T = 2$) is reached at a higher debt $F(2) > F(0)$ and a depreciated real exchange rate $R(2) < R(0)$. The longer-run depreciation of the exchange rate $R(2) < R(0)$ can be understood from equation (3). Since the debt is higher than initially, the trade balance $B(2)$ must be higher than initially to generate the foreign exchange to service the higher transfers $r_1 F(2)$. The real exchange rate must depreciate to $R(2) < R(0)$ in order to raise the trade balance to $B(2)$.

Figure 2



Note: Rise in social consumption, increase demand for non-tradables, generates trajectory $R(t)$ and external debt trajectory $F(t)$. Initial $R(0)$, $F(0)$ at origin.

Source: Author's conception.

The *Growth scenario* is summarized in the lower half of Table 5. The perturbation is a rise in the productivity of investment in tradables. Investment rises because of the rise in the rate of return. The difference between investment and saving is financed by a capital inflow. The exchange rate appreciates to $R(1) > R(0)$ which reduces the trade balance and initially produces a current account deficit. The current account deficit equal to $[I - S]$ raises the debt. The trade deficit provides the resources to finance capital formation, which raises the growth rate and the competitiveness of the economy.

The *B function* which relates the value of the trade balance to the real exchange rate R increases with a rise in the overall productivity/competitiveness of the economy. For example, the reallocation of resources leads to the production of higher quality/value goods that can compete in the world market. The trajectory to longer-run equilibrium differs from that in the Populist scenario. The crucial aspect implied by the Growth scenario is that the economy is more competitive. At exchange rate $R(1)$, the trade balance function CA increases, shifts to the right. The real exchange rate appreciates and there are now current account surpluses, excess of saving over investment. As a result, the debt then declines to a new equilibrium $F(2) < F(0)$. The trajectory of the debt is not monotonic. The dynamic process in the Growth scenario is summarized in the lower half of Table 5. The real exchange rate appreciates steadily to a higher level $R(2) > R(1) > R(0)$. The external debt reaches a maximum and then declines to $F(2) < F(0) < F(1)$.

NATREX analysis of the European situation

I analyze the European experiences within the framework of the NATREX model. Summary data in Table 6 shows that over the period 1998–2010 there were large current account deficits in Greece, Portugal and Spain, and lesser amounts in Ireland and Italy, relative to the euro area. The external debts of these countries rose due to current account deficits – as a result of what the NATREX model calls a rise in time preference: a decline in government saving and/or a rise in demand for non-tradables.

The role of the government sector is described in Table 6 by the row labeled Government balance. In Greece, Portugal and Italy, the current account deficits were produced by a rise in government consumption/decline in government saving.

Table 6

Summary data 1998–2010

| | Euro area | Greece | Ireland | Spain | Portugal | Italy |
|-------------------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Current account/GDP | m = -0.26 sd = 0.85 | m = -8.6 sd = 3.5 | m = -1.75 s = 2.16 | m = -5.4 s = 2.8 | m = -9.45 s = 1.78 | m = -1.7 s = 1.47 |
| Government balance | m = -2.38 s = 0.54 | m = -4.76 s = 2.11 | m = -2.24 s = 2.7 | m = -1.28 s = 0.31 | m = -4.5 s = 0.09 | m = -3.16 s = 1.27 |
| House price appreciation (% change) | m = 5.16 s = 1.97 | m = 10.1 s = 3.8 | m = 13.3 s = 7.24 | m = 9.71 s = 5.43 | m = 3.3 s = 2.8 | m = 5.11 s = 3.7 |
| GDP deflator (% change) | m = 1.7 s = 0.59 | m = 3.23 s = 0.84 | m = 2.45 s = 3.21 | m = 3.1 s = 1.35 | m = 2.67 s = 1.04 | m = 2.35 s = 0.72 |
| Growth (% change) | m = 1.6 s = 2.0 | m = 2.7 s = 2.8 | m = 4.2 s = 5.1 | m = 2.7 s = 2.4 | m = 1.52 s = 2.06 | m = 0.72 s = 2.14 |

Source: Federal Reserve St. Louis, International Economic Trends.

In Spain and Ireland, the government sector was not the major cause of a decline in social saving/rise in social consumption. Table 7 indicates the large capital gains resulting from investment in housing/non-tradables in Ireland and Spain, relative to the euro area. The mean capital gain was: Ireland 13.3 percent, Spain 9.71 percent and the euro area 5.16 percent. Irish and Spanish banks borrowed abroad at low rates of interest and loaned these funds to the housing industry. The anticipated return was the marginal product of capital plus the anticipated capital gain. Investors within and without the euro area ignored the default risk. Moreover they assumed that the capital gain could continue to exceed the mean rate of interest. The rise in the house price index reflected the increase in the demand for non-tradables (see Table 6, row labeled House price appreciation). In Ireland, Spain and Greece, there was a significant rise in the demand for non-tradables.

The movement of the real exchange rate, equal to the ratio of prices relative to the euro area, is reflected in Table 6 by the row labeled GDP deflator. In all five countries, both the government sector and the rise in the demand for non-tradables by the private sector led to an appreciation of the real exchange rate, current account deficits and the growth in the external debt ratio dF_t/dt . This is expressed in equation (2). The SI curve shifted from SI(0) to SI(1) in Figure 1 changing the medium-run equilibrium to $[R(1), A(1)]$ from $[R(0), A(0) = 0]$. The appreciation of the real exchange rate, measured by the GDP deflator, was higher in all five countries relative to the euro area.

The debt ratio stabilizes if the trade balance $B(R(t); Z(t))$ is sufficiently large to earn the income to service the debt, adjusted for growth. Since the appreciation of the real exchange rate, the percent change in the GDP deflator (relative to the euro),

Table 7

Residential property prices in EU countries, annual % change, new and existing houses

| | Germany | Ireland | Greece | Portugal | Spain | Italy | France | Euro area |
|--------------------|---------|---------|--------|----------|-------|-------|--------|-----------|
| 1996 | -1.1 | - | 9.9 | 1.7 | 1.4 | 2.4 | - | 2.0 |
| 1997 | -1.9 | - | 8.2 | 3.6 | 2.8 | 3.4 | 0.1 | 2.3 |
| 1998 | -1.6 | 22.6 | 14.4 | 4.5 | 5.8 | -1.4 | 1.9 | 2.5 |
| 1999 | 1.4 | 22.5 | 8.9 | 9 | 7.7 | 0.8 | 7.1 | 4.9 |
| 2000 | 0.2 | 20.5 | 10.6 | 7.7 | 8.6 | 3.9 | 8.8 | 6 |
| 2001 | 0.2 | 14.0 | 14.4 | 5.4 | 9.9 | 6.0 | 1.9 | 5.5 |
| 2002 | -1.9 | 6.1 | 13.9 | 0.6 | 15.7 | 12.6 | 8.3 | 6.8 |
| 2003 | -1.2 | 14.3 | 5.4 | 1.1 | 17.6 | 7.2 | 11.7 | 6.4 |
| 2004 | -1.4 | 11.5 | 2.3 | 0.6 | 17.4 | 7.0 | 15.2 | 7.2 |
| 2005 | -1.5 | 7.2 | 10.9 | 2.3 | 13.4 | 8.6 | 15.3 | 7.6 |
| 2006 | 0.3 | 13.4 | 12.2 | 2.1 | 10.4 | 5.8 | 12.1 | 6.4 |
| 2007 | 0.3 | 0.9 | - | 1.3 | 5.8 | 5.0 | 6.1 | 4.3 |
| Mean | -0.68 | 13.3 | 10.1 | 3.3 | 9.71 | 5.11 | 8.05 | 5.16 |
| Standard deviation | 1.1 | 7.23 | 3.8 | 2.8 | 5.43 | 3.7 | 5.27 | 1.97 |

Source: Bank for International Settlements (BIS), Housing Statistics IFC Bulletin 31 Annex 1.

Table 8

GDP deflator, percent change from year ago

| | Euro area | Greece | Ireland | Portugal | Spain | Italy | US |
|------|-----------|--------|---------|----------|-------|-------|-----|
| 1998 | 1.0 | 5.2 | 6.6 | 3.79 | 2.5 | 2.7 | 1.1 |
| 1999 | 1.6 | 3 | 4.1 | 3.29 | 2.6 | 1.8 | 1.5 |
| 2000 | 1.3 | 3.4 | 6.1 | 3.24 | 3.5 | 1.9 | 2.2 |
| 2001 | 2.4 | 3.1 | 5.5 | 3.57 | 4.2 | 2.9 | 2.3 |
| 2002 | 2.6 | 3.4 | 4.5 | 3.73 | 4.3 | 3.3 | 1.6 |
| 2003 | 2.2 | 3.9 | 2.8 | 3.0 | 4.1 | 3.1 | 2.2 |
| 2004 | 1.9 | 3 | 2 | 2.46 | 4 | 2.6 | 2.8 |
| 2005 | 2.0 | 2.8 | 2.5 | 2.51 | 4.3 | 2.1 | 3.3 |
| 2006 | 1.9 | 3.1 | 3.8 | 2.77 | 4.1 | 1.8 | 3.3 |
| 2007 | 2.4 | 3 | 1.1 | 3.18 | 3.3 | 2.6 | 2.9 |
| 2008 | 2.1 | 3.5 | -1.4 | 1.58 | 2.4 | 2.8 | 2.2 |
| 2009 | 1.0 | 1.3 | -4 | 0.545 | 0.6 | 2.3 | 0.9 |
| 2010 | 0.8 | 3.3 | -1.7 | 0.98 | 0.4 | 0.6 | 1.0 |

Sources: Federal Reserve Bank St. Louis, International Economic Trends, Eurostat.

was higher in all five countries, the trade balance could not rise to service the debt. A necessary condition for the debt ratio to stabilize is that the real exchange rate depreciates to increase the trade balance: see equation (3) above.

Table 8 shows that, in the last few years, there has been some real exchange rate depreciation in Ireland, but not in Greece and Italy. From Table 2, one sees growing current account deficits in all of the countries.

Conclusions

I use the NATREX model to explain the causes of the rise in the external debt, generated by the current account deficit. They were produced by both the government budget deficit and the rise in the demand for non-tradable, which in turn appreciated the real exchange rate. This is the movement to the medium run equilibrium $R(1)$, $A(1)$ in Figure 1. *Large budget deficits do not have a 1-1 correspondence with an external debt.* The IMF analysis showed that the US current account balance closely tracked the saving-investment balance of households, while the fiscal balance showed little correlation (IMF 2011). The SGP rules must be viewed in the context of the NATREX model above.

No sustained improvement in the external debt can occur unless the growth scenario occurs. Growth and the trade balance function must increase. In the shorter run, the real exchange rates of the five countries must depreciate relative to the euro. It is problematic if this is occurring. Bailouts and austerity policies will

be ineffective in reducing the growth of the debt unless the trade balance function $B(R(t))$ increases relative to the debt service $(r - g)F(t)$. The right hand side of equation (2) must decline.

The euro *per se* has not been adversely affected by the debt crises of the five countries. The value of the euro-US dollar depends upon the fundamentals, the two scenarios, in both areas, not just in either one (see also Stein 2006, chapter 5). The country crises are not a euro crisis.

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HOW TO RESCUE THE EURO: TEN COMMANDMENTS

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There is no simple solution to the euro crisis, so expect just more muddling through. The peripheral countries are too expensive and should strive to become cheaper, but they will only do so if the flow of public funds gradually dries up, not if the EFSF is expanded.

The Economist argued in its editorial column on 17 September that the real cause of the crisis-stricken countries of the eurozone is a lack of credibility, that these countries need fiscal stimulus to grow out of their problems, and that voluminous rescue programs are needed to create a firewall around Europe's solvent governments (Economist 2011). Unfortunately, both the diagnosis and the recipes are wrong.

Why *The Economist* is wrong

The truth is that the cheap flow of credit for private and public purposes made possible by the euro until 2007 had fed an inflationary bubble that pushed prices for property, government bonds, goods and labour above the market clearing level and resulted in huge current account deficits and foreign debt levels that private investors have not been willing to finance and refinance since 2008. The eurozone suffers from a severe balance of payment crisis of the kind that ended the Bretton Woods system. Instead of merely lacking credibility, the stricken economies have lost their competitiveness. Instead of growing out of their problems, they need to shrink out of them (in nominal terms, to reduce their imports and boost their exports). And instead of a firewall, what the excessive rescue funds will create is a fire channel between the inflated countries and those that are still solvent, drawing them into a morass of debt.

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It is surprising to see that *The Economist* does not even include the slightest hint regarding the problem of wrong, bubble-driven prices and the corresponding current account imbalances. It perceives the crisis as a temporary confidence crisis, but overlooks its deep structural roots. It focuses on a public debt problem, while entire economies, public and private sectors taken together, borrowed excessively from other countries, taking advantage of the demise of interest spreads once the euro was firmly announced. The current account deficits that the four GIPS countries (Greece, Ireland, Portugal and Spain) accumulated from 2002, the year the euro was physically introduced, to 2010 amounted to 932 billion euros, 7.0 percent of their joint GDP over that period. In the years 2005–2010, Greece's average current account deficit was 11.7 percent, Portugal's 10.8 percent, Spain's 7.6 percent, and Ireland's 3.7 percent of GDP. By the end of last year, the average net foreign debt position of the GIPS countries was 90.4 percent of GDP (95.3 percent for Greece, 90.9 percent for Ireland, 107.4 percent for Portugal and 86.6 percent for Spain). While the Portuguese and Greek debts resulted from government actions, the Irish and Spanish debt originated primarily from private borrowing, mainly in the construction sector. But that difference is irrelevant. In the end it does not matter whether the inflationary growth process originated with the government or the private sector. The cheap flow of credit unleashed by the euro pushed the prices in all four economies above their long-run equilibrium levels.

The balance of payment crisis

The bubbles that had built up in the GIPS countries burst when the American financial crisis deprived Europe's banks of substantial parts of their equity, forcing them to deleverage, and changed the market's risk perceptions. Private investors began to doubt whether the current account deficits were sustainable, balked at sending more funds to finance them and fled from those countries in order to safeguard their wealth. A balance of payment crisis erupted.

In that situation, prices and wages should have fallen to reduce the current accounts and attract new capital from abroad. But that did not happen in most countries. Goods prices and wages got stuck at a level far above the equilibrium, cementing the current account deficits. From 1995, when interest rates started to converge in anticipation of the euro, to the crisis year 2008, the average price level of the GIPS countries increased by 23 percent relative to their trading partners in the rest of the eurozone. After the outbreak of the crisis, only Ireland underwent a sizeable real depreciation of about 12 percent, which is likely to result in a current account surplus this year, the first in a decade. Portugal depreciated by a mere 1 percent, and Spain and Greece did not depreciate at all. The relative price level of Greece increased by the amount of the VAT increase, while the level of net-of-tax prices grew in line with Greece's eurozone trading partners.

A reason for the failure to depreciate significantly can be sought in the ECB's explicit and implicit rescue actions that began in the summer of 2007. This was not just the much debated purchase of government bonds, which by now amounts to 157 billion euros. Much more important was the Target credit, a reallocation of ECB refinancing credit from the core, basically Germany, to the periphery beyond the credit necessary to endow these countries with a monetary base for internal circulation.¹ To be concrete: the mechanics of the Eurosystem implied that the Bundesbank gave credit to other euro countries at the expense of German banks to the tune of 390 billion euros (by August 2011) to allow them to crank up the money-printing press to finance their balance of payment deficits.

It was like in the Bretton Woods system. At that time, the United States had financed its current account deficit by printing and lending more dollars than the United States needed for internal purposes.² The dollars were flowing to, among other recipients, German exporters who had them exchanged by the Bundesbank for deutschmarks. The 'dollar-deutschmarks' crowded out the 'refinancing-credit-deutschmarks' stemming from the Bundesbank on a one-to-one

basis, which meant that there was a public capital export from Germany to the United States *via* the central bank systems. At the time, it was assumed that the Bundesbank tolerated the process in order to help finance the Vietnam war. While the Bundesbank invested the dollars it received into US Treasury bills, the Banque de France insisted that the US government convert them to gold from Fort Knox. This destroyed the Bretton Woods system in the period 1968–1971. Today the Bundesbank converts the 'GIPS euros' into 'German euros', which then crowd out the 'refinancing-credit-euros' issued by the Bundesbank, and instead of foreign currency or foreign assets, the Bundesbank just receives claims on the Eurosystem that it will not be able to convert into anything.

Before the outbreak of the crisis, the Target balances were close to zero. But by June 2011 the four GIPS countries had built up a Target debt of 327 billion euros, while the Bundesbank's Target claims amounted to 337 billion euros in that same month. And the fast pace of that type of credit is breath taking. In August 2011 alone, the Bundesbank had to lend the ECB 47 billion euros for a further shifting of the stock of ECB credit to other euro countries.

In 2008, 2009 and 2010 no less than 88 percent of the aggregate current account deficit (capital import) of the four GIPS countries and 62 percent of Germany's current account surplus (capital export) was Target credit. While the Target credit was important in all four of the GIPS countries, there were substantial differences among them. In the three years mentioned, both Greece's and Portugal's current account deficits were entirely financed by Target credit. In Ireland the Target credit financed the entire current account deficit and, in addition, a huge capital flight, to the tune of 120 billion euros. By contrast, in Spain only about a quarter of the 200-billion-euro current account deficit was Target-financed.³

The credit provisions through the ECB system have not been deliberate policies insofar as they were endogenously induced by the GIPS countries' demand for funds which private markets were no longer willing to meet. However, the ECB has facilitated them through repeated lowering of the credit-worthiness requirement for the collateral that banks had to offer for their refinancing credit. In effect, this was a rescue mechanism before the rescue mechanism.

¹ Cf. H.-W. Sinn and T. Wollmershäuser (2011), Sinn (2011a, 2011b and 2011c) and Wolf (2011). See also the special issue of *ifo Schnelldienst* (2011) with contributions of H.-W. Sinn, H. Schlesinger, W. Kohler, C.B. Blankart, M.J.M. Neumann, P. Bernholz, T. Mayer and J. Möbert and C. Weistroffer, G. Milbradt, S. Homburg, F.L. Sell and B. Sauer, I. Sauer, J. Ulbrich and A. Lipponer, C. Fahrholz and A. Freytag, U. Bindseil and P. Cour-Thimann and P. König, F.-C. Zeidler, K. Reeh.

² See Kohler (2011).

³ See Sinn and Wollmershäuser (2011), Figure 14.

Opening or closing the tap?

The widely discussed open rescue mechanism being set up since May 2010 just came as a relief force helping the ECB to stem the tide, given that it was running out of ammunition. The rescue operations include the first package for Greece as well as the further help coming from the EFSM, the EFSF and the IMF, on the order of 332 billion euros. Together with the Target help to the GIPS until June 2011 (327 billion) and the current stock of ECB government bond purchases (157 billion), this amounts to a total of 815 billion euros. With the expansion of the EFSF to 780 billion euros decided on 21 July 2011, which will have to be ratified by the parliaments this autumn, the total volume of the planned and implicit rescue operations increases to 1.683 trillion euros, as shown in Figure 1. This is a bit more than half the 2011 public debt forecast for the GIPS and Italy by the end of this year, which amounts to 3.35 trillion euros.

This is a huge sum, a multiple of what was on the table on 8 and 9 May 2010, when the first programmes were hastily put together over a weekend. If the GIPS countries go bust, Germany alone will be liable for 469 billion euros, and France for 324 billion euros. If, in addition, Italy defaults, the two countries will incur a liability of 522 billion and 364 billion euros respectively. If the liability materialises and is covered by public debt, the debt-to-GDP ratios of Germany and France would be 103 percent, in both cases, taking the Eurostat 2011 debt predictions as a

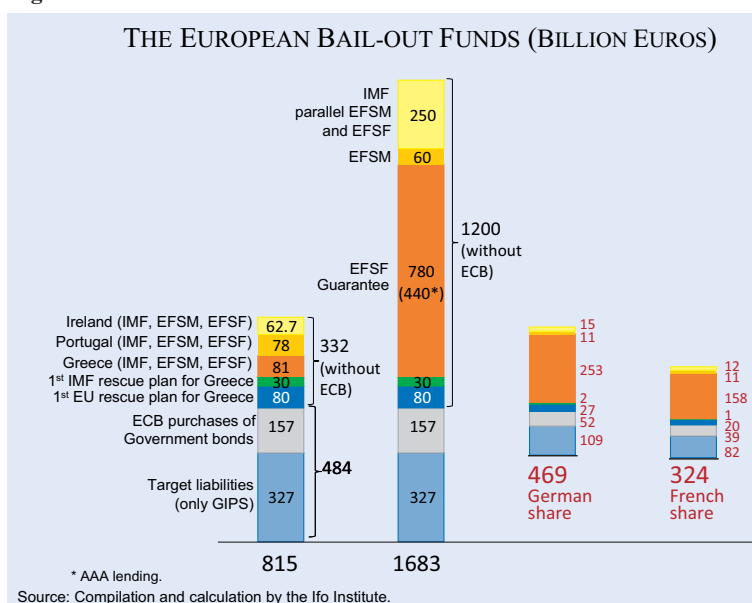
basis. There can be little doubt that such sums would undermine the creditworthiness of the eurozone as a whole. What is called rescue programmes may, in fact, turn out to be incendiary channels through which the fire can expand and smother all public budgets in the eurozone.

Markets have already reacted by charging substantially higher premiums for credit default risks. The insurance for ten-year German Bunds now costs 1.2 percent per year, ten times the price before the crisis, and it has increased much faster than the British rate, overtaking it in August 2011, probably for the first time in history. While Britain has also been hit by the crisis, except for a limited help for Ireland, it has decided not to participate in the euro rescue operations.

It is not only that France and Germany may already have taken on more than they can bear. What is more, the rescue measures perpetuate the current account imbalances and slow down or prevent the necessary process of real depreciation. After all, in countries that are cut off from the capital markets, the flow of rescue funds is identical to the current account deficits.

The rescue measures also destabilise markets inasmuch as they try to support asset prices above their long-run equilibrium. This creates a permanent downward risk that causes renewed jitters whenever doubts arise regarding the depth of the rescuers' pockets. This aspect, too, reminds of the times when governments tried to maintain inappropriate exchange rates, or used up their reserves to temporarily stabilise them, causing even larger disruptions when they had to give up. A frightening scenario is therefore that each new flaring of the crisis will drain more money from the creditors' purses, until they run empty and the euro collapses. As long as public credit continues to flow, the deficit countries can continue to be financed, but when it stops flowing, some of them may prefer to leave the euro in order to try to bring back their finances to order through depreciation. Then both the euro and the core countries will be ruined.

Figure 1



Given that this autumn public financing of the crisis countries has gone into its fifth year, the view that markets are merely dysfunctional and overstate the problems seems not well founded, and neither does the view that unlimited rescue funds should be provided to calm them. If stable countries like France, Germany, the Netherlands, Finland or Austria are not to become impoverished or the euro to collapse due to growing foreign debt levels, it is necessary to gradually but steadily close the tap for new loans rather than invent ever more channels and programmes to provide liquidity to insolvent countries.

If the tap is closed too quickly, this process could be accompanied by severe real contractions, but if it is sufficiently gentle, a mere real depreciation by cutting wages and prices relative to the trading partners in the eurozone will suffice to improve the current accounts and reduce the level of external debt. Germany before the crisis and Ireland after the crisis have demonstrated that this, though painful, is possible in principle.

European politicians argue that opening the tap and imposing a political debt constraint under common EU control, for example *via* the Euro Plus Pact, the new six-pack of the Commission or even a fiscal government for the eurozone, would be a sensible solution. While this view looks plausible at first glance, it seems to stem from the old days when markets were willing to finance the debtor countries and mere political debt constraints were necessary to discipline them. This is not the situation today. Given that private markets are no longer willing to finance the afflicted countries, such debt constraints are not only superfluous; they may even be counterproductive. What is called political debt constraints will, in effect, turn out to be entitlements to use the public debt machinery set up within the EFSF and the Target system. Europe does not need to place constraints on the demand for public debt if the supply constraints the creditor countries impose are sufficient.

What the eurozone needs is a crisis resolution mechanism, together with tighter constraints for the ECB that stop the self-service mechanism currently prevailing. It also needs to define how much help will be available under what conditions. The mechanism has to be specified before the respective funds for the new European Stability Mechanism planned to start in 2013 or earlier are set up, for otherwise the creditors will lose their bargaining chip. The '10 commandments' formulated below would lead the eurozone out

of its crisis by gently tightening the budget constraints, turning it into a place where markets can better perform their allocative function.

Ten commandments for a renewed eurozone

The 'commandments' limit the scope for political *ad-hoc* actions and specify a crisis procedure that is a compromise between the goals of maintaining discipline and preventing panic in the case of a crisis. They balance out the need to help with the need to respect the stability and solvency of the rescuing countries. The crisis countries will themselves then be able to decide whether they see a possibility of managing the real depreciation process or whether they find the burden too large and prefer exiting the eurozone. The procedure gives them a fair chance and a safe option if they are willing and able to find the necessary internal consensus. It does provide much more solidarity than the Maastricht Treaty foresaw, without establishing a self-service shop for debtors.

In detail, the following measures could be taken:

1. No government bond purchases

Further purchases of government bonds by the euro rescue fund EFSF and the ECB are prohibited. Only assistance programmes that count on the participation of the IMF are allowed. Eurobonds are ruled out permanently. Even in a putative United States of Europe there is no place for them. Both the United States and Switzerland, two decentralized fiscal systems that originated through a long trial and error process, do not foresee this kind of help.

2. Paying back the Target credit

The credit given by the Bundesbank (Target) to the GIPS is not to increase further. The Target balances are to be settled once yearly with marketable assets bearing market interest rates, as is the case in the United States. Transition rules for the existing balances could be agreed upon.

3. New voting rights in the ECB

Voting rights in the ECB Council should be weighted by ECB capital shares.

4. Unanimity for credit policies

The ECB Council is to require unanimity and the approval of the creditor countries' governments for any inter-country credit transfers that it tolerates or induces.

5. Liquidity help for two years

The EFSF is to concentrate on liquidity assistance for crisis countries and limit such assistance to two years.

6. Slicing the problem in the case of impending insolvency

If a euro country cannot service its debts after the two years, an impending insolvency instead of a mere illiquidity is to be presumed. In such a case, and under exclusion of the cross-default rules, an automatic haircut is to be applied to the maturing bonds, and only to them. The depreciated old debt is to be replaced by new sovereign bonds guaranteed up to 80 percent by the EFSF, limiting such guarantees to 30 percent of GDP.

7. Full insolvency and exit for non-performers

A country whose guarantees are drawn or that exceeds the guarantee limit must declare insolvency. The country in question will be granted a haircut on its entire sovereign debt and it must leave the eurozone.

8. Basel IV: higher risk weights for government bonds

After the Basel III system for bank regulation, a Basel IV system is needed in which the risk weights for sovereign debt are to be raised from zero to the level for mid-sized companies.

9. Higher equity ratios

Common equity (core capital plus balance-sheet ratio) is to be increased by 50 percent with respect to Basel III.

10. Bank recapitalisation

Weak banks unable to raise enough capital in the market to fulfil these requirements are to be forced to recapitalise and will be partly nationalised. The government is to sell its shares in them once the crisis has been overcome.

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APPLICATION OF REGIONALLY VARYING CO-FINANCING DEGREES IN THE PRACTICE OF EU COHESION POLICY

CHANG WOON NAM* AND
GEORG WAMSER**

In the Treaty Establishing the European Community, economic and social cohesion is defined in terms of reducing regional disparities in the level of development, usually measured by GDP per capita in purchasing power parities. To accomplish the cohesion goals and to promote and support the overall harmonious development of its member states, the EU contributes by co-financing the costs associated with regional projects. Such co-financing activities are subject to the so-called additionality principle, which is one of the general funding principles driving the functioning of the EU's cohesion policy. Additionality means that the regional funds of the EU should not replace, but be an *addition* to national regional policy funds. In fact, EU funds for a project are only granted to a member state (and its regions) if the member state (and its regions) also contributes. Consequently, additionality is anticipated to gauge the difference between the presumed underinvestment in regional infrastructure, human capital and economic activities made by a country or a region, on the one hand, and the actual (or planned) joint investment by the country or a region together with the EU, on the other (see Luukkonen 2000). While national governments and/or regional authorities should not expect a free ride from the European Union (Barnett and Borooah 1995; Buisseret *et al.* 1995; Bache 2008), Ederveen *et al.* (2002) suggests that EU funds may crowd out national financial support to 'lagging regions' by, on average, 17 percent, in spite of the co-funding requirement of national or regional governments.

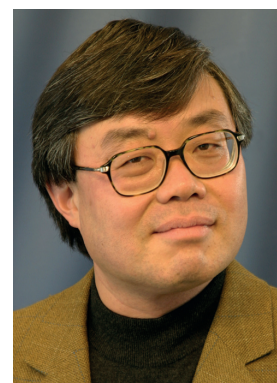
If funding for a regional project is covered by the additionality rule, the EU will only provide money for the scheme if national authorities also chip in. The *ex ante* rule for such an 'input' additionality appears to be a 50-50 split for funding, with half of the money coming from national sources and the other half from the Union coffers. This is the so-called 'matching co-financing principle' aimed at ensuring the complementary relationship. However, for projects implemented in some poorest regions, the EU contribution has reached 85 percent of total costs. The initial logic behind the varying co-funding rates of national governments in the EU is that, for the poor regions, national and regional governments lack financial means to co-finance projects and programmes. For such poor regions a lower co-funding rate of national or regional government (i.e. a higher additionality degree of the EU funding) is desirable to stimulate economic growth (Ederveen *et al.* 2002). Yet the EU's cohesion policy practice shows that the co-financing rate has also been widely varied from one region to another, although these regions are classified into the same promotion group.

Few previous empirical studies have investigated the reasons why different co-financing degrees have been adopted for the eligible regions in the EU, and the extent to which such a differentiation can be justified in the context of EU cohesion policy. Since not only investment in regional infrastructure and human capital but also new business start-ups as well as R&D and innovation are financially promoted by the EU regional funds, the EU should also adequately consider a variety of relevant variables when making decisions about the co-financing degrees for the individual regions. In this context, this study primarily attempts to examine whether the co-financing practice is in line with the goals of the EU cohesion policy.

**Changes in the EU cohesion policy practice:
a comparison of budget years 2000–2006 and 2007–2013**

Changes in cohesion policy

The EU cohesion policy has been continuously reformed. For instance, the simplification of its struc-



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ture and the preparation of EU enlargement from EU15 to EU25 were the two major focuses of the period 2000–2006. EU enlargement has led to increased regional disparities in income and employment in the EU, since the average GDP per capita in the ten new member states was under half of the EU average, and only around 55 percent of their population was in active employment, compared to approximately 65 percent in EU15. The entire 2000–2006 budget for the EU cohesion policy amounted to 213 billion euros for the EU15, to which an extra sum of 22 billion euros provided exclusively for the new member states for the period 2004–2006 was added (European Commission 2004). The EU aimed at three policy objectives:

- *Objective 1:* promoting the development and structural adjustment of regions in which GDP per capita does not reach 75 percent of the EU average,¹
- *Objective 2:* supporting the economic and social conversion of areas facing structural difficulties, and
- *Objective 3:* stimulating the adaptation and modernisation of policies and systems of education, training and employment.

Objective 1 regions cover 37 percent of the total EU25 population (about 170 million inhabitants). The financial resources provided by the EU Structural Funds – European Regional Development Fund (ERDF), the European Social Fund (ESF), the European Agricultural Guidance and Guarantee Funds (EAGGF) and the Financial Instrument for Fisheries and Guidance (FIFG) – reached around 150 billion euros in the period 2000–2006 under Objective 1 treatment, while an additional 25 billion euros were added under the Cohesion Fund. Around 40 percent of 175 billion euros was spent on infrastructure in this period, of which just under half was allocated to transport and a third to the environment. In addition, about 34 percent and 25 percent of 175 billion euros were allocated to creating a productive environment for enterprises and to human resources, respectively.

More than 15 percent of the EU25 population (i.e. 70 million people) lived in Objective 2 areas and benefited from a funding package of around 23 billion euros additionally provided by the ERDF and the

ESF in the period 2000–2006. Of this total amount, around 55 percent was spent on the productive environment, supporting particularly SMEs in these regions, 24 percent on the physical regeneration and environment, often for former industrial sites, and the remaining 21 percent on human resources. Focusing on target groups for active labour market policies, programmes under Objectives 3 and 4 had no geographical concentration and were agreed at the national level instead. The total amount for both objectives was approximately 24 billion euros provided by the ESF. Furthermore, approx. 12 billion euros were spent on four Community initiatives including Interreg III, Urban II, Equal and Leader+ and other cross-border cooperation projects during the 2000–2006 period (European Commission 2004).

The Lisbon Agenda, agreed upon by EU leaders at the Lisbon summit in March 2000, aims at making the EU a more competitive and dynamic knowledge-based economy in the world, which should be achieved by economic reforms and growth-enhancing investments. In this regard the European Commission (2007) lays great emphasis on the fact that the cohesion policy should be in accord with the goals of the Lisbon strategy by promoting growth and employment. Consequently, compared to the previous EU financial supports from Structural Funds which used to be concentrated on infrastructure and human capital development, the Lisbon strategy's stress on the knowledge economy introduced new policy orientations for the EU cohesion policy.

In the context of the 'new' cohesion policy, around 347 billion euros are being spent over the seven-year period from 2007 to 2013, to support regional growth and stimulate job creation. More than 80 percent of total funds (i.e. 283 billion euros) are allocated to the 'Convergence' regions, defined by GDP per capita of less than 75 percent of the EU average, which account for 35 percent of the EU's total population. While merging the previous Objectives 2 and 3, some 55 billion euros are being allocated in the remaining regions under the *Regional Competitiveness and Employment* objective. Another 8.7 billion euros are available for cross-border, transnational and interregional cooperation under the *European Territorial Cooperation* objective. The three objectives are supported by the ERDF, the Cohesion Fund and the ESF. The ERDF promotes programmes on regional development, economic change, enhanced competitiveness and territorial cooperation throughout the EU, while the Cohesion Fund mainly supports transport and envi-

¹ The new EU member states' territory almost completely fell under Objective 1, eligible for the highest possible level of support from the Structural and Cohesion Funds.

ronment infrastructure, as well as energy efficiency and renewable energy in Member States with a gross national income (GNI) lower than 90 percent of the EU average.

Under the Convergence objective, ERDF actions will concentrate on strengthening infrastructure, economic competitiveness, research, innovation and sustainable regional development. Under the Competitiveness objective, the ERDF sets three priorities: innovation and the knowledge economy, the environment and risk prevention, and access – away from urban centres – to transport and telecommunication. Throughout the EU, under both the Convergence and the Regional Competitiveness and Employment objectives, the ESF provides support to anticipate and manage economic and social change. There are four key areas for action: increasing adaptability of workers and enterprises; enhancing access to employment and participation in the labour market; reinforcing social inclusion by combating discrimination and facilitating access to the labour market for disadvantaged people; promoting reform in employment and inclusion. Under the Convergence objective, the ESF also supports efforts to improve education and training, and help develop institutional capacity and the efficiency of public administrations. Across all cohesion policy programmes, the main fields of investment and their relative shares of funding are classified into:

- Knowledge and innovation: almost 83 billion euros (24 percent of 347 billion euros) are being spent on, for example, research centres and infrastructure, technology transfer and innovation in firms, and the development and diffusion of information and communication technologies.
- Transport: about 76 billion euros (22 percent) have been allocated to improving the accessibility of regions, supporting trans-European networks, and investing in environmentally sustainable transport facilities in urban areas in particular.
- Environmental protection and risk prevention: investments of around 51 billion euros (19 percent) aim at financing water and waste-treatment infrastructures, decontamination of land in order to prepare it for new economic use, and protection against environmental risks.
- Human resources: around 76 billion euros (22 percent) are allocated to education, training, employment and social inclusion schemes financed by the ESF. Other interventions concern the promotion of entrepreneurship, energy networks and efficiency,

urban and rural regeneration, tourism, culture and strengthening the institutional capacity of public administrations (see European Commission 2008).

Dispersion of co-financing degrees and their changes

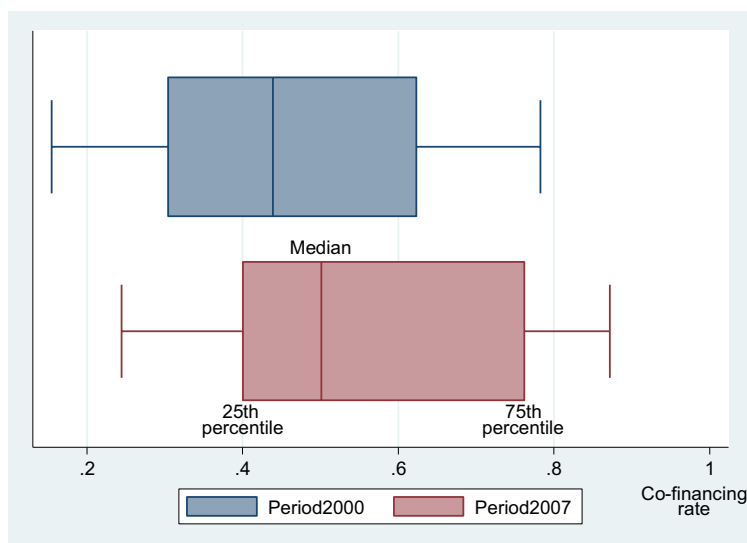
For the operational programmes officially adopted by the European Commission at the beginning of the budget years, the total costs of regional programmes and the respective EU contributions are reported.² These programmes were prepared by each EU member state and present the priorities selected by the national and regional authorities for the corresponding budget period. We are interested in the share of such supra-national grants that are directly addressed to respective regions. We calculate the relevant variable as the EU contribution divided by the total cost of the regional programme. For the 2000–2006 programme, the EU bears on average 44 percent of costs incurred by the regions. With respect to the 2007–2013 programme, the average EU contribution rate lies about 12 percentage points higher compared with the earlier period, amounting to approx. 56 percent (see Figure 1 and Table 2 below).

Figure 1 clearly indicates that the co-financing rates increased from the first to the second budget period. Displayed are standard box plots for the two programme periods. The same figure also demonstrates that some regions are provided with a very high degree of co-financing. The region with the highest EU contribution rate in the 2000–2006 period was the *Região Autónoma dos Açores* that belongs to Portugal. The EU provided around 78 percent of the funds for regional projects in this case. For the 2007–2013 period, the maximum share of funds was provided to Lithuania, where around 87 percent of project costs are contributed by the EU. Figure 1 also reveals that the co-financing degree is significantly lower in other regions. The lowest contribution ratio lies at only 16 percent (2000–2006) and 24 percent (2007–2013), respectively.

In the following, the changes of co-financing degrees for the individual EU regions, which are applied in the context of the EU regional support programmes in the budget periods 2000–2006 and

² See http://ec.europa.eu/regional_policy/country/prordn/index_en.cfm. There are also national, multi-regional as well as cross-border regional cooperation programmes which are financially supported by the EU. Yet, for such programmes, the distribution of project costs from one region to another is unclear.

Figure 1

DISPERSION OF CO-FINANCING RATES FOR EU REGIONS
IN THE DIFFERENT BUDGET PERIODS

Source: Authors' own calculations.

2007–2013, are descriptively examined. For such a comparison, 101 eligible EU regions, for which data is available for both budget periods, are considered. A co-financing degree of 50 percent is set as the benchmark, according to which regions are classified (see Table 1). Firstly, it is to be noted that, regardless of the budget periods, most Objective 1 regions are located in areas with a co-financing degree of over 50 percent. In particular, the co-financing rates of all the investigated German, Spanish and Portuguese Objective 1 regions remained higher than 50 percent in both surveyed budget periods (see also below).

Of all the investigated EU regions, sixty-two regions benefit from an increased share of EU financial aid ('winners'), while a decrease is reported in thirty regions ('losers'). The co-financing degree has remained more or less the same in nine regions including also some Spanish and Finnish Objective 1 regions (*Extramadura, Melilla, Castilla la Mancha, Itä-Suomi* and *Pohjois-Suomi*) in addition to *French Guyana*. As illustrated in Table 1, Austrian and German regions are the clear winners. In contrast, the classification becomes quite heterogeneous if the regions in France, Italy and Spain are taken into account. In France, for example, most investigated regions (except *Bretagne* and the three Objective 1 regions *Guadeloupe, Martinique* and *Réunion*) belong to the group with the co-financing rate below 50 percent in both budget periods and the larger share of these regions (including *Île de France, Picardie, Basse-*

Normandie, Bourgogne, Lorraine, etc.) was able to increase the co-financing degree in the budget period 2007–2013. For Italy, it is particularly noteworthy that all the Objective 1 regions (*Sardegna, Basilicata, Sicilia, Campania, Puglia* and *Calabria*) are classified as losers, i.e. their co-financing degrees decreased. Consequently, none of Italian regions belong to the group with a co-financing rate of over 50 percent in the latter budget period. Heterogeneity related to the changes of co-financing also exists in the group of Spanish Objective 1 regions: five regions (*Galicia, Asturias, Castilla y León, Andalucía* and *Murcia*) were able to achieve an improve-

ment of the co-financing rate, whereas it decreased in *Comunidad Valenciana, Ceuta* and *Canarias* in the budget period 2007–2013.

Data and variables used in the empirical investigation

In order to test how EU policymakers decide on the extent of involvement expressed in terms of co-financing rates, we employ several explanatory variables: according to the Council of the European Union (2006), cohesion policy should take into account economic, social and territorial characteristics. Control variables for the regional entities are taken from different sources (see Table A1 in the Appendix for further information on data sources), including a study of the European Parliament (see European Parliament 2007), the EU Regio database, and the European Regional Innovation Scoreboard (see Hollanders 2006).

Since the basic decision-making problem of the European Commission is concerned with providing funds to the structurally weak regions, we presume that EU policymakers use *GDP per capita* (measured in PPS) as an economic yardstick for the extent of financial support. Accordingly, if GDP per capita is high in a region, the European Commission should provide only a low share of financing. Figure 2 displays the relationship between the regional GDP per capita (in PPS) and the co-financing rate. These simple bivariate scatter plots show, as expected, that a

Table 1

Classification of EU regions according to co-financing degrees and their changes between the budget periods of 2000–2006 and 2007–2013

| Budget year 2000–2006 | | Budget year 2007–2013 | | |
|-----------------------|--------------------------------------|---|--|---|
| | | <i>Co-financing degree below 50%</i> | <i>Co-financing degree ≈ 50%</i> | <i>Co-financing degree over 50%</i> |
| | <i>Co-financing degree below 50%</i> | Hainaut (B) ↑ Hamburg (D) ↑ Southern and Eastern Region (IR) ↓ Pais Vasco (ES) ↑; La Rioja (ES) ↑; Madrid (ES) ↓; Cataluña (ES) ↑; Illes Balears (ES) ↓ Île de France (FR) ↑; Champagne-Ardenne (FR) ↓; Picardie (FR) ↑; Haute-Normandie (FR) ↓; Centre (FR) =; Basse-Normandie (FR) ↑; Bourgogne (FR) ↑; Nord- as-de-Calais (FR) ↓; Lorraine (FR) ↑; Alsace (FR) ↓; Franche-Comté (FR) =; Pays de la Loire (FR) ↑; Poitou-Charentes (FR) ↑; Aquitaine (FR) ↑; Midi-Pyrénées (FR) ↑; Limousin (FR) ↑; Rhône-Alpes (FR) ↑; Auvergne (FR) ↑; Languedoc-Roussillon (FR) ↑; Provence-Alpes-Côte d'Azur (FR) ↑; Corse (FR) ↓; Guyana (FR) = Piemonte (IT) =; Valle d'Aosta (IT) =; Liguria (IT) ↑; Lombardia (IT) ↓; Veneto (IT) ↓; Friuli-Venezia Giulia (IT) ↓; Emilia-Romagna (IT) ↓; Toscana (IT) ↑; Umbria (IT) ↑; Marche (IT) ↑; Abruzzo (IT) ↑; Molise (IT) ↓; Sardegna (IT) ↓ Etelä-Suomi (FI) ↑; Länsi-Suomi (FI) ↑ Highlands and Islands (UK) ↑ | Région de Bruxelles-Capitale (B) ↑ Navarra (ES) ↑; Aragón (ES) ↑ Martinique (FR) ↑ Lazio (IT) ↑ Niederösterreich (AT) ↑; Wien (AT) ↑; Kärnten (AT) ↑; Steiermark (AT) ↑; Oberösterreich (AT) ↑; Salzburg (AT) ↑; Tirol (AT) ↑ Åland (FI) ↑ West Midlands (UK) ↑ | Saarland (D) ↑; Schleswig-Holstein (D) ↑ Bretagne (FR) ↑; Guadeloupe (FR) ↑ Burgenland (AT) ↑; Vorarlberg (AT) ↑ Cornwall and Isles of Scilly (UK) ↑; West Wales and The Valleys (UK) ↑ |
| | <i>Co-financing degree ≈ 50%</i> | Bolzano-Bozen (IT) ↓; Basilicata (IT) ↓; Sicilia (IT) ↓ | Itä-Suomi (FI) =; Pohjois-Suomi (FI) = | Bremen (D) ↑ |
| | <i>Co-financing degree over 50%</i> | Border, Midlands and Western Region (IR) ↓ Lisboa (PT) ↓ | Cantabria (ES) ↓ Campania (IT) ↓; Puglia (IT) ↓; Calabria (IT) ↓ Algarve (PT) ↓ Northern Ireland (UK) ↓ | Mecklenburg-Vorpommern (D) ↑; Sachsen-Anhalt (D) ↑; Thüringen (D) ↑ Attiki (GR) ↑ Galicja (ES) ↑; Asturias (ES) ↑; Castilla y León (ES) ↑; Castilla la Mancha (ES) =; Extremadura (ES) =; Comunidad Valenciana (ES) ↓; Andalucía (ES) ↑; Murcia (ES) ↑; Ceuta (ES) ↓; Melilla (ES) =; Canarias (ES) ↓ Réunion (FR) ↑ Norte (PT) ↑; Açores (PT) ↑; Madeira (PT) ↑ |

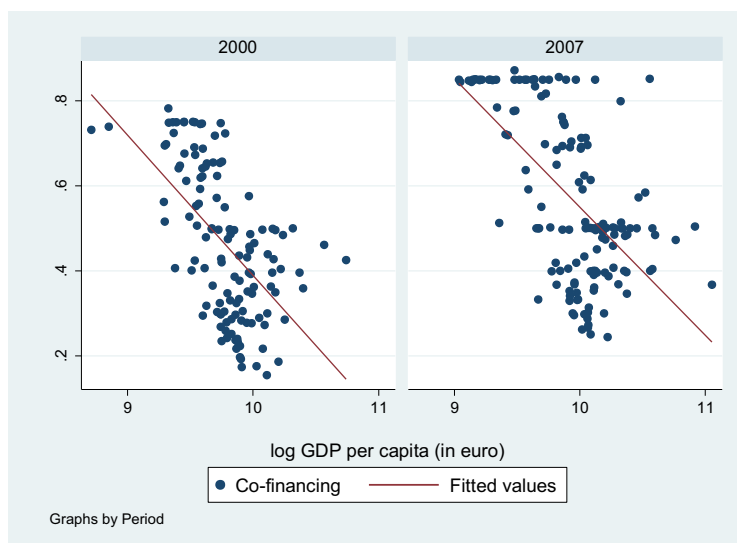
Note: Objective 1 regions are written in bold letters.

The sign ↑ indicates 'increase' ('winners'); ↓ 'decrease' ('losers') and = 'no change', when the co-financing degree of a region applied in the budget period 2007–2013 is compared to that adopted in the budget period 2000–2006.

Source: European Commission, Regional Policy – InfoREGIO, http://ec.europa.eu/regional_policy/country/prordn/index_en.cfm.

Figure 2

**GDP PER CAPITA AND CO-FINANCING DEGREE
IN THE BUDGET PERIODS 2000–2006 AND 2007–2013**



Source: Authors' own calculations.

higher GDP per capita is associated with a lower co-financing degree.³

While the EU cohesion policy aims at promoting lagging regions, the regional GDP per capita may not be the only measure used by the decision-makers.⁴ Variables of particular interest are presumably measures that proxy for features of the local labour market. As the EU intends to promote regions with structural difficulties, one appropriate variable might be the employment in the service sector relative to total employment. A high share of employment in the service sector indicates that some structural change ('deindustrialization') has already taken place in a region. For this reason, the service variable is expected to exert a negative effect on the co-financing degree. Further potentially relevant labour-market variables are the *Unemployment ratio* and the *Long-term unemployment ratio*. A high long-term unemployment ratio implies that the region is lagging in terms of structural adjustment, suggesting a positive impact on the share of EU funds provided. We also expect that the unemployment ratio relates positively to the share of funds provided. However, whether this holds in a multivariate regression will be investigated in the next section.

³ Note that GDP per capita (in PPS) applied for the development of the 2007–2013 programme refers to the 2006 GDP per capita of the respective region as this should be the relevant figure available to the decision-makers. Correspondingly, we use the 1999 GDP per capita for the 2000–2007 programme.

⁴ A list of determinants shaping the co-financing degrees of an eligible region and the way how such rates are calculated are not yet documented in an official publication of the EU.

We further control the local *Population density* and the *Land area* to control for size effects. Such geographic variables might be important as, according to the Council of the European Union (2006, 26), "the outermost regions should benefit from specific measures and additional funding. [In particular] the problems of accessibility and remoteness from large markets confronting areas with an extremely low population density [...] require appropriate financial treatment to offset the effects of these handicaps". In this context, reference is further made to regions with 'natural handicaps', such as a low population density.

A variable that may proxy for the level of development of a region is the share of the regional population that lives within 1-hour car drive from the next airport (*Airport accessibility*). Moreover, the variable *GDP accessibility* is an indicator of the size of market areas for suppliers of high-order business services.

Since, according to the Lisbon strategy, one goal of the EU cohesion policy is to stimulate innovation, which leads to growth, we also include a variable that might capture this aspect. A high score on the 2006 Regional Innovation Scoreboard (RIS) is associated with an enhanced performance in terms of innovation. This composite indicator comprises various aspects such as business and public R&D expenditures, employment in high-tech manufacturing and the service sector, patent statistics, etc. (see Table A1 in the Appendix). Table 2 provides descriptive statistics for all variables used in our empirical analysis.

Regression results

Period 2007–2013

The major aim of the empirical investigation is to explain the differences of co-financing degrees prevailing in the 2007–2013 programme, of which the results are presented in Table 3.⁵ In a first regression,

⁵ To begin with, we investigate the 2007–2013 budget period, since this is the recent time horizon and, moreover, the availability of data (also the number of regions eligible for EU funds) is better, compared with the earlier period.

Table 2

Descriptive statistics, programmes 2007–2013 and 2000–2006

| Programme 2007–2013 | | | | |
|--|------|----------------|---------|---------|
| Variable | Mean | Standard error | Minimum | Maximum |
| Co-financing rate 2007 | .562 | .200 | .244 | .872 |
| ln (GDP per capita) | 9.95 | .400 | 9.04 | 11.05 |
| Service | .648 | .094 | .442 | .887 |
| Unemployment ratio | .087 | .038 | .026 | .192 |
| Long-term unemployment | .397 | .148 | .121 | .679 |
| ln (Population density) | 4.75 | 1.19 | 1.19 | 8.75 |
| ln (Land area) | 9.52 | 1.16 | 5.08 | 11.94 |
| Airport accessibility | .475 | .297 | 0 | 1 |
| ln (GDP accessibility) | 3.98 | 1.01 | .788 | 6.46 |
| RIS ^{a)} | .416 | .155 | .070 | .900 |
| Notes: 131 observations; ^{a)} 116 observations. <i>GDP per capita</i> refers to the 2006 regional GDP per capita in PPS. <i>Service</i> is the ratio of employment in the service sector to total employment in 2005. <i>Unemployment ratio</i> is the unemployment rate in 2006. <i>Long-term unemployment</i> is measured as long-term unemployed as share of total unemployed persons. <i>Population density</i> is the regional population density measured as inhabitant per square kilometre in 2005. <i>Land area</i> is the land area of the region measured in square kilometres. <i>Airport accessibility</i> is defined as the share of the regional population living within 1-hour car driving time from next airport. <i>GDP accessibility</i> is an indicator of the size of market areas for suppliers of high-level business services. <i>RIS</i> is an indicator published in 2006 that comprises the overall innovation performance of a region. | | | | |
| Programme 2000–2006 | | | | |
| Variable | Mean | Standard error | Minimum | Maximum |
| Co-financing rate 2000 | .435 | .177 | .155 | .751 |
| ln (GDP per capita) | 9.82 | .311 | 8.71 | 10.74 |
| Service | .677 | .083 | .475 | .887 |
| Unemployment ratio | .090 | .052 | .022 | .26 |
| Long-term unemployment | .411 | .128 | .135 | .679 |
| ln (Population density) | 4.93 | 1.26 | 1.55 | 8.70 |
| ln (Land area) | 9.20 | 1.25 | 5.08 | 11.80 |
| Airport accessibility | .559 | .282 | 0 | 1 |
| ln (GDP accessibility) | 4.25 | 1.18 | 1.34 | 6.46 |
| RIS ^{b)} | .400 | .161 | .010 | .780 |
| Notes: 98 observations; ^{b)} 88 observations. <i>GDP per capita</i> refers to the 1999 regional GDP per capita in PPS. <i>Service</i> is the ratio of employment in the service sector to total employment in 2005. <i>Unemployment ratio</i> is the unemployment rate in 1999. <i>Long-term unemployment</i> is measured as long-term unemployed as share of total unemployed persons. <i>Population density</i> is the regional population density measured as inhabitant per square kilometre in 1999. <i>Land area</i> is the land area of the region measured in square kilometres. <i>Airport accessibility</i> is defined as the share of the regional population living within 1-hour car driving time from next airport. <i>GDP accessibility</i> is an indicator of the size of market areas for suppliers of high-level business services. <i>RIS</i> is an indicator published in 2006 that comprises the overall innovation performance of a region. | | | | |

Source: Authors' own calculations.

only the natural logarithm of the GDP per capita is taken into account. As expected, a higher GDP per capita is associated with a lower co-financing rate. Note that this specification already explains almost 40 percent of the variation of our dependent variable. In column II we include further control variables that proxy for different aspects of regional labour markets. We find that a high share of service-sector employment induces the EU to provide a lower share of funds. In contrast, a higher unemployment ratio leads to a higher co-financing rate. However, this variable is not statistically significant. The variable that measures the share of long-term unemployment is also

not significantly related to the dependent variable. In column III, population density and land area are additionally included. A higher population density is positively correlated with the share of EU funds provided, to which however the size of a region in terms of land area is negatively related.

We add further control variables in column IV. Note, though, that we lose observations since the new indicators are not available for all the investigated EU regions. While the accessibility of airports is not significant, a better GDP accessibility leads to a lower co-financing degree. At the same time, the GDP-per-

Table 3
Regression results (2007–2013)

| | I | II | III | IV |
|-------------------------|-----------------------|----------------------|-----------------------|-----------------------|
| ln (GDP per capita) | – 0.311*** [0.035] | – 0.182** [0.072] | – 0.301*** [0.075] | – 0.159** [0.073] |
| Service | | – 0.513** [0.230] | – 0.501** [0.177] | – 0.712*** [0.222] |
| Unemployment ratio | | 0.467 [0.990] | 0.457 [0.847] | 0.135 [0.809] |
| Long-term unemployment | | 0.114 [0.243] | – 0.190 [0.240] | – 0.070 [0.240] |
| ln (Population density) | | | 0.028 [0.021] | 0.071* [0.038] |
| ln (Land area) | | | – 0.033* [0.019] | – 0.039 [0.025] |
| Airport accessibility | | | | – 0.100 [0.064] |
| ln (GDP accessibility) | | | | – 0.097** [0.039] |
| RIS | | | | 0.173 [0.144] |
| Observations | 131 | 131 | 131 | 116 |
| R-squared | 0.386 | 0.415 | 0.482 | 0.513 |

Notes: OLS estimation, including an intercept (not reported). Robust standard errors (clustered by country) in brackets. If available, all control variables refer to 2006 values (see Table 2 for further definitions of control variables).
* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Authors' own calculations.

capita effect becomes less pronounced. Although the coefficient of the innovative performance measured by the RIS indicator is positive, it is statistically less significant.

With respect to the magnitude of effects, the coefficient in column III implies that a 10 percent increase in GDP per capita leads to a 3 percentage point lower co-financing rate. 10 percentage points less employment in the service sector is associated with a 5 percentage point increase in the share of funds provided by the EU.

Period 2000–2006

In Table 4 we investigate the earlier programme by replicating the above regression analysis. The number of observations is now smaller and we have the problem that not all the control variables are available for the year 1999. Since information from this year was probably the basis for the EU's decision-making, the results need careful interpretation. Nonetheless, the findings are basically consistent compared with the

results of the budget period of 2007–2013.

The regional GDP per capita is again negatively related to the share of funds provided. According to column III, a 10 percent increase in GDP per capita leads to a 2.6 percentage point lower co-financing rate, which is quite similar to the case of the 2007–2013 period. The most noticeable difference between the samples of the different programme periods is that the measure for long-term unemployment is now highly significant. According to the specification II, a ten percentage point higher share of long-term unemployed is associated with a 4 to 5 percentage point higher EU contribution rate, depending on the specification. The GDP per capita variable loses some significance as soon as GDP accessibility is included as shown in column IV. If the RIS index is additionally considered in specification V, GDP per capita is no longer significant. Note, however, that this

result should not be overemphasized, as the RIS variable is not available for all regions and the number of observations is reduced to 88. Despite the fact that periods 2000–2006 and 2007–2013 are not thoroughly comparable, it seems that the goal of the 2000–2006 period was to provide funds to regions where long-term unemployment is an issue.

Change in co-financing degrees

In Table 5 we consider the change in the share of funds provided by the EU. Since some variables do not vary over time, e.g. the land area, or no time-varying data is available for indicators like GDP accessibility, the number of explanatory variables is now reduced. Column I provides results where the change in the region's GDP per capita is used as the only right-hand side variable. The positive coefficient means that a rise in GDP per capita is reflected in a higher co-financing degree. This result should be interpreted very carefully and rather descriptively, as endogeneity issues may be important here. Column II reveals that an increase in

Table 4

Regression results (2000–2006)

| | I | II | III | IV | V |
|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| ln (GDP per capita) | – 0.315*** [0.095] | – 0.252*** [0.084] | – 0.263*** [0.075] | – 0.072* [0.042] | – 0.041 [0.053] |
| Service | | – 0.102 [0.240] | – 0.314 [0.261] | – 0.398 [0.262] | – 0.277 [0.298] |
| Unemployment ratio | | – 0.304 [0.578] | 0.068 [0.553] | – 0.319 [0.329] | – 0.490 [0.352] |
| Long-term unemployment | | 0.566*** [0.188] | 0.453** [0.168] | 0.441*** [0.137] | 0.486** [0.182] |
| ln (Population density) | | | – 0.010 [0.021] | 0.069*** [0.015] | 0.075*** [0.021] |
| ln (Land area) | | | – 0.040 [0.029] | – 0.013 [0.012] | 0.002 [0.012] |
| Airport accessibility | | | | – 0.059 [0.058] | – 0.057 [0.059] |
| ln (GDP accessibility) | | | | – 0.120*** [0.018] | – 0.109*** [0.023] |
| RIS | | | | | – 0.216 [0.137] |
| Observations | 98 | 98 | 98 | 98 | 88 |
| R-squared | 0.308 | 0.435 | 0.476 | 0.688 | 0.713 |

Notes: OLS estimation, including an intercept (not reported). Robust standard errors (clustered by country) in brackets. If available, all control variables refer to 1999 values (see Table 2 for further definitions of control variables). * significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Authors' own calculations.

unemployment leads to a higher degree of co-financing, which is in line with the goals of the cohesion policy. Finally, in column III, we include the 1999 GDP per capita to control for level effects. The results are similar to the findings in columns I and II, while the coefficients for the change in GDP per capita and the change in Population density are exactly the same.

Concluding remarks

Based on data obtained from the EU regional programme database we calculated the co-financing degrees for the individual EU regions. Such degrees have been widely varied from one eligible region to another, although they belong to the same promotion group of the EU cohesion policy. Our empirical findings suggest that the co-financing rate is largely determined by the regional GDP per capita, which is in line with the EU cohesion policy goals. Our estimated coefficients suggest that a 10 percent higher GDP per capita (measured in PPS) is associated with a 2.6 (3) percentage point reduction in the co-financing

degree for the 2000–2006 (2007–2013) period. We also find that a higher share of employees in the service sector is associated with a lower co-financing rate and that a higher share of long-term unemployment implies a higher co-financing rate. Yet the general explanatory power of the regression model explaining the co-financing rates of the recent EU programme periods seems to be rather disappointing: we were not able to explain all of the variations of co-financing rates with independent variables that are available from official data sources. In particular, variables capturing regional innovation activities (e.g. RIS) are not significantly related to co-financing rates. A higher degree of transparency concerning the determination of the regional co-financing rates would make the EU cohesion policy design more effective and would also enable the implementation of its support measures in a more efficient way.

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Table 5

Change in co-financing

| | I | II | III |
|--|--------------------|---------------------|---------------------|
| ln (Δ GDP per capita) | 0.063** [0.025] | 0.077** [0.030] | 0.077** [0.031] |
| Δ Unemployment ratio | | 1.314* [0.672] | 1.299 [0.739] |
| Δ Population density | | – 0.001* [0.000] | – 0.001* [0.000] |
| ln (GDP per capita in 1999) | | | 0.005 [0.058] |
| Observations | 102 | 71 | 71 |
| R-squared | 0.083 | 0.285 | 0.286 |
| Notes: OLS estimation, including an intercept (not reported). Robust standard errors (clustered by country) in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. | | | |

Source: Authors' own calculations.

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Appendix

Appendix

Table A1

Variable description and data sources

| <i>Variable</i> | <i>Description</i> | <i>Database</i> |
|--|--|---|
| Co-financing rate 2000 | Funds provided by the EU relative to total expenditures for the budget period 2000–2006 | EU regional programme 2000–2006 |
| Co-financing rate 2007 | Funds provided by the EU relative to total expenditures for the budget period 2007–2013 | EU regional programme 2007–2013 |
| GDP per capita | Regional GDP per capita (in PPS); yearly data 1999–2006 | EU Regio database |
| Service | Employment in service sector (in % of total employment in 2005) | EU Regio database |
| Unemployment ratio | Unemployment rate 1999–2006 | EU Regio database |
| Long-term unemployment | Long-term unemployment in 2005 as share of total unemployed persons | EU Regio database |
| Population density | Regional population density measured as inhabitant per square kilometre (1999–2006) | EU Regio database |
| Land area | Land area in square kilometre | EU Regio database |
| Airport accessibility | Share of regional population living within 1 hour car driving time from next airport | Study of the European Parliament (2007) |
| Potential GDP accessibility** | An indicator of the size of market areas for suppliers of high-level business services, standardized at EU 27+2*** | Study of the European Parliament (2007) |
| RIS (Regional Innovation Scoreboard) 2006* | A re-scaled synthetic indicator showing the overall innovation performance of regions in the EU | Hollanders (2006) |

* The RIS 2006 is calculated based on a set of seven determinants, capturing human resource and knowledge creation indicators from different statistical sources such as labour force survey, R&D statistics and patent statistics. These seven determinants include: (1) human resources in science and technology – core (% of population in 2004), (2) participation in life-long learning (% of 25–64 years age class in 2004), (3) employment in medium-high and high-tech manufacturing (% of total workforce in 2004), (4) employment in high-tech services (% of total employment in 2004), (5) public R&D expenditures (total R&D expenditures – business expenditures on R&D) (% of GDP in 2002), (6) business expenditures on R&D (% of GDP in 2002), and (7) The European Patent Office (EPO) patent applications (per million population in 2002).

** Potential accessibility is measured based on the assumption that the attraction of a destination increases with size, and declines with distance, travel time or cost. Destination size is usually represented by GDP or population. In other words, the potential accessibility is a construct of two functions, the *activity function* representing the activities or opportunities to be reached and the *impedance function* representing the effort, time, distance or cost needed to reach them. For potential accessibility the two functions are combined multiplicatively.

*** Switzerland and Norway.

ELECTRICITY GENERATION: COAL USE AND CUTTING CO₂ EMISSIONS IN THE FUTURE

HANS-DIETER KARL AND
JANA LIPPELT*

High demand for electricity is an essential feature of developed economies. This is true not only for industrial production in which the growing use of electric energy largely contributes to improving productivity and enables specified production; it also applies to the creation of services in the consumer sector, where the application of power is indispensable and expanding into a growing number of applications. For this reason, electrical energy as a share of final global energy consumption rose from 15.5 percent to 17.3 percent between 2000 and 2009. This figure takes into account that around 83 percent of total gross electricity generation is included in final energy consumption. During this period electricity as a share of final consumption increased by nearly 2 percentage points to 21.6 percent in developed OECD countries. In less developed countries the share of electricity was significantly lower, although some emerging countries are already catching-up fast.

In China, for example, the share of electric energy in final energy consumption increased from 11.7 percent to 18.4 percent between 2000 and 2009, while an increase from 9.9 percent to 13.4 percent was observed in India. Latin America, on the other hand, saw only minor changes to the electric energy component of final energy consumption, which increased from 15.5 percent to 16.9 percent. In Africa the increase in the share of electricity in final energy consumption was even smaller, rising from 8 percent to 8.9 percent, while in Asia (excluding China) an increase from 10.8 percent to 13.4 percent was observed.

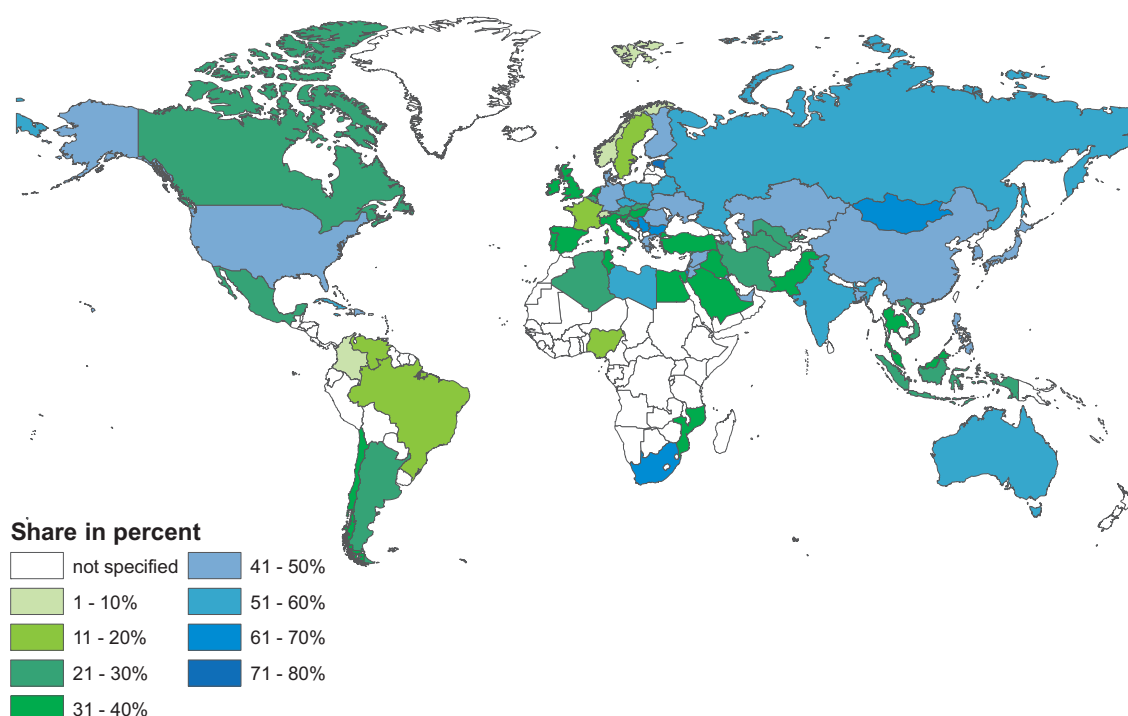
Since the availability of electrical energy is essential to the promotion of economic development and repre-

sents a key way of closing the gap to developed countries, there are extensive plans for the worldwide expansion of electricity supply. Currently, over 1.3 billion people, mostly in Sub-Saharan Africa and large parts of Asia, do not have access to electricity (International Energy Agency 2011). The outstanding importance of electrical energy is also reflected in the size of the investment required to expand the electricity supply compared to total investment in energy supply. According to a recent estimate, the electricity sector will account for nearly 45 percent of total world investments in energy supply in 2011–2035 (see also International Energy Agency 2011). However, the significant advantages offered by electric energy come at a high price. In addition to the high capital costs of building the requisite infrastructure, there is a growing focus on the carbon dioxide emissions associated with electricity generation. The world currently produces around two-thirds of electrical energy from fossil fuels, with coal representing by far the largest share of this figure. Since the production of electricity in thermal power plants suffers from relatively low energy conversion efficiency, the percentage of fuel input usually accounts for a multiple of the electric energy generated. Therefore, the fuels used add up to around a quarter of global primary energy consumption. As a worldwide average, the energy conversion efficiency of fossil power generation amounted to approximately 37.7 percent in 2009 (International Energy Agency 2011), which means that around 62 percent of the fuel energy used was lost in conversion. Power generation is therefore associated with relatively high emissions of greenhouse gases. This applies to the operation of all heat engines, including internal combustion engines, while relatively small losses occur in the conversion of fuels into heat.

Figure 1 depicts the importance of electrical power generation in terms of global CO₂ emissions from fossil fuel combustion. In the 2008 data there is only one statistic for emissions from electricity and heat production, and notably for the provision of heat for district heating networks *via* a third party (International Energy Agency 2011). As electricity generation is likely to account for a share of around 87 percent, it largely determines the emissions from this sector.

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Figure 1

SHARE OF ELECTRICITY AND HEAT PRODUCTION IN TOTAL CO₂ EMISSIONS

Sources: IEA (2011); OECD (2011).

Overall, this sector represented a share of 40.8 percent of worldwide CO₂ emissions from fossil fuels in 2008. While this share totalled 39.5 percent in OECD countries, it reached the even higher level of 44.5 percent in non-OECD countries. The fact that this figure did not rise even higher is due to carbon-free electricity generation from nuclear energy, hydropower and other renewable energies, which accounts for around 30 percent of the electric energy produced worldwide. There are major disparities between the different regions of the world, and even greater differences between individual countries. While in Asia (excluding China), almost 46 percent of carbon emissions stem from the power plant sector, in Latin America this figure is only around 20 percent due to the large share of hydropower in power generation. This share is particularly high in countries where power generation is largely based on coal. In Australia, the Czech Republic and Poland, 50–60 percent of carbon emissions stem from the power plant sector, whereas in South Africa this figure is even higher at around 63 percent.

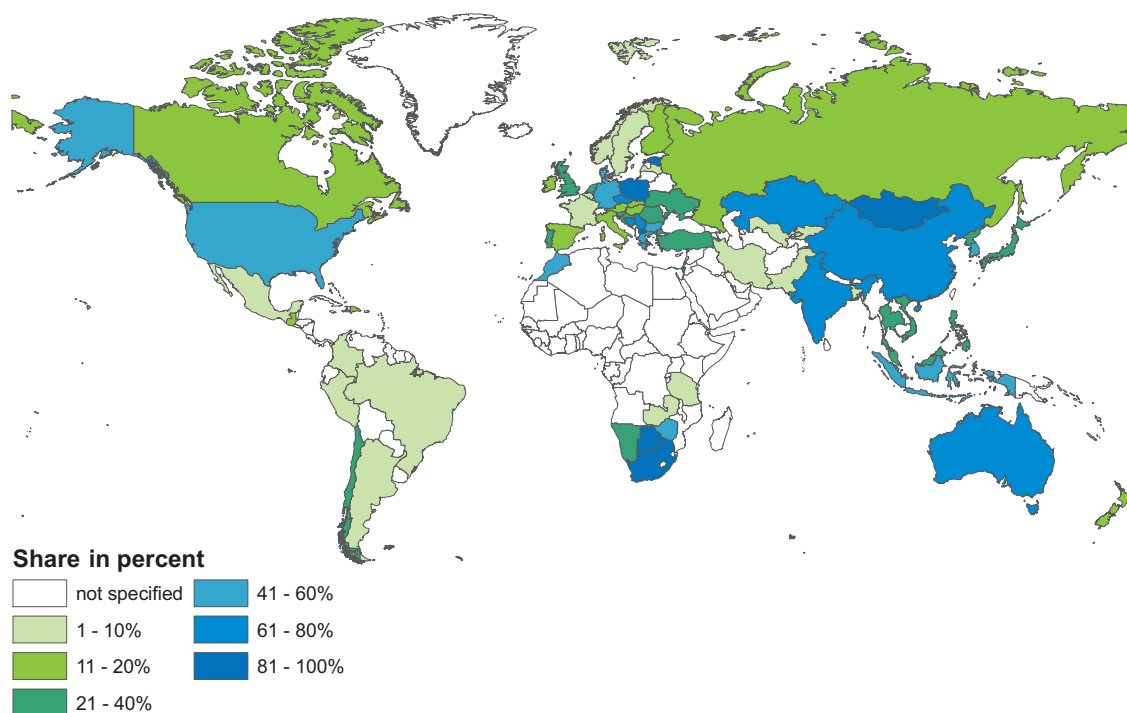
Global electricity production is currently dominated by coal and is likely to remain so in the short-term. In 2009, 40.5 percent of electric energy was provided by coal, followed by gas at 21.4 percent, hydropower at 16.2 percent, nuclear power at 13.5 percent and oil at

5.1 percent. The remaining production of 3.3 percent was accounted for by other renewable energy sources (International Energy Agency 2011). There are, as can be seen in Figure 2, huge disparities in the share of coal in electricity generation by country. At the top of the ranking there are coal-producing countries like South Africa (94 percent), Poland (91 percent), China (79 percent), Australia (78 percent), India (69 percent) and the Czech Republic (62 percent). Even countries like the United States at 49 percent and Germany at 46 percent, however, generate a large part of their electricity from coal. As a result, and also because of its higher specific CO₂ emissions relative to other fuels, coal contributes significantly to global greenhouse gas emissions. In 2009 coal-fired power plants accounted for 72.8 percent of the global CO₂ emissions produced by total electricity generation and for 29.7 percent of the total global CO₂ emissions from fuels. There are good reasons for the importance of coal in electricity production. The following aspects are particularly crucial: in many countries, coal can be produced cheaply, there is global, efficient coal trading and the reserves are, compared to oil and gas, much larger. In addition, combustion is becoming increasingly efficient in larger furnaces.

In view of the growing electricity demand to be expected in the future the goal is to prevent carbon

Figure 2

SHARE OF COAL-GENERATED ELECTRICITY IN TOTAL ELECTRICITY GENERATION



Sources: IEA (2011); OECD (2011).

dioxide emissions from increasing further or even to reduce them. To this end, the following measures can, in principle, be taken (in addition to the option of increasing the productivity of electricity use and thus saving electrical energy):

- increase the conversion efficiency of fossil-fired power plants,
- construct additional of facilities for the use of renewable energies, and
- expand nuclear energy.

A significant increase in the efficiency of fossil-fired power plants can only be achieved by replacing the old facilities. The average efficiency of existing global coal-fired power plants is currently 35.5 percent (according to estimates based on figures from the International Energy Agency (2010a), International Energy Agency (2010b), International Energy Agency (2010c)). There is a range which extends from about 25 percent for older power plants up to 46 percent in modern facilities. If all power plants had the highest efficiency today, the use of coal as well as CO₂ emissions could be reduced by around 23 percent. With a further increase in efficiency, which is expected in the coming years, a reduction of around 25 percent would be possible. However, since coal-fired power plants are generally operated for around 40 years, a modern-

ization of all facilities will extend over a long period. The effects of modernization will therefore only be felt in the long run. Another option is to replace coal-fired power plants with gas-fired equivalents. However, on a global scale, this alternative is not really practical given the limited availability and the price of gas. In other words, a large-scale replacement of coal with gas is hardly conceivable. Since modern gas-combined power plants achieve efficiencies of around 60 percent, this would result in a fuel saving of around 40 percent compared to the average of coal plants. Lower specific CO₂ emissions would also make it possible to slash emissions of greenhouse gases by around two-thirds. Overall, increasing power plant efficiency can indeed be an important measure for reducing CO₂ emissions, but the potential of this instrument is limited and it can only be mobilized in the long run.

The facilities for the use of renewable energies and the expansion of nuclear energy represent another option because they allow operation without CO₂ emissions. A key feature of these systems is the high capital expenditure necessary for their construction. However, while nuclear power plants are usually built in large units, and are therefore primarily for industrial and emerging countries with high electricity demand, wind and solar plants in particular can be used for

power generation even in small units to complement and partly replace the existing supply system. The main drawback of electricity generation *via* wind and sun, however, is that it is subject to sharp fluctuations, making sufficient control and reserve power plants a necessity. In many regions of the earth there are relatively good conditions for the generation of solar and wind power, while there is also still considerable potential worldwide for the use of hydropower. However, even the extensive construction of these high-performance facilities requires investment, which can only be realized in the long term. By using these options, it seems possible to significantly decrease the high carbon emissions associated with the employment of fuels to generate electricity in the long-term, and to clearly reduce the weight of the conversion sector as a CO₂ emitter.

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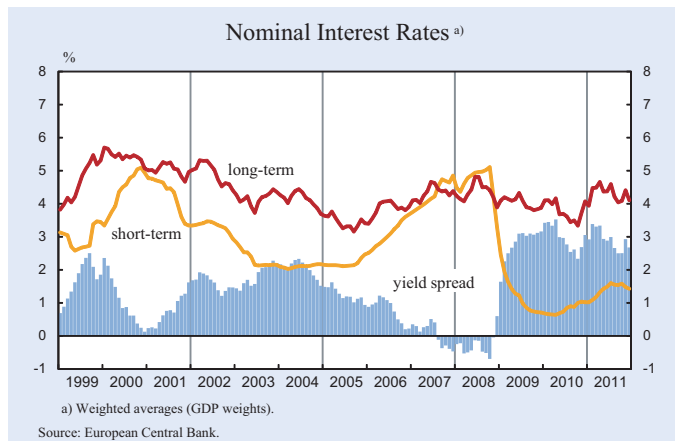
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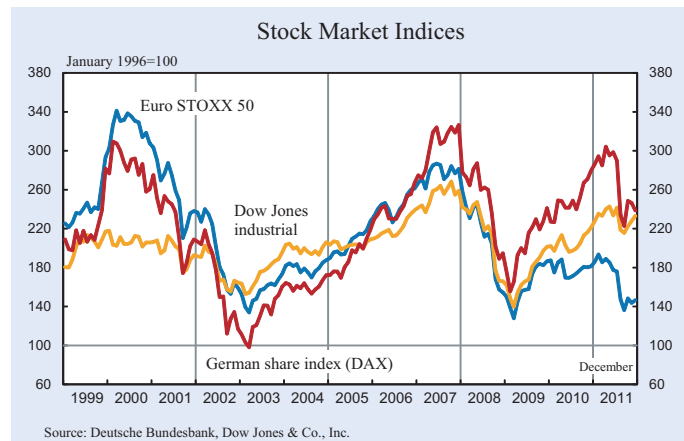
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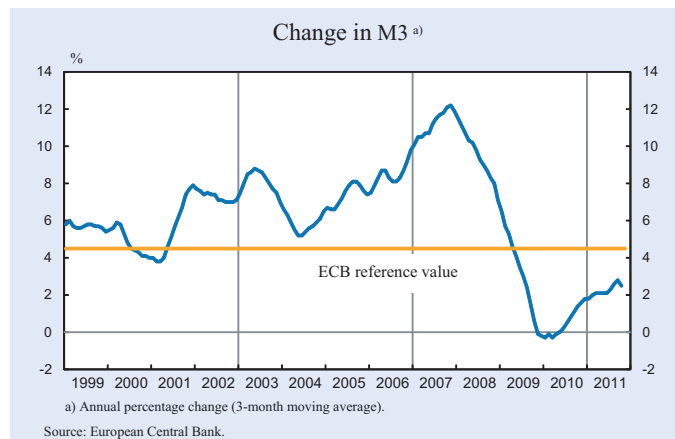
FINANCIAL CONDITIONS IN THE EURO AREA



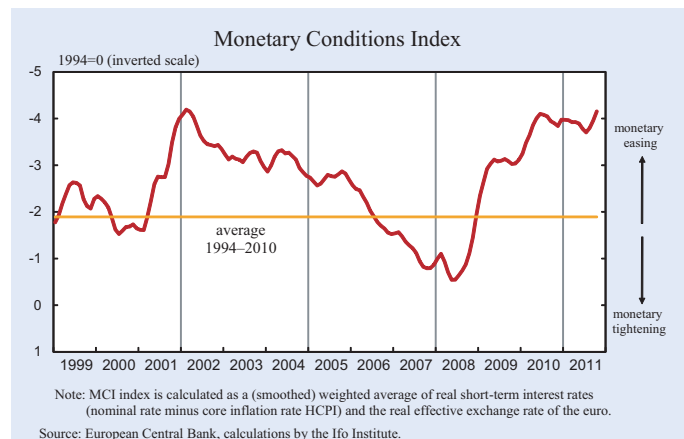
In the three-month period from October to December 2011 short-term interest rates decreased. The three-month EURIBOR rate declined from an average 1.58% in October 2011 to 1.43% in December 2011. Yet the ten-year bond yields slightly increased from 4.09% in October 2011 to 4.11% in December 2011. In the same period of time the yield spread also increased from 2.51% to 2.68%.



The German stock index DAX declined in December 2011, averaging 5,898 points compared to 6,141 points in October 2011. The Euro STOXX also decreased from 2,312 to 2,283 in the same period of time. However, the Dow Jones International grew, averaging 12,076 points in December 2011 compared to 11,516 points in October 2011.

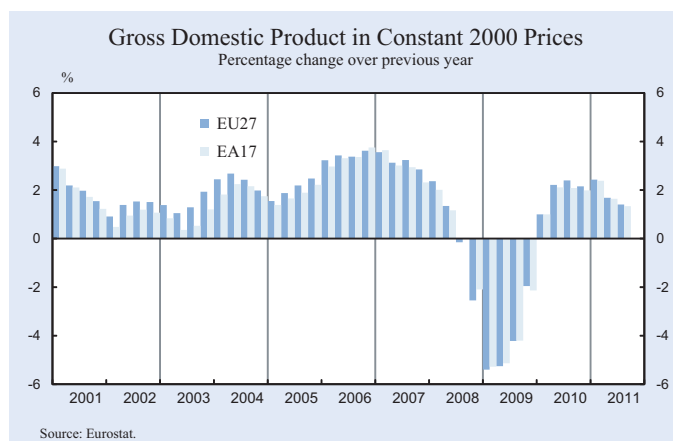


The annual growth rate of M3 decreased to 2.0% in November 2011, compared to 2.6% in October. The three-month average of the annual growth rate of M3 over the period from September to November 2011 decreased to 2.5%, from 2.8% in the period from August to October 2011.

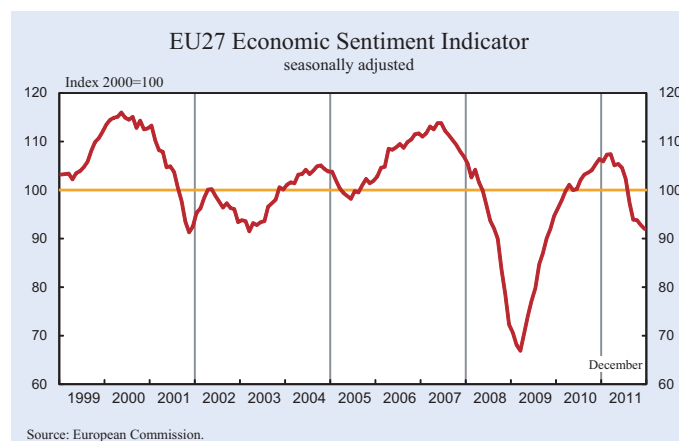


Between April and November 2009 the monetary conditions index remained rather stable after its rapid growth that had started in mid-2008. The index started to grow again since December 2009, signalling greater monetary easing and reached its peak in June 2010. In particular, this has been the result of decreasing real short-term interest rates. In October 2011 the index has continued its slow upward trend started in August 2011.

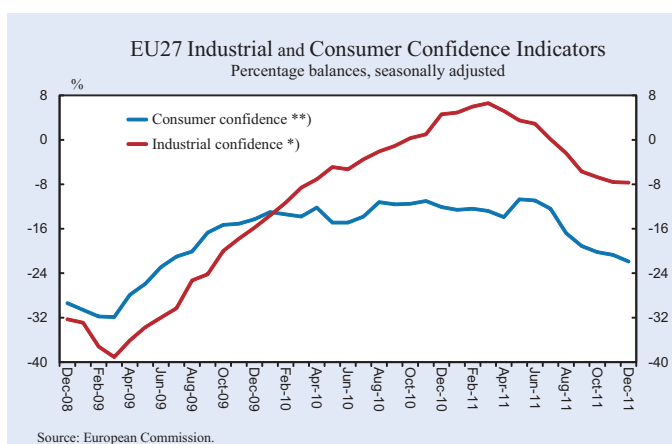
EU SURVEY RESULTS



According to the second Eurostat estimates, GDP increased by 0.2% in the euro area (EU17) and by 0.3% in the EU27 during the third quarter of 2011, compared to the previous quarter. In the second quarter of 2011 the growth rates were 0.2% in both zones. Compared to the third quarter of 2010, i.e. year over year, seasonally adjusted GDP increased by 1.4% in both the euro area and the EU27.



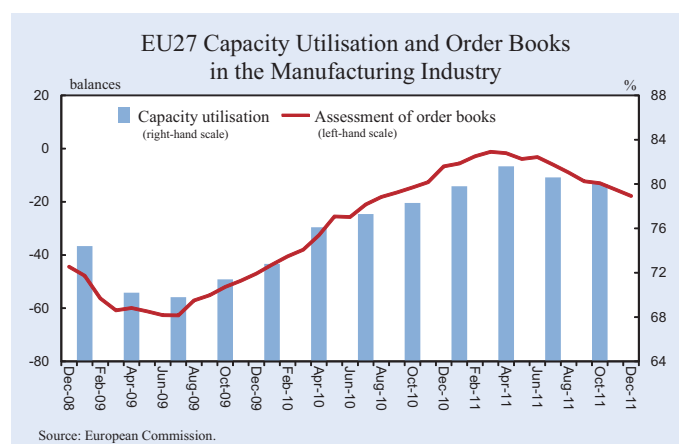
In December 2011 the Economic Sentiment Indicator (ESI) continued its downward trend in both the EU27 and the euro area (EU17). The indicator declined by 0.8 points in the EU27 and by 0.5 points in the euro area, to 92.0 and 93.3 respectively. In both the EU27 and the euro area the ESI stands below its long-term average.



* The industrial confidence indicator is an average of responses (balances) to the questions on production expectations, order-books and stocks (the latter with inverted sign).

** New consumer confidence indicators, calculated as an arithmetic average of the following questions: financial and general economic situation (over the next 12 months), unemployment expectations (over the next 12 months) and savings (over the next 12 months). Seasonally adjusted data.

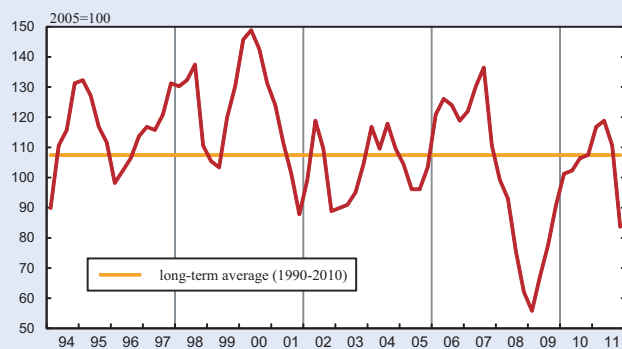
In December 2011, the *industrial confidence indicator* declined by 0.1 points in the EU27, while it remained unchanged in the euro area (EU17). The *consumer confidence indicator* also decreased in both the EU27 (– 1.2) and the euro area (– 0.7).



Managers' assessment of *order books* worsened from – 15.4 in November to – 17.8 in December 2011. In August 2011 the indicator had reached – 9.0. *Capacity utilisation* also slightly decreased to 80.0 in the fourth quarter of 2011, from 80.6 in the previous quarter.

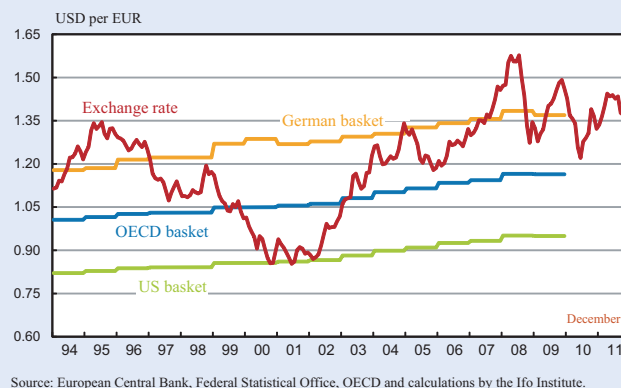
EURO AREA INDICATORS

Ifo Economic Climate for the Euro Area



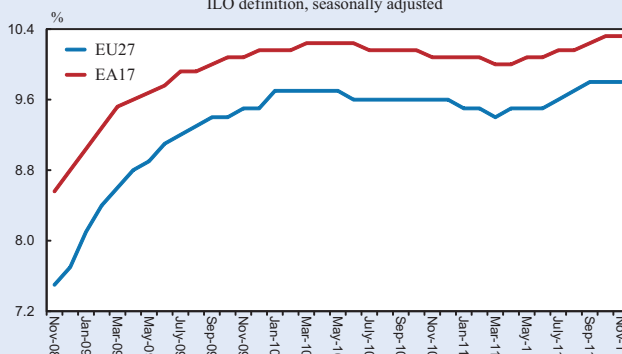
The Ifo indicator of the economic climate in the euro area (EU17) has fallen further in the fourth quarter, and is now significantly below its long-term average. Both the assessments of the current situation and the expectations for the next six months worsened considerably over the third quarter of 2011. The results suggest that the economic weakening in the euro area will continue.

Exchange Rate of the Euro and PPPs



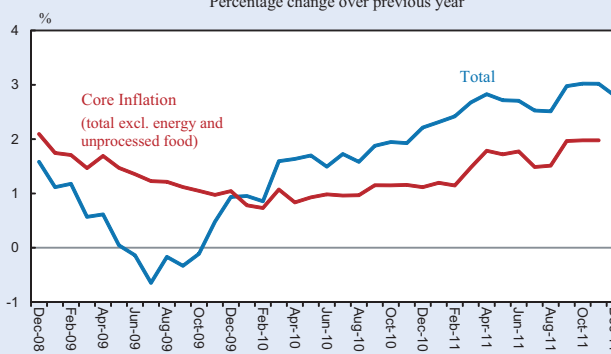
The exchange rate of the euro against the US dollar averaged approximately 1.35 \$/€ between October and December 2011. (In September 2011 the rate had also amounted to around 1.38 \$/€.)

Unemployment Rate
ILO definition, seasonally adjusted



Euro area (EU17) unemployment (seasonally adjusted) amounted to 10.3% in November 2011, unchanged compared to October. It was 10.0% in November 2010. EU27 unemployment stood at 9.8% in November 2011, also unchanged compared to October. The rate was 9.6% in November 2010. In November 2011 the lowest rate was registered in Austria (4.0%), the Netherlands and Luxembourg (both 4.9%), while the unemployment rate was highest in Spain (22.9%).

Inflation Rate (HICP)
Percentage change over previous year



Euro area annual inflation (HICP) was 3% in November 2011, unchanged compared to October. A year earlier the rate had amounted to 1.9%. The EU27 annual inflation rate reached 3.4% in November 2011, unchanged compared to October. A year earlier the rate had been 2.3%. An EU-wide HICP comparison shows that in November 2011 the lowest annual rates were observed in Sweden (1.1%), Malta (1.5%) and Ireland (1.7%), and the highest rates in Romania (6.2%), Estonia (5.2%) and Britain (4.4%). Year-on-year EU17 core inflation (excluding energy and unprocessed foods) slightly increased to 1.98% in November 2011 from 1.96% in September.

Ifo World Economic Survey

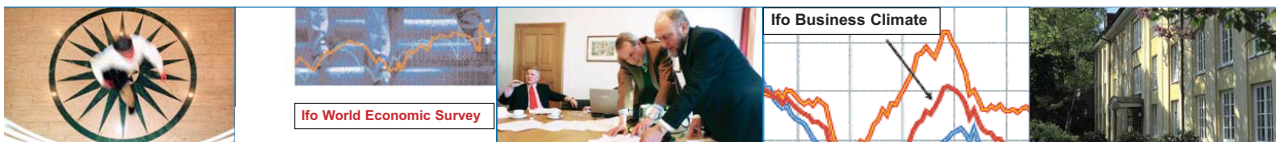


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PORTABILITY OF SOCIAL BENEFITS: THE ECONOMICS OF A CRITICAL TOPIC IN GLOBALISATION

Organisers: Robert Holzmann and Martin Werdning

18-19 July

THE ECONOMICS OF LONG-TERM CARE

Organisers: Helmuth Cremer and Pierre Pestieau

20-21 July

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Organisers: Karen Pittel, Rick van der Ploeg, and Cees Withagen

TAXATION OF THE FINANCIAL SECTOR

Organisers: Ruud de Mooij and Gaëtan Nicodème

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