

Economics

12 August 2011 | 10 pages

Global Economics View

Europe: Fear and Panic Make Poor Counsellors

- Europe, or rather the European Union (EU), faces a sovereign solvency crisis in the 'narrow periphery' (Greece, Ireland, Portugal), a sovereign liquidity crisis in the 'broad periphery' (Spain and Italy) and concerns about a possible sovereign downgrade in the 'soft core' (Belgium and France). It also faces bank liquidity and bank solvency crises of different degrees of severity through most of the Euro area and indeed in some of the EU members that do not belong to the Euro area.
- This note argues that both the sovereign crises and the banking crises can and will be managed and that market concerns are overblown. We take the contrarian view that while the path to the end-state could be choppy, the current crises will in the end result in a stronger EU and Euro area.

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Europe can meet liquidity needs of sovereigns and prevent disorderly sovereign defaults

The EU and the Euro area have the means to prevent disorderly sovereign defaults even when the sovereigns are most likely insolvent (Greece, Ireland and Portugal) and, in the case of Greece, already engaged in a process that will lead to a selective sovereign default – probably within a month. The EU and the Euro area also have the means to prevent fundamentally solvent sovereigns (including Spain and Italy) from being pushed into unwarranted defaults through a fear-driven denial of market access – when the fear of default bootstraps itself into an actual default, through soaring funding rates or complete loss of market access. Additional front-loaded fiscal austerity and structural reform of labour and product markets in Italy and Spain will underpin and validate the financial support that will be described below. Fears of a downgrade from AAA levels, something that, since the US downgrade, is causing problems especially for France, are a less important issue. They can and in all likelihood will be addressed by additional frontloaded fiscal austerity in France and Belgium.

The institutions and arrangements available for supporting sovereigns and banks are:

- The European Central Bank (ECB) and the Eurosystem it manages (the ECB plus the national central banks (NCBs) of the 17 Euro area member states).
- The various Euro area and EU fiscal facilities – EFSF, Greek Loan Facility, EFSM and from mid-2013 on, the ESM.
- IMF resources.
- National governments' budgetary support.

The ECB/Eurosystem

The ECB has very deep pockets: it has the means to act as lender of last resort and market maker of last resort for sovereigns and banks.

Do not be fooled by the puny paid-in capital of the ECB (€5.4bn) or its subscribed capital (€10bn), or even by the capital plus reserves of the Eurosystem (about €81bn). Central banks whose liabilities are denominated overwhelmingly in the currency they issue, as is the case for the ECB, never go bust unless they want to. They can always pay their domestic-currency obligations in full by 'printing money', that is, by creating base money (currency in circulation plus reserves (overnight deposits) held by commercial banks with the central bank).

Central banks ought not to care about their equity or their capital. If we impose no constraint on the rate of inflation, their loss absorption capacity is infinite. Arbitrarily large negative equity does not threaten their survival. The ECB, of course, is deeply committed to price stability, in practice to a rate of CPI inflation of no more than 2 percent per annum. So the relevant question is: what is the non-inflationary loss-absorption capacity of the ECB? If we impose the constraint that the ECB will not let inflation go no higher than 2 percent ever, what is the net present value (NPV) of its future base money issuance? This NPV of future base money issuance consistent with 2 percent inflation is the invisible asset that is normally paid out gradually as dividends to its shareholders (the NCBs) who then pay it to the ultimate beneficial owners of the ECB, the Treasuries of the 17 Euro area member states and through

them to the Euro area tax payers. The ECB can, if necessary, bring forward in time a capital transfer equal to the NPV of its future non-inflationary base money issuance, and use it to make good any losses it incurs through financial support of sovereigns and banks.

In Buitier (2010), this non-inflationary loss-absorption capacity of the ECB/Eurosystem was calculated for some plausible projections of future base money demand. Figure 1 below gives some illustrative numbers. Inflation π , is always 2 percent. Real GDP growth γ is either assumed to be a miserable 1 percent or a still poor 1.5 percent. The interest rate used to discount future base money issuance was, conservatively, set at a high number, 4, 4.5 or 5 percent.¹ Finally, the calculations reported in Figure 1 only consider future currency issuance – reserves held by commercial banks with the central bank are assumed to pay a market rate of return. That, of course, is at the discretion of the ECB, which sets reserve requirements as well as the interest rate on both required and excess reserves. So the numbers reported in Figure 1 are bound to be underestimates.

Figure 1. Present discounted value of future seigniorage, S , in the Euro

	$i=4.0\%$	$i=4.5\%$	$i=5.0\%$
$\pi=2.0\%; \gamma=1.0\%$	€2,497bn	€1,644bn	€1,222bn
$\pi=2.0\%; \gamma=1.5\%$	€6,085bn	€2,932bn	€1,924bn

Source: Citi Investment Research and Analysis

We consider the most plausible number to be the one produced by a discount rate of 4.5 percent and a real growth rate of 1.5 percent. That number is just under €3 trillion. So the ECB has the wallet to risk even a very large exposure to the high-risk Euro area sovereigns and banks.

The ECB is allowed to intervene in support of sovereigns and banks and has already done so

The so-called no bailout clause in the Treaty does not exist. The Treaty forbids the ECB from lending to sovereigns and from buying their debt in the primary markets. It permits the ECB to buy any private and public securities in the secondary markets. It has already done so. Before this week, it had accumulated through the Securities Markets Programme (SMP), created in May 2010, some €74bn exposure to the Greek, Irish and Portuguese sovereign. Before that the ECB has purchased just over €60bn of covered bonds to support the covered bond market in the Euro area and the banks that fund themselves with such instruments. The SMP was idle from March 2011 till this week, when the Eurosystem purchased sovereign debt from Ireland, Portugal, Italy and Spain. Until yesterday, our market intelligence suggested about €7.5bn worth of purchases this week. We won't know for sure how much until next Monday. Even then we will only know the aggregate amount bought, not the composition among sovereigns or the prices paid.

The ECB does not like SMP interventions, but this is not an insurmountable obstacle

The ECB is extremely unhappy with what it views as inappropriate and illegitimate (but not illegal or in violation of the Treaty) quasi-fiscal interventions. It wants an exit to the EFSF for its SMP purchases of sovereign debt, when the EFSF is granted the

¹ The numbers also reflect the further assumption that the semi-elasticity of base money demand with respect to the interest rate is minus 2, and that nominal base money demand is proportional to nominal GDP.

ability to purchase sovereign securities outright in the secondary markets, probably by late September 2011, if the national ratification processes for the EFSF enhancements (and other related Treaty changes) are completed successfully in all 17 Euro area member states. It may also try to get the EFSF to guarantee some of its SMP purchases. After all, among the EFSF enhancements expected from the end of September is the ability of the EFSF to guarantee Greek sovereign debt offered as collateral by (Greek) banks to the Eurosystem, during the period that the Greek sovereign will be in selective default.

Even without a promise of an exit to or guarantee from the EFSF, the ECB has been willing to engage in sovereign debt purchases under the SMP. Of the 23 Governing Council members of the ECB (6 Executive Board members and 17 NCB governors), no more than 4 oppose SMP purchases. Although this minority includes both the Bundesbank President Jens Weidmann and the German Executive Board member Juergen Stark, there is no doubt in our view that, until and unless the EFSF is capable of taking over the active sovereign debt market stabilising role from the ECB, the ECB will continue purchases under the SMP to guarantee market access to the Spanish and Italian sovereigns and support the secondary sovereign debt markets.

Europe has the means to support its banks with liquidity and capital injections

The EU and the Euro area have the means to provide any bank deemed systemically important with liquidity support for as long as this is needed and on any scale required.

The ECB continues to supply liquidity on demand to banks and on very favourable terms

The ECB continues to accept as collateral at the Eurosystem all Euro area sovereign debt, even the debt rated below investment grade. The problem caused by Greece (and in the future likely also by Ireland and Portugal) that the ECB is most reluctant to accept as collateral the debt of a sovereign that is in default was solved by permitting the EFSF to guarantee that debt for the duration of the default.

The Treaty imposes no conditions on the counterparties of the ECB. The ECB's own 'operations manual' states that these counterparties should be 'solvent'. Although this is no doubt a reasonable requirement, even this is a self-imposed restriction, not one based on the Treaty. As regards eligible collateral, the Treaty only requires it to be of 'acceptable quality'. Again, this does not represent a meaningful restriction on the ability of the ECB to lend to banks.

So the ECB is lending in some cases to institutions whose solvency would be at risk if the sovereign whose debt they offer as collateral were to default.

If matters get to the point that even the ECB feels that some combination of counterparties and collateral does not meet the minimum acceptable standards for access to the Eurosystem, there is a second 'window' through which the Eurosystem can provide credit to banks, *Emergency Liquidity Assistance* or *ELA*. With an ELA arrangement, the national central bank lends to banks in its jurisdiction that are no longer eligible to access the normal Eurosystem facilities. This can happen only with ECB approval and on terms approved by the ECB. Although the liabilities created through an ELA are Eurosystem liabilities, the exposure to the banks borrowing through the ELA is not supposed to be the Eurosystem's exposure,

but just an exposure of the NCB, guaranteed by its sovereign. Any losses on the exposure will not be pooled by the Eurosystem but fall on the national sovereign. Of course, this protection provided to the Eurosystem is only as good as the degree of solvency of the sovereign. At its peak, Ireland had a €70bn ELA facility for its banks. Greece has requested an ELA facility, but it has not yet been approved by the ECB's Governing Council.

The EU and the Euro area have the means to recapitalise banks at risk of insolvency and indeed any undercapitalised bank that cannot raise capital in the markets

In recent days, the markets have seen turmoil and indeed flashes of panic about Euro area banks, including some of the leading French banks. Hard information is scarce. We have seen no evidence that any French bank is insolvent or even seriously undercapitalised. It is certainly possible that the turmoil in the sovereign markets of the narrow periphery, and now also of the broad periphery, may have had capital adequacy consequences for some banks in France and elsewhere in the EU. But even the most pessimistic reading of the situation does not justify the panic and fear that we are seeing. Much of this response appears to reflect bad information and ignorance.

If any French bank needs additional capital and cannot find it in the markets, there are a number of other sources.

The French sovereign

This sovereign remains triple-A rated. It has access to the markets. It can borrow from the markets and recapitalise any bank that needs additional capital. If the required capital injection were to be large, the French government would probably have to credibly commit itself additional front-loaded fiscal austerity measures to convince the markets that it remains committed to fiscal sustainability and the defence of its triple-A rating. In our view, such a credible commitment would no doubt be forthcoming.

The European and IMF facilities

The existing Euro-area wide intergovernmental facilities include the EFSF and the Euro Area governments' contribution Greek Loan Facility. There also is the supranational EU-wide EFSM. The current notional funding capacity of the EFSF is €440bn; its current effective funding capacity (reduced because of the desire for a triple-A rating for the EFSF) is €255bn of which about €190bn remain available. The IMF contributes one euro for every two euro actually lent by the EFSF. The Euro area contribution to the Greek Loan Facility is €80bn of which around €33bn remains available. The IMF contributed €30bn to the Greek Loan Facility of which about €2bn remains available. The EFSM has a funding capacity of €60bn of which perhaps €11.5bn remains available. Assuming that the €35bn remaining Greek Loan Facility money remains earmarked for Greece, and that the IMF would continue to put in one euro for every 2 euro worth of EFSF and EFSM funding, the total amount available for bank recapitalisation would be about €300bn.

Under current rules, all the remaining EFSF, EFSM and Greek Loan Facility money (plus the contributions the IMF has already committed to) can be made available as loans to governments, to be used by the governments for recapitalising banks. This can, however, only be done for governments that are under a Troika (EU/ECB/IMF) programme. It was done for Ireland and its banks (with €35bn earmarked for bank recapitalization) and for Portugal and its banks. The Greek Loan Facility also earmarked €10bn for bank recapitalisation.

This means that, under current rules, France, Spain or Italy, should they wish to avail themselves of EFSF money to recapitalise their banks, would have to ask for a Troika programme.

The enhanced and enlarged EFSF, which is expected to come into effect by the end of September 2011, will have two great advantages over the existing one for countries in need of external support to recapitalise their banks. Even if the EFSF effective funding capacity is only raised to €440bn – which is all that is officially on the table – that would increase the effective lending power by €277.5bn (assuming the IMF ‘co-financing formula’ remains unchanged). Second, the enhanced EFSF will be able to lend to governments that are not in a Troika programme for the purpose of recapitalising banks in their jurisdictions.

A more substantial increase in the size of the EFSF is likely

Right from the creation of the Greek Loan Facility and the EFSF, we have argued that, if the EFSF were to take over the liquidity support role for sovereigns currently undertaken by the ECB through the SMP, it would need at least a €2 trillion facility to be a credible deterrent to self-fulfilling speculative withdrawals of market funding. With the new roles foreseen for the EFSF as guarantor of debt issued by defaulted sovereigns offered as collateral at the Eurosystem, as a source of funding for bank recapitalisation and as a source of precautionary funding for non-programme sovereigns, that required size of the EFSF envelope would have to be even larger, say €2.5 trillion.

We don't believe that an increase to anything like this size is politically feasible today. But we also don't believe that €440bn is the absolute upper bound. We can certainly see an increase in the size of the EFSF to around €1 trillion in the not too distant future.

Two arguments are frequently made against such a further enlargement: the EFSF would not remain triple-A rated and the required consent (or non-objection) of the 17 Euro area member states would not be forthcoming. The Finns, the Dutch, the Slovaks or the Slovenes would veto it, if the Germans don't. We'll address these points in turn.

The EFSF can be effective even if it is not triple-A rated

Any facility likes to borrow as cheaply as possible. But clearly, a triple-A rated €440bn EFSF would be much less useful than an AA-rated €1 trillion EFSF. We should expect the EFSF, if it gets very much larger (say €2.5 to €3.0 trillion), to have the credit rating of the average Euro area sovereign, something like AA-. Europe can live with that.

There will be an enlarged EFSF-like facility even if not all Euro area member states support it

Even if not all 17 Euro Area member states ratify the enhanced and enlarged EFSF, an enhanced and enlarged EFSF will be created, if necessary, by the ‘coalition of the willing’ through *Enhanced Cooperation*. Enhanced Cooperation is an EU procedure where a minimum of nine EU member states are allowed to establish advanced integration or cooperation in an area within EU structures but without the other members being involved. The arrangements cannot violate the Treaty, of course, and they must be open to any EU member wishing to join. As of March 2011, Enhanced Cooperation had only been used in the fields of divorce law (http://en.wikipedia.org/wiki/Enhanced_co-operation - cite_note-Council_approve-1) and patents. It seems purpose-made, however, for overcoming a small Euro area

member state veto of EFSF enhancement or enlargement. If Germany were to be opposed, that would be the end of the matter, but Germany is, despite the often fierce rhetoric, not about to destroy the Euro area and the EU.

Don't think of the EU as either a nation state or an intergovernmental organisation. It has features of both but is neither. It is quite unlike any other political-economic entity in the world.

Europe never does things neatly, it seldom gets ahead of the curve and often only does the right thing when all else has been tried and failed. But it has considerable skills at lurching from crisis to crisis. This sovereign and banking crisis is likely to result in a stronger EU and Euro area.

References

Willem H. Buiter (2010) "[Games of chicken between the monetary and fiscal authority: Who will control the deep pockets of the central bank?](#)" (long version) , Citi Economics, Global Economics View , 21 July 2010.

Appendix A-1

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