The Eurosystem in Times of Crises: Greece in the Role of a Reserve Currency Country?

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Government debt crises versus balance of payments crises

It must be assumed that Greece's public sector has become insolvent: existing government debt exceeds the present value of achievable primary surpluses of future government budgets. Prior to the EU Summit of 26 October 2011, the European Commission estimated that the Greek general government's consolidated gross debt would stand at 162.8 percent of Greek GDP by the end of 2011, and would further increase to 198.5 percent by the end of 2013. These figures reflect 20 years of government borrowing of around 7.5 percent of GDP on average for the years from 1991 to 1999 and an almost unchanged average of 7.4 percent between 2000 and 2010. The lowest level of Greek government borrowing was achieved in 1999, at 3.1 percent of GDP, and the peak figure was reached ten years later in 2009, at 15.8 percent of GDP. Factoring in the austerity packages that came along with the 2010 bail-out, the Commission estimates that the Greek general government will still have to borrow 8.9 percent, 7 percent and 6.8 percent of Greek GDP, respectively in the years 2011, 2012 and 2013.[1]

During the 1990s, the borrowing needs of the Greek government could be met by net lending by the Greek private sector, which averaged at 10.8 percent of GDP between 1991 and 1999. Over the past decade this changed dramatically when the average annual net lending position of the private sector shrank to a mere 1.5 percent of GDP.[2] The outcome was an accumulation of net foreign debt which stood at 98.2 percent of Greek GDP at the end of 2010.[3] Accumulation of foreign debt does not necessarily mean a balance of payments crisis. Such a crisis does, however, arise if a negative net lending position of the consolidated government and private sector of an economy cannot be financed by private capital imports for several years. In Greece, this has been the case since 2007.

To varying degrees, government budget as well as balance of payments crises have also arisen in Portugal, Spain, Ireland and Italy, although the ingredients of the crisis vary across these countries. For instance, in stark contrast to Greece, in the early 2000s Spain and Ireland had achieved remarkable improvements in their public sector budgets, with government debt ratios below the 60 percent eurozone threshold and on downward trends, until they were hit by severe financial crises in 2008 (mostly caused by the bursting of a speculative bubble in the real-estate market), with subsequent government interventions turning their budgets into large and unsustainable deficits.[4] However, the 2007/2008 financial crisis was not equally disastrous for government budgets in all countries. The Italian government debt ratio had been on a high level for a long time, exceeding 120 percent as early as the mid-1990s, followed by a moderate downward correction, but remaining above the Greek level until 2006. The financial crisis had a very moderate impact on the Italian government budget, although it did halt the downward trend in 2008. Moreover, while Spain, Portugal and Italy did see reductions in their private sector net lending positions from the 1990s to the 2000s, these reductions were not nearly as strong as that observed in Greece.[5]

Among all of these countries (subsequently referred to as GIPS), only Greece now has a public sector

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[1] Source: European Commission, Directorate General ECFIN, General Government Data, General Government Revenue, Expenditure, Balances and Gross Debt, Part II: Tables by Series, Autumn 2011.

[2] Source: AMECO data base, Section 3.13, http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm, accessed July 2011.

[3] Bank of Greece, Summary of the Annual Report 2010, April 2011, Table 21.

[4] See again the General Government Data mentioned in footnote 2.

[5] Spain and Italy saw a reduction from 11 percent to around 5 percent, while in Portugal the net lending position in the 2000s was on a level comparable to that of Greece, but it had been on a much lower level of 7 percent as early as in the 1990s; see the AMECO data base mentioned in footnote 3.

which is undoubtedly insolvent. Yet, over the past 3 years, all of them have run into a balance of payments crisis in that large financing needs of the domestic agents (private and or public) could no longer be met by private capital imports. As pointed out by Sinn and Wollmershäuser (2011a and 2011b), in the case of Ireland and Italy the crisis has partly been one of capital flight. All GIPS countries are members of the eurozone. How did the Eurosystem respond to this multiple internal balance of payments crisis? In the aforementioned papers, Hans-Werner Sinn and Timo Wollmershäuser have shown that it has responded through large and persistent cross-country credit relationships accumulating under the Target2 system.[6] They argue that this constitutes a dysfunctional use of the system, quite separate from its intended purpose. In this paper, I want to evaluate this crisis response against the backdrop of established theory of balance of payments adjustment. A principal insight will be that the accumulation of Target2 balances may be seen as the GIPS countries playing the role of reserve currency countries within a fixed-rate-system of the Bretton Woods type.

Balance of payments crises with and without national currencies

The public debate during the past couple of years has largely focused on refinancing and restructuring the outstanding *stock* of public debt in troubled countries and the specter of write-downs in creditors' asset positions or, in the extreme case, disorderly default. Admittedly, this aspect must not be ignored because of possible systemic risks, but in the longer term the true underlying problem is one of *flows*, i.e. of the annual deficit in the government budget and the current account. Restructurings, even debt reliefs, provide little lasting help as long as these flows are on unsustainable paths.

As regards the EU, two questions are of great importance. Firstly, will a return to their own currencies help the deficit countries? And secondly, how did the Eurosystem react to balance of payments crises of the kind described? I shall deal primarily with the second question here. However, a brief note on the first question may be permitted. There is one lesson that we should have learnt from history: *nominal* currency devaluations are helpful only in the short run, if helpful at all. In the medium to long run they are unlikely to help at all, leaving us with higher inflation as the only lasting effect. This holds true, at least, if the underlying problem is one of rigid *real* wages. Furthermore, it is aggravated, if devaluations are undertaken non-cooperatively by many countries. If, on the other hand, nominal prices and wages are fully flexible, then currency devaluations are unnecessary in the first place, as the required adjustments are also feasible without resorting to weakened national currencies. It is a great illusion that the plight of weak economies can be resolved by letting them have weak currencies. This is a recipe for them to remain weak. In addition, it is unclear whether expenditure, particularly public expenditure, on domestic versus foreign goods is sufficiently elastic with respect to relative goods prices for devaluations to deliver the desired short-run effect. These are all familiar arguments that, in my view, should prevent us from viewing the return to currency devaluations as a solution to the present balance of payments crises, not to mention the legal and practical problems connected with a return of Greece or other euro countries to their own currencies.

The second question of how the present practice of Eurosystem tends to respond to emerging balance of payments crises has for a long time remained almost completely ignored. It was not until several media contributions by Hans-Werner Sinn and the two papers by Sinn and Wollmershäuser (2011a and 2011b) that this issue has started receiving broader attention in the public and academic debate about the European sovereign debt crisis. As we know by now, the issue became relevant at the very beginning of the balance of payments crisis in 2007, when the net lending positions of the private and public sectors in the so-called GIPS countries (Greece, Ireland, Portugal and Spain) could no longer be matched by private capital imports.

However, does it make sense at all to talk of a balance of payments crisis *in parts* of a currency area? At least the textbook case of a balance of payments crisis does not seem applicable here, since balance of payments theory typically refers to an *entire* currency area. The implicit assumption, however, is that the currency area coincides with a fiscal and political union – in brief: a country. This, however, is not the case with the eurozone where member countries were allowed, and keen, to retain fiscal and political independence. This is why all euro countries still compile their own national balance of payments statistics. Moreover, as

[6] Target stands for '**T**rans-European **A**utomated **R**eal-time **G**ross Settlement **E**xpress **T**ransfer System'. The system was developed as a multilateral clearing system for intra-European payments in connection with 'big, cross-border' transactions.

we shall see, national central banks within the eurozone continue to be important players in the current balance of payments crises. Complaints about the lack of a political union with a common fiscal policy to support European Monetary Union are unhelpful as long as striving for such a union is unrealistic. Nor should we place much hope in fiscal rules in the form of a reinforced Stability and Growth Pact. The upshot is that, the particularity of a common currency notwithstanding, we need to view the eurozone as a group of countries with a fixed exchange rate system in need of a well-functioning mechanism of member countries' balance of payments. The present crisis reveals that such a mechanism is not in place.

Looking at the eurozone as a fixed-rate system

A fixed-rate currency system needs an adjustment mechanism that corrects balance of payments disequilibria without nominal exchange rate adjustments. One could argue that the balance of payments of any one eurozone country need not be in equilibrium *vis-à-vis* the other member countries, but only *vis-à-vis* the entire rest of the world. After all, exchange rate adjustments are still possible *vis-à-vis* non-member countries. However, this mechanism of adjustment is not available simultaneously and independently to all member countries, according to their diverging needs. We are confronted with the oft-quoted question: *does one size fit all?* The question is rhetorical, of course, and in the present context it implies that eurozone member countries still need a mechanism that aligns their expenditure levels with balance of payments constraints. Moreover, given the common currency, this must be an adjustment mechanism akin to what balance of payments theory envisages for a fixed-rate system.

The ultimate purpose of a balance of payments adjustment mechanism is to ensure that agents within a given area observe their respective inter-temporal budget constraints. If all agents are able to close gaps between their current expenditures (including any obligation from existing debt) and their incomes through lending in private capital markets, then we automatically observe a balance of payments equilibrium, no matter how this area is delineated. Otherwise, there is a balance of payments disequilibrium and, if it persists, the spectre of a crisis.

However, if this area is composed of several countries, each with its own currency, then central banks enter the picture. They can soften inter-temporal budget constraints for other agents in their countries by buying or selling foreign exchange reserves. Indeed, in a fixed-rate system central banks are typically obliged to provide this type of relief. This, however, can be no more than temporary relief. Hence the crucial question is whether such central bank operations set off an adjustment mechanism that leads agents back to their intertemporal budget constraints. If this is not the case, then the persistence of unsustainable financing positions will eventually lead to crisis. This, in a nutshell, is what has happened in the Eurosystem through the Target2 balances, as described by Sinn and Wollmershäuser (2011a and 2011b).

The textbook mechanism of adjustment for a fixed-rate currency system is a modern version of Hume's price specie flow mechanism. If the central bank of a deficit country sells foreign exchange reserves, then its monetary base (central bank money) shrinks. The opposite occurs if the central bank of a surplus country accumulates foreign exchange reserves. The price specie flow theory asserts that this combination of monetary contraction and monetary expansion brings about a change in relative prices that causes expenditure switching in both countries. Provided that the price elasticity of expenditure is sufficiently high, this eventually restores balance of payments equilibrium.

This mechanism requires two pre-conditions: the existence of a reserve currency and price flexibility. For the deficit country, price flexibility implies 'internal devaluation', which ultimately means a painful reduction in wages. I shall return to this point below. As to the reserve currency, a formal fixed-rate system typically features a specific currency that serves this purpose; in the Bretton Woods system it was the US dollar, in the gold standard it was gold. Importantly, in a fixed-rate system of the Bretton Woods type (BW-type) system there is a basic asymmetry. The reserve currency country has the exclusive privilege of financing its balance of payments deficit by printing money, provided only the other countries accept a build-up of their foreign exchange reserves.[7] Let us note that

[7] This does not mean, of course, that the other countries can only accumulate foreign exchange reserves to the extent to which the reserve currency country has a current account deficit. In fact, the US current account showed surpluses during a good part of the BW System. Exceptions were 1953 (War in Korea) and 1959 as well as after 1971. It does mean, however, that the reserve currency country can exchange its bonds with low interest rates, or even its cash, for assets in other currencies with relatively high interest rates. Therefore, the reserve currency country has the privilege of achieving seigniorage comparable to that of a central bank. In 1960, this led the then French president to the meanwhile proverbial statement that the United States as the reserve currency country of the Bretton Woods System had enjoyed an 'exorbitant privilege'– see Eichengreen (2007 and 2011).

although this asymmetry was initially an intended element of the BW System, it led to its collapse in 1973, as the other countries were no longer willing to accept the degree of inflation that would arise in the entire fixed exchange rate system as a result of the US using its printing press to finance its excess of expenditure over income. Interestingly, the United States did not lose its reserve currency status after 1973, but this was no longer based on a formal agreement; see Eichengreen (2011).

The history of Bretton Woods thus illustrates that a fixed-rate system where a certain country has the privilege of printing the reserve currency is likely, sooner or later, to create tension between member countries.[8] If the reserve currency country runs up a balance of payments deficit, it can simply print fresh money which, through exchange market interventions, will be converted into national currency by the central banks of surplus countries. It thus becomes part of foreign exchange reserves in these countries' central banks. If the surplus countries want to avoid the risk of inflation, they can do so, up to a point at least, by sterilization. This means reducing the domestic component (domestic lending) of their monetary base. To the extent that this type of stabilization occurs, the reserve currency expansion does not inflate the money supply of the entire system. However, in this case it seems questionable, whether the price specie flow mechanism would ever become effective, since there is no monetary expansion in surplus countries. I shall return to this point below. Independently of the price adjustment, however, this mechanism implies 'forced' capital exports from the surplus countries to the deficit country that holds reserve currency status.

The Eurosystem's adjustment mechanism: Target2 balances

How did the Eurosystem react to the present balance of payments crises? In the Eurosystem countries no longer have their own currencies, and there is no national reserve currency within the Eurosystem. Is there, nevertheless, a well-functioning balance.-of-payments adjustment mechanism?

The Target2 balances within the Eurosystem, as described by Hans-Werner Sinn and Timo Wollmershäuser (2011a and 2011b), reveal a surprising and worrisome finding. Starting in 2007, the Eurosystem has reacted to balance of payments crises by *de facto* letting the troubled deficit countries play a role that in a BW-type fixed-rate system would be the privilege of the country with the reserve currency. However, in contrast to the price-specie-flow-type mechanism of the BW System, there is no correction mechanism here: the unsustainable flows underlying the balance of payments crisis (public budget, current account) remain virtually unaffected. Furthermore, in sharp contrast to the BW System, the surplus countries shoulder a substantial risk by accumulating 'foreign exchange reserves' that are threatened by insolvency of the public sector in deficit countries. We must thus conclude that, instead of a well-functioning adjustment mechanism, the Eurosystem has adopted an automatism of sharing risk emanating from unsustainable debt accumulation.

What is the logic underlying this verdict? As we have seen above, the reserve currency country in a BW-type fixed-rate system can simply finance a balance of payments deficit by printing fresh money that will then become the foreign exchange reserve, and thus part of the monetary base, in the central banks of surplus countries. To put it bluntly: an importer in the reserve country pays his bill with newly created central bank money, while the supplier in the surplus country receives his own country's central bank money from his central bank, with the additional reserve currency ending up in the foreign component of the surplus country's monetary base. Creation of central bank money is always based on lending by the central bank. In this case the importer becomes a debtor to the central bank of the deficit (reserve) country, and the central bank of the surplus country becomes a creditor to the deficit country. The key aspect of this process is that money created by the central bank of the surplus country has its origin in lending by the central bank of the deficit country.

In any currency union with 'regional' central banks, we would not expect the entire stock of central bank money circulating within any one region to have originated in lending by the 'domestic' central bank. Looked at on a very general level, the Target2 system was meant to serve as a 'plumbing system' that facilitates such cross border flows of central bank money.[9] Taking stock at any point in time, we would not be

[8] The European monetary system has tried to avoid this asymmetry by abstaining from any notion of a single reserve currency. Instead, exchange market interventions were supposed to take place symmetrically by deficit and surplus countries.

[9] The Deutsche Bundesbank describes this as follows: "[…] Target2-(net)balances are […] the result of the cross-border distribution of central bank money within the decentralized structure of the Eurosystem" (Deutsche Bundesbank 2011).

surprised to see positive Target2 balances, representing central bank money stocks circulating in one area that goes back to original central bank lending in some other region. However, we would expect such balances to be relatively small fractions of a region's monetary base, and to follow no systematic trend over time. This is, indeed, what we have witnessed up to 2007. We would, however, be much surprised to see Target2 balances of any one country (or a small group of countries), exploding over time. Yet, this is exactly what Sinn and Wollmershäuser (2011a and 2011b) have shown has happened from 2007 up to the present date. The numbers are astounding. Until 2007 the Target2 liabilities of the GIPS countries at the central banks of the surplus countries within the Eurosystem were largely in the single-digit billion range; since 2007, however, they have increased rapidly to account for over 300 billion euros by the end of 2010. By September 2011, the Deutsche Bundesbank had accumulated a Target2 balance totaling 450 billion euros. A comprehensive presentation of the empirical developments, as well as a detailed description of the mechanics of Target2, is found in Sinn and Wollmershäuser (2011a).[10]

The analogy to the reserve currency mechanism in a BW-type system is quite striking. In the recent explosion of Target2 balances, the central banks of deficit countries have financed domestic agents' (say their governments') expenditure by creating euro central bank money, which then became central bank money of the surplus countries *via* the Target2 system. In other words, newly granted GIPS credits (or GIPS bonds) have flown into the foreign component of the monetary base in surplus countries. In this mechanism, although the deficit country does not issue its own currency, it is still true that central bank money is created in that country which – exactly as in the above-mentioned case of the reserve currency country – speedily becomes central bank money in the surplus country. In parallel, the Target2 system moves the claim of the central bank of the deficit country to a claim of the surplus country.[11] The central aspect in both cases, the reserve currency mechanism of a BW-type system as well as the Target2 mechanism, is the cross-regional flow of central bank money, and not whether or not different currencies are involved.

[10] This paper also contains an extensive description of the debate on Target2 balances in the media; on more recent developments, see Hans-Werner Sinn, "Italy's Capital Flight", *Project Syndicate*, 2011-10-25.

[11] This is done by debiting an account of the central bank of the deficit country at the ECB and crediting an account of the central bank of the surplus country at the ECB.

Interestingly, the calculations by Sinn and Wollmershäuser (2011a) show that up to this point the Target2 balances have not resulted in an overly large expansion of the central bank money supply within the eurozone. In other words, the surplus countries seemingly have sterilized their accumulation of 'GIPS foreign exchange reserves', as surplus countries worrying about inflation in a BW-type fixed-rate system would typically do. As a result, a rapidly growing share of the entire euro monetary base, which is not based on gold and 'true' foreign exchange reserves,[12] can be traced to creation of central bank money within the GIPS countries for the purpose of financing their balance of payments deficits. More specifically, the monetary base of the non-GIPS countries created *via* the 'reserve currency status' of the GIPS countries meanwhile amounts to 64 percent (314 billion euros) of the entire credit-financed monetary base (493 billion euros). No less than 66 percent of the credit-financed money stock in the eurozone was created in the GIPS countries, although their share in the GDP of the Eurosystem amounts to only 18 percent.

There has been some controversy over the appropriate interpretation of Target2 balances. Specifically, it has been argued that they should not be seen as financing of GIPS countries' expenditure on the grounds that in some cases they seem related more to capital flight than to current account deficits. As pointed out by Sinn and Wollmershäuser (2011a and 2011b), this was the case in Ireland and Italy. However, this does not, *per se*, make Target2 financing any less worrisome. What matters is a good match between the maturity of financing and the pattern of expenditure, particularly regarding investment and consumption expenditure in the public sector. It seems a safe bet to say that Target2 balances have not improved the quality of this match. Moreover, Target2 credit should not be seen as the reason why unsustainable borrowing positions (of governments of private agents) arose in the first place; see my introductory remarks above. The issue here is not causality, but the finding that Target2 financing is almost the opposite of a well-functioning adjustment mechanism in that it is a means to perpetuate such positions and to facilitate procrastination of necessary adjustments.

How long can this go on?

Like all sterilization, the practice of sterilizing the accumulation of the 'Target2 GIPS reserves' will

[12] In this context 'true' means simply non-euro assets of the ECB.

come to an end at some point. This point will be reached once the entire monetary base within the surplus countries of the Eurosystem is based on gold, 'true' foreign exchange reserves and Target2 claims. At this point, further financing of GIPS countries' balance of payments deficits through a build-up of further Target2 balances will result in an expansion of the monetary base of the Eurosystem, unless the central banks of the core start selling their gold and foreign exchange reserves or borrow on a large scale from their banking systems. In the June 2011 version of their working paper, Sinn and Wollmershäuser had come to the conclusion that the point of exhaustion of the refinancing credit would be reached by 2013, but in the November NBER-version of their working paper they show that, mainly because of capital flight from Italy, that point has meanwhile already been surpassed: the Bundesbank has now become a net borrower of the German banking system.

A striking parallel can also be observed at the beginning of the present Target2 practice. In a colossal failure of financial markets, the risk premia on public debt of troubled countries that were observed in the 1990s disappeared almost overnight when the Eurosystem was introduced in 1999. There are two possible interpretations. One is that investors were under the illusion that the loss of an autonomous national monetary policy would immediately restore full fiscal discipline. The other, more convincing explanation is that from the start investors were treating the explicit no-bailout commitment as incredible. The result was an unprecedented ease of financing for government deficit in some of the weaker member countries of the eurozone, and a corresponding resurgence of borrowing. However, in the aftermath of the global financial crisis of 2007/08 the implicit bail-out commitment had apparently lost its credibility too, whence risk premia started to return. Unsurprisingly, at least with hindsight, it was around this time that the Target2 system started being used in the way described above; see again Sinn and Wollmershäuser (2011). With private funds drying up or being available only at almost prohibitive risk premia, governments were keen on alternative financing and the Target2 system, although never designed for this purpose, was made available to help. Instead of correcting the underlying flows, troubled countries were happily adopting an 'as-if reserve currency status'. It is a little ironic that, at least if judged by the evolution of yield spreads, the bail-out commitment did not become fully credible even after it had been made explicit through the country-specific rescue packages and the rescue facility (EFSF) in 2010.

Target2 balances: financing without adjustment

In principle, the above mentioned asymmetry in the monetary base can continue *ad infinitum,* as the monetary base is a *stock variable.* Moreover, even an increase in this asymmetry need not be inflationary, provided the total money supply does not increase relative to output. However, what will come to an end eventually is the *sterilized* expansion of Target2 balances. If the ECB is unwilling to run down its foreign exchange reserves, the end will be reached by 2013. However, once the practice starts being inflationary, we must expect the sort of international tension within the eurozone that has led to the collapse of the Bretton Woods System in the 1970s.

If Target2 financing thus lacks long run viability, the crucial question is whether it involves sufficient, or any, adjustment in the short and medium run to avoid crisis by the time the accounting identities strike. The tragedy with Target2 financing is that there is very little, if any, of the adjustment mechanism that we would normally expect from a price-specie-flow mechanism. On the contrary, the roots of the problem remain untouched by the Target2 balances. This is not to say that no adjustment takes place, but I see no element of corrective adjustment inherent in Target2 financing as such.

Firstly, as I have emphasized above, a key element of a price-specie-flow-type mechanism, i.e. monetary expansion in the surplus countries, has not taken place to date, due to sterilization. Monetary expansion, a vehicle for nominal price changes that might then lead to a mechanism of expenditure switching, is lacking. Those afraid of a surge in inflation will say that this is for good reason. However, the mechanism would bear fruit only if and when the surplus countries were to accept an expansion of the money supply and the ensuing inflationary rise in prices. Let us note, however, that what we would need according to this mechanism is a change in *relative* prices that could help to eliminate the flow disequilibrium (current account deficit, government budget deficit). More specifically, the classic adjustment process in this case requires a real appreciation in surplus countries, meaning an increase in the prices of their tradable goods relative to those of deficit countries, as well as a reduction (increase) of the prices of tradable goods

relative to non-tradable goods in surplus countries (deficit countries). The attendant expenditure switching effect on the flow demand of goods would tend to correct the balance of payments imbalance. Demand for goods (tradable and non-tradable) from the deficit countries would rise, while demand for the goods from the surplus countries would fall. This would be reinforced by mirror-image supply effects, i.e. a real allocation of resources towards non-tradable (tradable) goods in surplus (deficit) countries.[13]

The contribution of this type of adjustment to solving the balance of payments problem depends, of course, on the price elasticities of demand and supply. They must be high enough to let absorption in deficit countries rise less (fall more) than domestic output; and *vice versa* in the surplus countries. If supply is inelastic, there is good reason to believe that restoring external equilibrium would come at the expense of internal equilibrium, so that deficit countries would experience an increase in unemployment; see Corden (1994).

Whatever the details, unless there are huge productivity increases, a true correction of the disequilibrium underlying the balance of payments problem will be accompanied by a decline (increase) of *real* income in deficit (surplus) countries. Naturally, with monetary expansion in the surplus countries, this might be easier to digest for deficit countries in an inflationary environment, since it would then be possible without 'internal devaluation' in the deficit countries, meaning a fall in *nominal* incomes. But as pointed out before, monetary expansion from Target2 financing as such has so far been avoided. If worried about the risk of inflation, we might add that this was for good reasons. However, at the same time it deprives the whole process of the price-specie-flow mechanism of adjustment. Hence, merely observing that Target2 financing has not been inflationary to date provides little comfort.

It is all too obvious that a workable solution requires permanent changes in the annual government budgets to generate primary surpluses that bring down debt ratios to sustainable levels. If national governments and the EU rescue packages fail to achieve this, and if the Target2 financing continues, then the euro risks a Krugmanite currency crisis, as I shall detail below. What determines the likelihood of successful and fiscal adjustment? As is well known, the required austerity pain depends significantly on growth prospects. In the calculus of austerity, each percentage point of additional real growth (or lower contraction) has the same effect as a 1 percentage point reduction in the real interest rate. Even under optimistic growth assumptions, the required austerity in GIPS countries is huge; see Darvas *et al.* (2011). This brings us to the uneasy question of whether too much fiscal austerity may hamper real growth, thus causing a vicious circle that makes adjustment even more difficult and painful. Work by Alberto Alesina and others has shown that fiscal consolidation has in many cases contributed to, rather than impeded, real growth. This was true particularly, in cases where consolidation was based on a political consensus and was carried out on the expenditure side of the budget. However, it is highly questionable whether the prerequisites for expansionary austerity are prevailing in the GIPS countries; see Perotti (2011).

Expectations: does the euro face a speculative attack?

The expansionary effect of fiscal consolidation, as well as supply-side reforms in GIPS countries, will not be felt until the longer term. In the short run, their effect is mostly driven by expectations. If such reforms are deemed credible and promising at the time of implementation, the immediate effect will be a lowering of risk premia on government debt, which will ease adjustment. Thus, the success of reform feeds on credibility. Unfortunately, this may generate multiple equilibrium outcomes, particularly regarding government default. If a rescue and reform program is deemed credible by investors, then the low interest that the government has to pay on its debt reduces the incentive for and thus the probability of default or a restructuring of existing debt. If the same program gets implemented, but fails to convince the markets, then the outcome might be a need to restructure debt, or even default; see de Grauwe (2011) and Grossman (2011). Such indeterminacy is not inevitable, however. Conceivably, offering a rescue facility could be a decisive factor for triggering a 'good equilibrium' scenario without any sovereign default, instead of a possible 'bad equilibrium' scenario with default.

Expectations and credibility play an important role not just for investors and financial markets, but *vis-à-vis* the domestic private sector more generally. It will, for instance, be vital for GIPS countries to attract investment and to avoid the emigration of skilled labor. Moreover, comprehensive reform will almost by

[13] Note that these changes in relative prices do not require flexible exchange rates and are also conceivable in a monetary union; see Corden (1994 and 2002).

necessity involve several stages of implementation. It is well known that under these circumstances reform might be plagued by time inconsistency. More specifically, if private agents anticipate that the government might *ex post* have an incentive to renege on reform and turn to default, then they will take this into account in their current decisions (consumption, investment, wage setting etc.) and thereby generate conditions that increase the incentive for default in the future. Certain reform policies may simply be impossible to announce in a credible way. Here, too, rescue measures might conceivably provide help in serving as a 'commitment device' for a government with weak credibility of its own.

A final point in this context leads me back to Target2 balances. Target2 financing perpetuates conditions that cannot continue forever. Ruling out large scale borrowing of the core countries' central banks from their commercial banks, a situation may soon arise in which the ECB must decide between two unattractive options: permitting monetary expansion through *non-sterilized* continuation of Target2 financing, or a reduction of the international reserves of the Eurosystem. If government budgets should remain unreformed, there is no third alternative.[14] Let us use T to denote the point in time when the ECB unavoidably faces this decision. Moreover, let us assume that the ECB will not be willing to touch its foreign exchange reserves. Then, other things equal, a process of devaluation of the euro will set in. This is just the mirror image of a stronger monetary expansion in the euro area. It is improbable, however, that forward looking investors would let this point in time approach without guarding themselves against sudden devaluation. Instead, what we should expect in this – admittedly – worst-case scenario is a classic euro currency crisis to arise well before time T. The reasoning behind this statement is as follows.

I simplify by assuming risk neutrality and by focusing on the euro-dollar relationship. In a world with forward-looking expectations and high international capital mobility, capital markets are governed by the uncovered interest parity. This implies that at time T there needs to be a risk premium on euro assets that offsets the expected depreciation. There will be a discrete jump in euro interest rates, as well as a discrete jump in the euro value of the dollar. However, with forward-looking expectations, a discrete jump in the exchange rate that is anticipated by rational investors is not an equilibrium time path. Rational investors will not knowingly and willingly wait for time T and then watch their euro investments suddenly lose dollar value. Instead, they will try to avoid this by betting against the euro well before time T arrives. In doing so, they effectively bring forward the time when the euro starts to depreciate.

This is a relatively straightforward application of the first generation model of currency crises developed by Krugman (1979).[15] In that model a speculative attack occurs after the central bank has embarked on a path of financing recurring budget deficits through monetary expansion. Defending the exchange rate requires running down foreign exchange reserves, which cannot go on forever. Speculation will set in before the policy would have depleted all foreign exchange reserves, thus bringing forward in time the point when the fixed-rate system breaks down. In our case, point T is not the time when foreign exchange reserves would in fact be depleted, but the point at which the ECB is confronted with the decision of whether it wants to embark on a process of losing foreign exchange reserves for the sake of price stability. Currency speculation might bring forward in time that awkward policy choice, and force the central bank to accept inflation and depreciation earlier.

It is more likely, however, that developments will play out in a different way, analogous to the collapse of a BW-type fixed-rate system. In such a system, central banks of surplus countries risk negative wealth shocks through depreciation of their foreign currency reserves, should the system break down. In a sense, that is the price for having chosen the 'wrong' reserve currency. The Chinese central bank, with its huge dollar reserves, is currently facing the same risk. With the Target2 balances in the balance sheet of the Bundesbank, an analogous risk exists from a partial or complete write-down of credits or bonds threatened by insolvency of the public sector (or also of private debtors) GIPS countries. However, within the Eurosystem this risk is shared by all member countries in line with their ECB capital shares. Arguably, just as its huge dollar reserves constitute an incentive for China to avoid a devaluation of the US dollar, so the Target2 balances may

[14] Ruling out central bank borrowing from commercial banks, Sinn and Wollmershäuser (2011a) have calculated this point to be reached by 2013, given an unchanged continuation of past developments. However, as they document in Sinn and Wollmershäuser (2011b) the Bundesbank has in fact turned to large-scale borrowing from the German banking system, thus postponing the point in time when a decision has to be made between selling foreign exchange reserves or allowing Target2 financing to be inflationary.

[15] A convenient exposition of this model is found in Obstfeld and Rogoff (1996).

constitute an incentive for the ECB to indulge in procrastination in order to avoid or postpone scenarios that lead to write-downs on GIPS assets present in the non-GIPS monetary base.

Conclusions

How is all of this to be assessed from a monetary policy perspective? In a well-functioning fixed exchange rate system the reserve currency country enjoys its privilege based on trustworthiness. Ideally, the choice of a reserve currency is a basic, deliberate and consensual monetary policy decision, made when designing the currency system. Similarly, in the absence of a formal fixed-rate system, certain currencies may be granted *de facto* reserve currency status, based on a mixture of economic and political strengths of their countries, as with the US dollar after the break down of the Bretton Woods system, and indeed with the euro in more recent times.[16]

In stark contrast, there is no deliberate monetary policy decision behind the role that Target2 balances have been playing in the Eurosystem's response to the balance of payments crises that arose after 2007 in the GIPS countries. This role has almost nothing to do with the 'plumbing role' that it was designed for with respect to distributing central bank money across member states. Instead, it came about mainly as a response to fiscal needs, without being subject to institutions and responsibilities pertaining to fiscal policy. Even if the system does not collapse, this contradicts the principles of sound monetary policy. There is also, of course, no special trustworthiness involved in this case of 'quasi reserve currency status'. On top of all the reforms required by GIPS countries retain sustainable fiscal positions, the monetary policy institutions of the Eurosystem need a reform that prevents the Target2 system from being used to address fiscal needs.

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[16] See Eichengreen (2011) for a comprehensive treatment of the history of the US dollar as a reserve currency.