WHAT SOLUTION FOR THE EURO-CRISIS?

Alvaro Cencini*

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Summary

The core concern behind the questions raised by the promoters of Lord Wolfson's Prize points to one fundamental problem, namely how a member country deciding to leave the euro-zone can recover its monetary sovereignty in order to expand the range of its policy tools, overcome its sovereign debt crisis, and promote economic growth without adverse consequences. Faced with the worst economic and financial crisis since the 1930s, European countries, members of the euro-zone, seem to be caught between two alternatives: 1) abandon the euro and recover their monetary sovereignty, or 2) stick to the euro at the price of an increasing economic recession. Both alternatives are worrying, and it is very arduous to estimate which one would entail the worst consequences.

The aim of this paper is twofold:

- answer the question asked by Lord Wolfson's Economics Prize by showing that a third alternative is conceivable, which would allow euro-area countries to recover their monetary sovereignty while guaranteeing an increased stability of their currency exchange rates and at the same time providing for a solution to the sovereign debt crisis;
- show that the answer to the dilemma facing the member countries of the euro-zone applies equally well to non-member countries of this area.

To address the issues at stake one needs first to understand the situation euro-area countries are actually in. Apparently, the obvious starting point is the fact that countries adhering to the euro-zone have replaced their national currencies with the euro, thus giving up their monetary sovereignty. In reality, this is far from being the actual state of affairs. A simple, albeit rigorous analysis based on European official documents will show beyond doubt that the euro is *not* the single currency of the group of countries having adopted it. Within a national payment system, the existence of a single currency is made possible by an inter-bank settlement system operated by the central bank. Up to now, no such a system exists at the European level, inter-European payments being carried out without the systematic mediation of the European Central Bank. Thus, the problem is more complex than it first appears. 17 EU countries have given up their monetary sovereignty in the belief to have become part of a new, homogeneous monetary area, while, in actual fact, no such an area exists as yet. Two alarming consequences follow:

(1) within each country, the euro 'evolves' differently without being officially allowed to do so;
(2) payments between countries are as problematic within as outside the euro-zone.

Now, another important point needs to be clarified before attempting to provide a solution to Lord Wolfson's puzzle: the rationale of the sovereign debt crisis. Once again, the problem is apparently straightforward. If countries are over-indebted it is because they have lived beyond their means, increasing their spending without also increasing their budgetary proceeds. Yet, once again, reality is more subtle, and calls for a deeper analysis. In this summary, let us simply observe that:

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- a country's sovereign debt is nothing other than its *external debt*, and *not* merely its public debt; and
- a substantial part of a country's sovereign debt is not caused by its excess spending, but by a pathological mechanism of monetary origin.

A country is the *set* of its residents, and the public sector is only one of these residents. It is therefore mistaken to identify a country with its public sector, or with the State. A country gets indebted insofar as its residents borrow abroad; its sovereign debt is therefore defined by the sums borrowed abroad by its public *and* private sectors.

In this paper we will show that half of the external debt incurred by any given country is pathological. This is done by developing a thorough analysis of the monetary flows involved in external borrowing. We will rigorously show that a monetary deficit arises each time a country benefits from a foreign loan, and that this deficit is financed through a decrease in the country's official reserves. Thus, for example, if a country borrows *x* billion dollars abroad, it suffers *at the same time* from an increase in debt of *x* billion dollars *and* from a decrease of *x* billion dollars in its official reserves.

The second, pathological debt (a loss in official reserves is an increase in debits) is incurred to the *financial bubble*, and not to another country. What is lost by the indebted country's official reserves increases the stateless, financial capital whose speculative investment so dramatically destabilises the markets. Because of the pathological increase of their external debts, indebted countries pay interests both to creditor countries, and to the financial bubble. The first payment is legitimate, the second iniquitous.

A viable solution to the actual crisis must deal with the sovereign debt problem as well as with exchange rates instability and monetary sovereignty. The problem is essentially monetary, and calls for a reform of the euro-area wide payment system. The monetary solution as proposed in this essay may easily be implemented by all European countries, without exception, for it does not require the acceptance of any common policy, either monetary, economic or social. Most of the structures and institutions required for the reform advocated here already exist, and the necessary changes are much simpler than any elaborate set of rules envisaged so far to control the financial markets. By preventing the exponential growth of the financial bubble, the new system will contribute more than any restrictive measure to restore order and enhance economic recovery across Europe.

The analysis on which this paper rests has been developed by Bernard Schmitt (1973, 1984, 2004), with whom I have been collaborating for the last forty years. His present physical conditions have prevented him from writing an essay himself, yet his intellectual presence permeates the text.

Biographical notes

Alvaro Cencini: Full Professor in Monetary Economics, University of Lugano (Switzerland); Director of the Research Laboratory in Monetary Economics, Centre for Banking Studies, Lugano; external member of the Centre d'études monétaires et financiers, University of Bourgogne (France); Ph.D. in Economics University of Fribourg (Switzerland), and Ph.D. in Economics London School of Economics. Main publications: (1984) *Time and the Macroeconomic Analysis of Income*, Pinter Publishers and St. Martin's Press; (1988) *Money, Income and Time*, Pinter Publishers; (1997) *Monetary Theory, National and International*, Routledge; (2001) *Monetary Macroeconomics. A New Approach*, Routledge; (2005) *Macroeconomic Foundations of Macroeconomics*, Routledge.

WHAT SOLUTION FOR THE EURO-CRISIS?

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Introduction

This paper aims both to answer the question raised by Lord Wolfson's Economics Prize, and to propose a solution based on a reform that can easily be implemented at the EU level, independently of whether the countries adopting it are or not members of the euro-zone. The problems concerning the European economy have their root causes in the present economic and financial crisis suffered by euro-zone countries, but also, more broadly, by all the countries involved in the project of gradual European integration. The hypothesis implied in the question asked by Lord Wolfson's Economics Prize panel of judges is that one or more member countries will soon decide to, or will be forced to, leave the EMU. This is a very plausible scenario, which clearly frames the investigation required to deal with the problem. The recovery of monetary sovereignty may well prove a necessary step 'for the future growth and prosperity of the current membership', and it is undoubtedly opportune to investigate what its consequences would be for monetary stability, external debt – both private and public –, institutions, international contracts, and so on. In order to address this question in the most appropriate way, it is first necessary to clarify its terms. In particular, one has to verify whether in the euro-zone a true monetary integration has indeed occurred or not, that is, whether or not the euro is actually the single currency of the countries that have officially adopted it.

This might sound as a strange proposal, for it is an accepted fact that since 1999 the euro has replaced the national currencies of those countries that have become full EMU members (the physical replacement of these currencies with the euro occurred at the beginning of 2002). Yet, on closer inspection the question acquires a specific relevance, for it can be shown that, up to now, the euro does not exist as a single currency. What is required to establish the euro as the European single currency it is believed to be, is a system of inter-European payments operated by the European Central Bank (ECB) according to a mechanism of real-time gross settlements, analogous to the domestic payment systems operated nationally by each country's central bank. A rigorous analysis based on official ECB's documents shows that such a system has *not* been implemented so far, which is tantamount to saying that, in reality, in the euro-zone there are as many different euros as countries.

If countries, members of the EMU, were to give up the euro, they would recover their monetary sovereignty without losing a common currency, which has *de facto* never fully existed. Having clarified this point, the analysis will then turn to the evaluation of the advantages and disadvantages of abandoning the euro-zone. In this respect, the problem of exchange rate stability is of a particular relevance. No one doubts that an important change in parities would occur as soon as one or more countries were to leave the euro-zone. The principal concern, however, does not lie in this specific change in parities – even though it would have serious implications for international contracts as well as for foreign deposits denominated in euros – but in the overall instability in exchange rates that would ensue. One of the reasons that encouraged European countries to adopt the euro was precisely to avoid disruptive exchange rate fluctuations between their national currencies. As necessary as it might be, the recovery of monetary sovereignty would not contribute much to economic growth and prosperity if it were

accompanied by erratic fluctuations in the foreign exchange market. This is why the question of European countries leaving the euro must be considered within the broader context of the necessity to provide them with a sound system of international payments.

In the first part of the paper we propose a simple reform, which would allow European countries to recover their monetary sovereignty while adopting the euro as a means of international payments, issued by the ECB in conformity with the principles of banking and with the mechanism of real-time gross settlements. The new system would guarantee the '*vehicular*' use of the euro, the final payment of every transaction, and an increased monetary stability. Yet, a correct assessment of both the present situation faced by EU countries, and of the impact of a reform such as the one advocated in the paper requires also a detailed analysis of another most serious problem: the sovereign debt crisis.

The entire second part is thus devoted to a thorough investigation of what we have called *the sovereign debt theorem.* Having first clarified what the term 'sovereign debt' should be taken to mean, we briefly recall the principles on which monetary analysis must rest, and we show that, because of the lack of a true system of international payments, foreign borrowing is at the origin of a monetary deficit entailing the pathological duplication of the borrowing country's sovereign debt. As surprising or absurd as this might seem, respecting the principle of double-entry book-keeping leads inevitably to the discovery of a pathological difference between the monetary outflows and the monetary inflows related to the transactions implied by a country's foreign borrowing. Two cases are conceivable, according to whether the foreign loans obtained by a country's domestic economy (made up of the private and public sectors) are transferred to the country's official reserves, which is what happens when the domestic economy refinances itself in national money, or are used to finance new commercial imports.

As we shall verify, in both cases a gap is formed between money outflows and inflows, which is covered through an equivalent loss in the country's official reserves. The ensuing pathological duplication of countries' sovereign debts is what makes the present situation of most European countries so dramatically threatening, and what explains the exorbitant growth of the financial bubble, whose speculative investments are so disruptive. It is, in fact, to the benefit of the stateless financial bubble that indebted countries lose part of their international reserves, and it is to this speculative capital that the interests on the pathological part of the sovereign debt have to be paid.

Our theoretical analysis is supported by a statistical investigation, based on the official data collected by the IMF and the World Bank. In section 4 of this second part we show that, according to these data, a substantial part of the external debt of most important European countries (France, Germany, Italy, Spain and the UK) is totally unjustified, and can be explained only by referring to the sovereign debt theorem.

In the final part we come back to our initial question, and to the reform introduced in the first part. In light of the sovereign debt theorem, we show that a system of inter-European payments based on the monetary intermediation of the ECB would not only allow to recover monetary sovereignty thereby limiting the risks due to exchange rate instability, but also give member countries the chance to gain yearly the amount of interest lost at present to the financial bubble. Every country adopting the new system would be able to reduce its public debt and/or increase its public investments, thus enhancing the process of economic growth that each so desperately

needs. In this last part we deal also with the problem of Euro-bonds, showing that in the new system the ECB may well be charged to play an active financial role, without forcing countries to finance its lending. The emission of Euro-bonds by the ECB and their sale to European and non-European residents (individuals and institutions) would be a way to channel investments to countries unable to sell their claims and bonds on the financial market. The ECB could sell its own bonds, and lend the sum thus borrowed to the countries most in need of help. This would require a rigorous control of these transactions, and an effective management of the risks involved. We claim that the issuance of Euro-bonds will prove useful only if it is part of a reform allowing for the passage from a disorderly to an orderly system of payments.

Part I
The terms of the problem

Introduced as a common unit of account on 1 January 1999, the euro became the unique currency of 12 EU member countries on 1 January 2002, when the national currencies of these countries ceased to be used as legal tender. Since then the euro-zone has been extended to 17 countries, and the euro is officially considered as Europe's single currency. Thus, for example, in the European Commission webpage it can be read that: '[l]aunched in 1999, Europe's single currency is now shared by 17 EU countries and around 331 million citizens, making it one of the world's most important currencies and one of the EU's greatest achievements'.

Countries that have so far adhered to the project of monetary unification have by the same token given up their monetary sovereignty in exchange for exchange rate fixity, which was believed to be a necessary requisite to boost the process of economic growth that would reduce economic discrepancies among EU countries and pave the way towards increasing political cooperation and integration. As everybody can see, these expectations have not been fulfilled: economic convergence between member countries is far from being underway, and the future of the euro is increasingly shaky. How can this be explained? Did something go wrong because of unexpected and exogenous shocks, or did the advocates of monetary unification misjudge the impact of the loss of monetary sovereignty?

To answer these questions it is useful to recall the main advantages and disadvantages of monetary unification. The major advantage by far is exchange rate stability, which is perceived as the obvious result of national currencies being replaced by a single currency. Exchange rates between national currencies of member countries are simply abolished by eliminating the national currencies themselves. No one disputes that exchange rate stability is an all-important target; however, what must still be further investigated is whether monetary unification is the only way to attain it. Later in the paper it will be shown that this is indeed not the case, a fact that strongly undermines the European decision to adopt the euro as a unique currency. For the time being, let us simply observe that by giving up their monetary sovereignty, member countries of the euro-zone have given up the possibility to adopt those monetary policies that are more attuned to their own specific situations. In particular, neither interest rates nor exchange rates can be modified by any single country, whatever the needs of its domestic economy. If economic convergence were a reality, the loss of monetary sovereignty would be of no great consequences. This not being the case, it behoves us to ask if the disadvantages of monetary unification are not seriously trumping its advantages.

Statistical analysis by itself can neither confirm nor disprove the claim that monetary unification has accelerated the economic downturn of several countries members of the euro-zone, for the simple reason that no statistical data are available pertaining to what would have happened had the euro not replaced their national currencies. However, it is no mystery that the loss of monetary sovereignty is liable to increase economic disparities if it is not counterbalanced by redistributive and fiscal measures, on which EU countries have never agreed so far. The first point that has to be analysed in some detail is whether the euro-zone is indeed a 'homogeneous monetary space' or currency area characterised by the existence of a unique currency. In other words, it has to be verified whether the euro-zone member countries have indeed lost their monetary sovereignty as a consequence of the euro having replaced their national currencies, or have given it up without becoming part of a truly unified, one-currency zone. This question, which is far from being rhetorical, calls for an answer that is all important for the analysis of the present economic and financial shortcomings affecting the EU.

Section 1. Is the euro-zone defined by the existence of a single currency?

Let us start by examining the necessary requirements for the existence of a unique currency within a given, national economy.

Two facts must be recognised from the outset:

(1) Money is issued by banks.
(2) Banks operate according to the principle of double-entry book-keeping.

As soon as these two facts are granted, it appears that money is a spontaneous acknowledgment of debt issued by banks. A sceptical reader could object by claiming that only central banks are entitled to issue their acknowledgments of debt as money. In reality this is not so: money is currently issued on a regular basis by any private or commercial bank operating within any national economy. Broadly speaking, we can say that a bank issues its acknowledgment of debt in exchange for any good financially deposited with it. For the time being, let us not investigate the nature of this exchange, which does not belong to the category of relative exchanges. For now it suffices to assert that money is issued in order to monetise current output, and that payments are carried out by banks.

As each bank is a different institution, the acknowledgment of debt issued by each bank is in principle different or heterogeneous with respect to the IOUs issued by the others. This is a well-known problem, which confronted bankers prior to the creation of an inter-bank clearing system managed by the central bank. Originally, bankers dealt with it pragmatically by asking one or more private banks to act as clearing houses. Today, most clearing systems work on the basis of a real-time gross-settlement (RTGS) system whose main principles are:

(1) all inter-bank payments are to be carried out through the intermediation of the central bank;
(2) currencies issued by private banks are to be given the common form of central bank money;
(3) each final payment on the inter-bank market is to be carried out by the central bank on condition that the bank asking for it owns a countervailing credit (in the form of a deposit) with the central bank.

In a few words, the inter-bank settlement process is a 'catalytic' process where the central bank acts as a catalyst allowing for the transformation of heterogeneous bank monies into the undifferentiated units of a national currency. It is thanks to the system of real-time gross settlement of inter-bank payments that a country can benefit from the existence of a national currency.

The apposite question to ask now is whether or not the ECB is indeed acting as the bank of banks within the euro-zone, that is, if every payment between banks operating across national borders in the euro-zone is in fact carried out through the ECB's intermediation.

A European payment system has indeed been established in 1999: the TARGET (Trans-European Automated Real-time Gross-settlement Express Transfer system). In the *Blue Book* of August 2007 published by the ECB and, more precisely, in Volume I, titled *Payment and Securities Settlement Systems in the European Union*, the TARGET is defined as a 'decentralised system consisting of the 16 national RTGS systems, the ECB payment mechanism (EPM) and the Interlinking system' (ECB 2007: 31). The key word here is 'decentralised'. A few pages later it is in fact specified that: '[t]he TARGET set-up can be described as a decentralised system in which payment messages are exchanged on a bilateral basis without a central counterparty' (ibid.: 34). This clearly means that the system adopted is neither centralised, nor organised on a multilateral basis. Another quotation discloses that payments between EU's countries are carried out by their central banks, and not via the intermediation of the ECB: 'Cross-border TARGET payments are processed via the national RTGS systems and exchanged directly on a bilateral basis between NCBs [national central banks]' (ibid.: 34).

The settlement procedures as described in point 3.1.1.6 of the ECB's *Blue Book* are apt to dissipate whatever doubt, if any, about the fact that there is no centralised clearing system between national central banks within the euro area. As done in the *Blue Book*, let us consider a cross-border payment between two EMU's countries.

Let us suppose that resident *a* of country A asks her/his bank to pay her/his economic correspondent *b*, resident of country B. Acting on behalf of its client, *a*'s commercial bank asks A's central bank to carry out the payment via the local RTGS system. A's national central bank (NCB) 'checks the validity of the payment […] and the availability of sufficient funds or overdraft facilities' (ibid.: 34-5), and, if the necessary funds are available, credits B's national central bank. 'Once the sending NCB [A's central bank in our example] has checked the validity of a payment message and the availability of funds or sufficient overdraft facilities, the amount of the payment is debited irrevocably and without delay from the RTGS account of the sending credit institution and credited to the Interlinking account of the receiving NCB [B's central bank]' (ibid.: 35). The following two steps are easily described: B's NCB credits *b*'s commercial bank, which credits *b*. '[T]he receiving NCB […] credits the beneficiary RTGS account and delivers a positive acknowledgment to the sending NCB or the ECB. Finally, the receiving NCB sends the payment message, through the local RTGS system, to the beneficiary credit institution' (ibid.: 35).

It clearly appears that presently payments between euro-zone member countries do not occur through the ECB intermediation. Whereas commercial banks within any given national payment system do not pay each other directly, national central banks within the euro-zone pay each

other directly. This means that the banking system of the debtor country (A) pays by crediting the banking system of the creditor country (B). Hence, the receiving country is paid through the remittance of an acknowledgment of debt (IOU) issued by the sending country (by its banking system). If a final payment system existed, the creditor country, member of the euro-zone, would be paid, in central euro, by the ECB. In this case, a double result would be simultaneously reached: (1) national IOUs would be given the common form of the euro issued by the ECB, and (2) being carried out on the basis of a gross-settlement system, every payment would lead to an exchange between goods (i.e. commercial goods, services and financial assets). *Since no such an international payment system exists today, payments between euro-zone countries are carried out in national currencies, and not, as widely believed, in the European currency officially adopted as a common standard*.

As the following quotation clearly shows, in both the first and the second versions of TARGET payments between countries of the euro-zone are channelled directly, without the active intervention of the ECB:

> Finally, with the multi-addressee access in TARGET2, direct participants will be able to authorise branches and other credit institutions belonging to their group, located in EEA [European Economic Area] countries, to channel payments through the direct participant's main account without its involvement, by submitting/receiving payments themselves directly to/from the system. This offers a direct participant's affiliate banks, or a group of banks, efficient features for liquidity management and payments business. The payments will be settled on the account of the direct participant.
>
> (ibid.: 38)

Instead of being an inter-bank settlement system conveying all payments between euro-zone countries, TARGET2 is being used as a means to channel credits from the richest EU countries, Germany *in primis*, to weaker nations (Greece, Ireland, Portugal, Italy, Spain and even France). Germany's claims on the ECB are thus balanced by the ECB's claims on these weaker countries. Let us illustrate this mechanism by a simplified example. Suppose a German exporter sells part of its output to Greece. Through TARGET2, this exporter is paid in euro by Germany's Bundesbank, which will balance its liability with an equivalent asset in the form of a claim on the ECB. Is this not a factual illustration that TARGET2 is indeed an inter-bank payment system operated by the ECB? The answer is in the negative, for the straightforward reason that Germany has not yet been paid for its export. Its claims on the ECB are clear evidence that it has still not received any good (commercial or financial) in exchange for its commercial exports. If German residents were importers of Greek bonds or IOUs, it would be correct to conclude that a settlement has effectively occurred thanks to the ECB intermediation. However, this is not what actually happens. The settlement process deployed so far is *incomplete*, and it is thus incapable both to provide euro-zone countries with a unique currency, and to allow for the final payment of international transactions. As a result, for example, in December 2011, 64 per cent of the Deutsche Bundesbank's assets were made up of TARGET claims on the ECB (Deutsche Bundesbank 2012). If we add the fact that the Deutsche Bundesbank had accumulated more than 463 billion euro claims on the ECB it is immediately clear how dramatic the consequences of a breakdown of the euro-zone could be.

Monetary unification cannot emerge directly from the political decision arrived at by a certain number of countries agreeing to give up their monetary sovereignty. The existence of a unique currency becomes possible only if *an appropriate system is implemented* that allows for national currencies to be given a common form. An international payment system is what is needed to this effect. If no such system exists, national currencies are bound to remain heterogeneous even if, as in the euro-zone, their nominal denominations are replaced by a unique name ('euro'). A name change is clearly not enough to transform a bunch of heterogeneous currencies into an undifferentiated amount of a single currency. Names can be changed at will, without this having any impact whatsoever on the status of a given currency. The passage from the national currencies present in each member country before unification to a single currency called euro is either substantial or imaginary. If no supranational payment system is available to substantiate the adoption of a new and unique currency, the passage to the euro is reduced to a change in the denomination of the national currency of each member country. Despite their new, common denomination, national currencies remain thus fundamentally heterogeneous, and it can safely be claimed that each member country has its own national euro-currency.

Contrary to what is dogmatically believed to be a well-established fact, the euro as we know it is not a single currency, and countries that have adopted it find themselves in an increasingly difficult, not to say absurd, situation since:

- they have given up their monetary sovereignty, and yet
- their currencies are still substantially different from each other.

In other words, today's reality is such that countries of the euro-zone have deferred to a centralised institution their monetary sovereignty, and fixed the exchange rate of their national currencies in the strictest possible way. Even though the Italian euro remains essentially, if not formally, different from the French or the German euro, no distinction is made as to their exchange rates, for they are considered as interchangeable versions of a unique standard. From this state of affairs it is easy to infer that today's European monetary system is a disorderly one, and that monetary unification is still far away. A viable regime of fixed exchange rates has never proven possible, at least not since the Great War. Among the worst examples to date we find the attempts to stick to a rigidly fixed exchange rate for a long period of time by means of the political decision of a country's government. No wonder, then, that some countries, members of the euro-zone, are facing serious monetary troubles because of their decision, a predominantly legal and political one, to fix permanently – to abolish altogether – the exchange rate between their currencies.

At this point, the question that presents itself is whether the member countries of the euro-zone would be better off if they adopted a mechanism of international payments allowing for their currencies to be successfully replaced by a single European currency as well as for the final payment of their reciprocal transactions, or if they gave up the euro and recovered their monetary sovereignty. Let us consider this question in the next section.

Section 2. Does Europe need a single currency?

Before Maastricht, the question was debated whether economic convergence was a necessary pre-requisite for monetary unification, or was monetary unification a useful and desirable means to accelerate economic convergence. A compromise was found, and it was decided that the euro

would be adopted only by those countries able to satisfy the *convergence criteria* agreed upon in Maastricht. Now, even if it is true that statistically-set targets are mostly arbitrary, it is a fact that in 1997 only one country, Luxembourg, satisfied all the Maastricht's criteria. The decision to disregard this state of affairs and go ahead with monetary unification was a bet that could well undermine the related project of European political unification. As a matter of fact, no straightforward comparison is even possible between what would have happened had the euro not been introduced, and what would have occurred if the euro had been adopted together with a payment system allowing for it to become Europe's single currency. Neither of these situations has materialised, so that we can only rely on analytical counterfactual reasoning in order to answer our initial question, namely whether monetary unification is, at present, the best way to help European countries achieve economic convergence.

In fact, disparities among European countries are greater today than back in 1997, and there is hardly any need to observe that the loss of monetary sovereignty has deprived some of them from the capacity to formulate and implement monetary and fiscal policies to their advantage. Moreover, it seems unlikely that the advantages of monetary unification – were it to become a reality – could compensate for the disadvantages due to the loss of monetary sovereignty. But there is more to it, for the creation of a single currency area allows for the free movement of capital within this same area. Let us consider this last question in some detail.

In any given national economy, the total of domestic income is deposited with the national banking system. Now, not even the smallest fraction of this income, or capital, can ever be taken away from the banks where it is deposited: *double-entry book-keeping does not allow for it to happen*. Capital may be transferred from a deposit account to another, of course, but only within the same banking system. Within any given national economy, capital can freely circulate from a bank to any other bank operating nationally. Legal constraints notwithstanding, free capital circulation is made possible by the existence of a single currency area, which is itself the result of monetary unification brought about by the creation of a single payment system based on an inter-bank settlement system.

National income can also be spent abroad, and capital formed in any given country, A, may be invested in the rest of the world, R. Does this mean that, in these cases, income or capital is transferred from A to R? that R gains what is lost by A? Certainly not, for double-entry book-keeping's accounting structure prevents the direct transfer of capital between countries. Let us consider the two cases separately.

Suppose country A's commercial and financial imports to be greater than its exports, and let A's national money be a reserve currency. The payment of A's net imports is carried out by its commercial banks, which credit the banks of R with say an amount of *x* units of money A. The relevant entries into A and R bank ledgers are shown in Table 1.

Commercial banks of country A

Assets			*Liabilities*
Importers	x MA	Commercial banks of R	x MA

Commercial banks of R

Assets			*Liabilities*
Commercial banks of country A (x MA)	y MR	Exporters	y MR

Table 1 *The payment of commercial imports by country A*

Table 1 clearly shows that the entire amount of A's national income remains deposited with its banking system. What is obtained by R in exchange for its net exports to A is not a sum of money A, but a deposit formed within A's banking system. What is entered on the assets side of R's bank ledgers is a credit on A's banks, whose object is a deposit formed with these same banks. What is transferred from A to R is only the *ownership* over part of A's bank deposits.

Correctly understood and implemented, double-entry book-keeping manifests the simultaneous debit and credit of the 'payer', and the simultaneous credit and debit of the 'payee'. Thus, in our example, R's banks are at the same time credited and debited with a sum of *x* units of money A. The credit does not require explanation: it is induced by A's payment of its net imports. The debit relates to another payment, carried out by R, the 'payee'. As soon as it is credited with a sum of money A, R's banking system spends it for the 'purchase' of an equivalent bank deposit with A's banking system. The amount of money transferred from A to R is therefore strictly nil. Money is nothing more than a flow conveying the payment between 'payer' and 'payee'. Finally, through the intermediation or the circular flow of money, R's goods (commercial and financial) are exchanged against an equivalent sum of claims on A's bank deposits.

The analysis remains essentially the same when the question refers to the possibility of transferring a capital from a country (R) to another (A). What happens, in fact, when R invests part of its capital in A is that the *ownership* over part of R's capital (which is formed as a deposit with R's banking system) is handed over from R to A. The beneficiary of R's investment is the domestic economy of country A, EA, which can use R's capital either to finance its imports, or to transform it into a bank deposit denominated in money A, that is, to refinance itself in national currency. In the first case, EA gives up its bank deposit formed with R's banks in order to purchase an equivalent amount of R's current output. In the second case, EA exchanges its bank deposit in R's banks with an equivalent deposit in A's banking system. In other words, EA asks R's banks to destroy its deposit and form an equivalent deposit to the benefit of A's central bank, and at the same time asks its central bank to create a bank deposit in money A to its benefit. Country's A official reserves thereby replace EA as owners of a bank deposit formed in R. The conclusion is thus confirmed that in no circumstances does the investment of a capital abroad imply its transfer from one banking system to another.

When asking the question whether or not Europe would benefit from the introduction of a truly unique currency, one has to consider that the creation of a single currency area would entail the free circulation of capital among member countries. As easily confirmed by factual observation, capital tends to concentrate in areas where productivity is high and yields are greater. Historically, within most European countries capital has moved from South to North, thus increasing, sometimes dramatically, the gap between these two regions. Monetary unification would likely exacerbate this problem, by allowing capital to be transferred from the South of Europe to the North of Europe. Facilitating and encouraging the *investment* of capital from one country to another is a measure apt to reduce economic disparities, since it does not imply a one-way transfer of capital. Free *transfer* of capital made possible by monetary unification, by contrast, is liable to increase these disparities, widening the gap between highly capitalised regions and those in need of capitalisation.

Coming back to our initial question, we must observe that the great advantage that European countries would derive from the adoption of a single currency is undoubtedly an increased

exchange rate stability. On one hand, the suppression of national currencies would guarantee the absolute stability of exchange rates between all countries accepting to replace their national currencies with the new European currency (in fact, within the euro area exchange rates would simply disappear). Following the suppression of national currencies within the euro zone, exchange rate fluctuations would remain possible only between the currency chosen as a single European standard and the currencies of the rest of the world. On the other hand, these same fluctuations would be reduced in intensity, the new euro 'carrying' a much higher 'weight' than any single currency would have had in the absence of monetary unification.

No one disputes the advantages deriving from greater exchange rates stability. This makes it particularly difficult *to choose between maintaining monetary sovereignty at a cost of great exchange rate instability, and giving up monetary sovereignty at a cost of increasing economic disparities among member countries*. However, the horns of this dilemma have not yet been fully recognised and appropriately investigated. In particular, it is of the foremost importance to analyse what is widely considered as the main cause of the present financial crisis suffered by most European countries: the sovereign debt crisis.

Part II
The sovereign debt theorem

To avert a possible misunderstanding, a terminological clarification is required from the outset. The adjective 'sovereign' referring to a country's debt means that what has to be considered is the debt of the country as a whole with respect to the rest of the world. Briefly stated, a country's sovereign debt is but its *external debt*. It has also to be made clear from the start that the State is merely one element, albeit a very important one, of the set of residents defining the country as a whole. As a consequence, it would be mistaken to identify a country's sovereign debt with its public debt. In fact, the debt incurred by the State to the residents is an internal debt incurred among residents of the same country, which does not concern the country itself. In the terminology of the IMF, it does not alter its international investment position (IIP). On the other hand, the public debt incurred to non-residents is only a part of a country's external debt, whose amount includes also the debt incurred abroad by the private sector. Hence, a country's sovereign debt is made up of the debt incurred by its residents, State included, to the residents (again States included) of the rest of the world. The present confusion concerning public and sovereign or external debt is generated by the fact that the State is often identified, made coextensive and synonymous with the idea of country or nation. *The expression 'sovereign State' is widely used everywhere, and the passage from sovereign debt to debt of the State may be easily made without being aware that, by doing so, the great majority of a country's residents are erroneously excluded from the picture*.

Once it has been clarified that a country's sovereign debt is nothing other than *the external debt incurred by its public and private sectors*, the problem known as the sovereign debt crisis appears in all its dramatic magnitude. Great Britain's case is symptomatic. Its external debt in 2010 was equal to 9.7 trillion dollars, that is, 430 per cent of its GDP (World Bank and IMF data), and there are no signs that it will drop in the near future. How heavily this external debt lies on the British economy can be easily imagined by considering that the UK has to regularly pay interests on it. Supposing an average rate of interest of 3 per cent, for example, the UK would have paid 29.1 billion dollars in 2010.

Now, if the external debt incurred by the UK or by any other country was the consequence of its having benefited from equivalent foreign loans, it would be correct to say that its indebtedness is perfectly justified. Heavily indebted countries would legitimately be blamed for having lived beyond their means, and the fitting remedy would be an austerity policy reducing spending and encouraging commercial exports. In fact, this argument does not provide the correct explanation and remedy for the sovereign debt crisis, whose origin lies in a pathological mechanism that *doubles* countries' external debts. Specifically, any time a country's domestic economy obtains a foreign loan of say x billion dollars, the total debt carried by the country itself, taken as a whole, is *multiplied by two*, and amounts therefore to $2x$ billion dollars. As absurd as this might seem at first sight, the reality is such that the present system (or non-system) of international payments fails to recognise and uphold the flow nature of money, with the pathological consequence of engendering a monetary deficit (that is, a difference between monetary outflows and monetary inflows) every time a country contracts an external loan.

Given the important and yet elusive character of this accounting malfunction, which we identified as a duplication, let us analyse it step by step, starting with a summary recapitulation of the main features characterising bank money.

Section 1. Money and monetary payments

Once again, let us start from the factual, empirical observation that contemporary money is issued by banks, and that banks must comply with the accounting principle of double-entry book-keeping. Irrespective of what may have happened in the past, nowadays money is issued by banks as their spontaneous acknowledgment of debt, an IOU whose 'object' is the IOU itself. As generally recognised, money is a *means* of payment, which means that banks issue it every time they carry out a payment on behalf of their clients. Does this also mean that money is itself a term of a payment? That a payment is an exchange between a good (commercial or financial) and money? If the answer were to be *yes*, this would imply that money is not only a dematerialised means of payment, but also the 'content' or the 'object' of the payment. If money were commodity-money, if it could be identified with silver, gold or cigarettes, then it would also be possible to maintain that the object of a seller's payment is a sum of money. Yet, it is absolutely certain that, when issuing money, banks do not create any good whatsoever. Through the use of double-entry book-keeping, banks can merely credit and debit their clients in term of their own (the banks') acknowledgement of debt.

Another widely-accepted concept that can help in the analysis of bank money is that of money's circulation. Since Adam Smith (1776/1991), money has been conceived as a circulating means of payment. Properly understood, this means that money itself is a flow and not a stock, that is, not a real good or an asset circulating at different velocities among economic agents. Being a dematerialised means of payment issued by banks as their spontaneous IOU, money conveys payments through its 'flow' that, monetary payments being indeed instantaneous events, is itself instantaneous.

Let us consider what happens when a 'payer', client *a*, asks her/his bank to pay client *b*, the 'payee', on her/his behalf. It is necessary to observe, from the outset, that *a* may order her/his bank to carry out the payment only on condition that she/he is the owner of a positive bank deposit or has access to a positive deposit lent to her/him by some other client. This gives *a* the right to order her/his bank to pay *b* on her/his behalf. If this is indeed the case, the bank debits *a*

for, say, 10 money units, and credits *b* for the same amount. Is this all there is to it? Does the payment of *b* ordered by *a* merely entail the debit of *a* and the credit of *b*? Certainly not, and for the simple and straightforward reason that double-entry book-keeping requires *a* to be *simultaneously* debited *and* credited, and *b* to be at the same time credited *and* debited in money units. Once again, if money was a good of a positive value and not a flow, a payment would define a relative exchange between money, which would be 'moved' or transferred from the 'payer' to the 'payee', and the purchased goods, which would 'move' or circulate in the opposite direction, from the seller to the purchaser. In reality, however, bank money is neither a commodity nor a positive asset, and its flow is circular and instantaneous, from and to the issuing bank. The mere debit of the 'payer' and credit of the 'payee' is inconsistent with the flow nature of money, a simple accounting means of payment, and hence with the requirements and exigencies of double-entry.

Whereas the reason for the debit of *a* and the credit of *b* is clear, it is apparently more difficult to justify the *simultaneous* credit of *a* and debit of *b*. However, the difficulty disappears as soon as it is recalled that *a*'s payment is carried out by the bank on condition that *a* is the owner of a positive bank deposit. When *a*'s payment takes place, her/his bank deposit is destroyed, and *a* is credited with a sum of money, 10 money units in our example. At the same time, a new bank deposit of the same amount is created to the benefit of *b*, which explains why she/he is debited by 10 money units as soon as she/he is credited: *b* spends at once the 10 money units she/he is credited with in order to acquire an equivalent bank deposit.

The logic of double-entry book-keeping and of bank money imposes the following simultaneous steps:

- *a* asks her/his bank to pay *b*;
- *a* is debited and *b* is credited;
- *a*'s bank deposit is destroyed and she/he is thus credited in money units;
- at the same time *b* is debited in money terms, and a new and equivalent bank deposit is formed to her/his benefit;
- finally, *a* is debited-credited for 10 money units, and *b* is credited-debited for the same amount;
- in 'real' terms *a* purchases a good and sells a bank deposit, while *b* sells a good and purchases a new bank deposit.

The debit-credit of *a*, and the credit-debit of *b* are imposed by the circulation of money, and by double-entry book-keeping. Being a flow, money is never the 'object' of *a*'s payment: *b* obtains a zero sum of money. Yet, through its instantaneous flow, money allows *b* to obtain a positive bank deposit in exchange for her/his sale of goods (commercial and/or financial).

Having clarified how payments are actually carried out by banks, we can now move on to the analysis of the monetary flows involved in the 'sale' of a domestic economy's IOUs on external markets. Two cases are conceivable, according to whether the sum borrowed abroad is used to refinance the domestic economy (private and public sectors) or to finance an equivalent sum of commercial imports. Let us give here only a concise analysis of one of them, inviting the reader to refer to Appendices 1 and 2 for a more detailed analysis of both cases.

Section 2. A country's sovereign debt is pathologically multiplied by two every time a foreign loan is used to refinance its domestic economy

Let us consider country A's domestic economy, EA, in both its sectors, public and private, and suppose that it benefits from a foreign loan of *x* billion dollars. Suppose also that EA gets indebted to the rest of the world, R, in order to refinance itself in domestic currency. This means that the *x* billion dollars borrowed by EA will finally be 'transferred' to A's central bank – more precisely to A's official reserves, RA – in exchange for an equivalent bank deposit in money A.

Let us now consider the outflows and inflows of *x* billion dollars for country A taken as a whole. Having 'sold' abroad a sum of IOUs equal to *x* billion dollars, country A benefits from an equivalent inflow of foreign currency. Since, in compliance with double-entry book-keeping, each credit-payment is also immediately a debit-payment, both the domestic economy of country A and its official reserves are debited by *x* billion dollars. Country A's total outflows amount therefore to 2*x* billion dollars, which leads to a gap of *x* billion dollars between its foreign currency outflows and inflows. It is enough to be aware of the instantaneous outflow of the *x* billion dollars flowing into A's official reserves to see that this sum of foreign currency flows out of country A twice over, namely:

- it flows out of A's domestic economy when the sum newly lent is disbursed (loan disbursement) by non-residents; and
- it flows out of A's official reserves when A's domestic economy converts it into money A at the central bank.

Since the sum of *x* billion dollars flows only *once* into country A, as payment of its export of equivalent IOUs, outflows exceed inflows by *x* billion dollars.

Let us follow the logical sequence of events step by step.

1. Country A's external debt increases by *x* billion dollars: the reason is that IOUs equal to this amount, issued and exported by A, are now in the hands of foreign lenders.
2. Borrowers, who are residents of A, obtain the credit payment equal to *x* billion dollars as a counterpart of their export of equivalent amount of IOUs.
3. The credit payment of the residents of A is simultaneously accompanied by their debit payment: dollars flowing into A's economy flow out of it in one and the same 'movement', a flux-reflux of *x* billion dollars.
4. The reflux or outflow of *x* billion dollars is the payment or purchase made by country A's economy of an equivalent deposit formed in one (or in several) foreign bank(s).
5. As a result, *before* the borrowed foreign currencies are paid to A's official reserves, country A gets hold of a bank deposit of *x* billion dollars formed abroad. At this moment, country A obtains the exact counterpart of its export of IOUs, since the external debt it incurs is exactly balanced by the import of an equivalent bank deposit.
6. The last flow to consider is the payment into RA of the *x* billion dollars borrowed by A's economy. This payment is simply the conversion of this sum of foreign currency into an equivalent sum of national money by the central bank.
7. According to a cursory analysis concerning the relationship between country A and the rest of the world, the only effect of this last flow is the transfer to RA of the deposit of *x* billion

dollars initially formed on behalf of A's domestic economy: EA gives up, to the benefit of RA, its foreign bank deposit.

8. A thorough analysis offers a less lenient conclusion: in reality official reserves *lose instantaneously* the *x* billion dollars they are credited with on behalf of A's domestic economy.
9. How is this loss explained? It is nothing less than the direct and unavoidable consequence of the 'accounting structure' of bank payments as currently enacted in the real world: no one in this world can avoid enacting the rule according to which every credit-payment is an equal and simultaneous debit-payment, every debit-payment being an equal and simultaneous credit-payment.
10. One may claim that the debit-payment imposed to RA is compensated, since a bank deposit is acquired abroad.
11. It is true that the debit-payment of RA gives it an equivalent bank deposit; at first sight country A is therefore not negatively affected: EA's external debt rises by *x* billion dollars, yet its official reserves are increased by a foreign deposit of *x* billion dollars.
12. However, this very increase in reserves comes with a cost of *x* billion dollars.
13. The following conclusion is reached: this cost is an *additional* outflow of foreign currency, added on top of EA's outflow of *x* billion dollars. The *excess outflow* of foreign currency, namely the difference between their total outflow, 2 times *x* billion dollars, and their inflow, equal to *x* billion dollars, is financed by the loss of a bank deposit (or of other financial assets) retained abroad by A's official reserves. RA's gain is therefore of ±*x* billion dollars as for the payment in foreign currency, and of ±*x* billion dollars as for the bank deposits formed abroad: it is zero on both sides. *The increase in A's external debt, equal to* x *billion dollars, has no counterpart at all for the borrowing country*.

Let us expand on the pathological increase in a country's sovereign debt, to the profit of the so-called financial bubble.

Section 3. The pathological increase in countries' sovereign debt and the financial bubble

As shown in *Appendices 1* and *2*, whether the sum borrowed abroad by a country's domestic economy is conveyed to the country's official reserves or spent in its commercial imports, a monetary deficit arises, which increases, pathologically, the country's sovereign (i.e. external) debt. What has to be clearly understood is that this pathology is not in the least due to the decision to borrow abroad. In itself, the decision to borrow abroad is perfectly legitimate, and it would be weird indeed to claim that this kind of transactions should be banned if order was to be restored. *The cause of the pathological deficit accompanying foreign borrowing lies entirely in the absence of a system of international final payments*. If such a system existed, no monetary 'black hole' would appear, each outflow being perfectly matched by an equivalent inflow. In the next section we will show how such a system can be introduced by EU countries, and how it would work. For the moment, let us observe that it is the borrowing country as a whole that carries the second debt. The external debt carried by the public and private sectors of A's domestic economy is equal to *x* billion dollars, the exact amount of the sum borrowed abroad. Under no circumstances is the second debt carried by EA. The excess outflow of foreign currency weighs on country A, which suffers from a loss in its official reserves equal to *x* billion dollars. Likewise, it is not the rest of the world that benefits from the loss of A's official reserves. If the creditors of a country's pathological, external debt were other countries, the symmetry between debtor and creditor countries would have not gone unnoticed by experts of

international payments. In fact, such a symmetry has never been observed. In particular, the residents of R who lend *x* billion dollars to A's domestic economy do certainly not see their credit go from *x* to 2*x* billion dollars. What is then the identity of the creditor of the second debt of *x* billion dollars incurred by country A? The answer is clear, and should not come as a surprise: it is the *financial bubble*, the stateless pathological capital whose speculative movements so dramatically disrupt our economies, threatening their very survival.

When a country's external debt is due to the deficit of its current account, it concerns the relation between this same country and the rest of the world. Yet, this is not what happens in the case of the pathological sovereign debt we have just examined. The debt incurred by A towards other countries is limited to the amount of foreign currencies borrowed abroad, *x* billion dollars, whereas the second, pathological debt, also equal to *x* billion dollars, is incurred to the financial bubble.

Section 4. Statistical data confirm the existence of a pathological discrepancy affecting countries' external debt

A simple table concerning the evolution of the gross external debt of the most important EU countries is enough to show how seriously the situation has worsened since 2002 (2011 data are those published in June) (Table 2).

Evolution of gross external debt position of the most important EU countries (France, Germany, Italy, Spain, United Kingdom), bn USD

	France	Germany	Italy	Spain	United Kingdom
2002	1,727	2,750	1,117	708	–
2003	2,301	3,327	1,452	980	5,406
2004	2,852	3,776	1,648	1,235	6,729
2005	3,052	3,578	1,676	1,350	7,386
2006	3,818	4,219	2,108	1,805	9,239
2007	4,842	5,116	2,549	2,302	11,261
2008	4,871	5,140	2,395	2,327	9,107
2009	5,167	5,116	2,551	2,539	9,409
2010	5,091	5,217	2,435	2,317	9,714
2011	5,633	5,624	2,684	2,570	9,836

Source: data elaborated from The World Bank (2011) *World Development Indicators & Global Development Finance*, databank.worldbank.com (accessed December 2011) and International Monetary Fund (2011) *World Economic Outlook Database*, September 2011 edition, www.imf.org (accessed December 2011)

Table 2 *Gross external debt of France, Germany, Italy, Spain and the United Kingdom*

The risks related to the large and increasing gross external positions of these countries do not need to be stressed, for they are all too well known to economists and experts worldwide. Now, the evaluation of the effects of such a destabilising increase in countries' external debt is far more negative once it is realised that part of it is of a pathological origin. Let us corroborate this claim by referring to the statistical data that justify an increase of a country's external debt.

Our test is simple and straightforward: compare the justifiable increase in a country's sovereign debt with its actual increase in order to verify whether or not an important part of it is due to a pathology, i.e. is totally unjustifiable. It is easy to establish that an increase in external debt is unavoidable insofar as a country's purchases of goods, services, and financial assets exceed its sales of goods, services and financial assets. Variations in official reserves have also to be taken into account, since every increase in a country's official reserves defines an acquisition of bank deposits denominated in foreign currencies, which has to be financed like any other acquisition

of financial assets. Hence, the justifiable variation in external debt is determined by the difference between the acquisitions, commercial and financial, which a country needs to finance, and its capacity to finance them through its commercial and financial sales. A deficit in a country's current account and an increase in its official reserves require to be financed, while a current account surplus and a positive amount of foreign direct and portfolio investments increase a country's current financial capacity. If a difference is found between the current financial capacity of a country, and what it needs to finance all its external transactions, the necessary equality between its total imports (commercial and financial), IM, and its total exports (of goods, services and financial assets), EX, is restored through a loan obtained from the rest of the world. The amounts of the justifiable increase in external debt of France, Germany, Italy, Spain, and the UK are shown in Annexe 1.

Table 3 shows the difference between the variation of these countries' external debt that should have been observed, and the actual variations, a difference, entirely pathological, which measures the extent of the *unjustifiable increase in debt*, and gives a straightforward, quantitative dimension of the seriousness of the sovereign debt crisis.

	France	**Germany**	**Italy**	**Spain**	**United Kingdom**
Justified increase in external debt stocks	+386.533	–1,047.180	+616.896	+926.330	+301.230
Actual variation in external debt stocks	+3,364.602	+2,467.158	+1,318.263	+1,608.636	+4,307.916
Unjustified increase in external debt stocks	+2,978.069	+3,514.338	+701.367	+682.306	+4,006.686

Table 3 *The unjustified increase in external debt of France, Germany, Italy, Spain, and the United Kingdom (bn USD)*

Section 5. The cost of the pathological increase in external debt

At this point, the sceptical reader could object that, despite the huge amounts involved, the problem is much less worrying than it might first appear, since pathological increases in external debts tend to compensate. Two arguments may be conceived to support such claims. It may first be observed that a country's gross external debt is compensated by its external credits, so that if a problem exists it is limited to the amount of a country's *net* external debt. However, this first argument is misleading, for it amounts to saying that an increase in debt is not problematic insofar as it is compensated by a credit, thus omitting the fact that if the increase had not occurred the credit would have been so much the greater. *An increasing debt is as worrying as a decreasing credit, and is always an indicator of the worsening of a country's international investment position.*

According to the second argument, the increment of a country's external debt would be compensated by an equivalent increment in other countries' credit, which misses the fact that the increase in debt under investigation is of a pathological origin. The idea that the unjustified increase in a country's external debt gives rise to an equivalent and reciprocal increase in other countries' external credit is inconsistent with factual observation. In reality, the second, pathological debt incurred by a country because of the gap between its monetary outflows and inflows, which arises mechanically as a consequence of the lack of a system of international final payments, does not define a positive inflow to the benefit of the rest of the world. It is to the stateless, financial bubble that the pathological debt is incurred, so that no compensation can

take place between countries suffering and countries benefiting from the pathological duplication of external debts.

To conclude this part it is important to note that the second increase in A's sovereign debt is as costly as the first one. Interests have to be paid on every debt, whether logically justified or not. It is true that the pathological debt is not incurred through a new disposal of IOUs or a new sale of bonds, yet this does not prevent country A from paying interests on it. To illustrate this point, consider the case most likely to be problematic, that is, when A's official reserves are simultaneously increased and decreased by *x* billion dollars. As the reader will remember, this happens when A's reserves acquire a new deposit of *x* billion dollars with the banks of R, which they lose in order to fill the gap between country A's monetary outflows and inflows. Even though the total amount of A's reserves remains unchanged, it is correct to conclude that A suffers from a loss of *x* billion dollars in its official reserves, which would have increased by this amount if no pathology had occurred. The failed increase in reserves is an instantaneous cancellation of a positive increase, which amounts to the loss of a positive asset, i.e. to an increase in debt. Likewise, the cost in interests consists in the sum of interests that country A's official reserves would have obtained had their increase of *x* billion dollars not disappeared into the black hole of A's monetary deficit.

Now, while interests on the debt incurred to R's residents are paid to those who have financed the foreign loan granted to A's domestic economy, interests on the pathological debt are paid, or lost, to the benefit of the stateless financial bubble. The existence of this bubble is beyond dispute, and economists all over the world agree that its erratic and mostly speculative use is a major source of disturbances, and the principal cause of the current financial crisis. Yet, a satisfactory explanation of the way and reason the financial bubble formed in the first place is still missing. The design of new financial products like derivatives, and the mechanisms of arbitrage and leverage may explain its expansion, but not its formation. The pathological increase in countries' sovereign debts contributes to this effect. Its analysis provides the elements for a new insight that might prove useful in the joint effort to overcome economic and financial crises. It is to the description of a twofold reform suggested by the monetary analysis of international transactions and of countries' sovereign debt that we will now turn our attention.

Part III
What future for the member countries of the euro-zone?
A way out of the dilemma facing EU countries

The question contestants for the Lord Wolfson's Economics Prize are required to answer is: if member States leave the Economic and Monetary Union, what is the best way to manage the economic process to provide the soundest foundation for the future growth and prosperity of the current membership? There can be little doubt that this is the apposite question to ask today, and the analysis developed in the previous parts of this essay allows for an answer in line with the requirement for EU countries to:

(1) recover their monetary sovereignty;
(2) maintain exchange rate stability;
(3) solve their sovereign debt problem;
(4) reduce their public deficit.

Let us consider all these requirements, and show how they can be fulfilled at little cost and through a reform that can be easily and rapidly implemented.

Section 1. Monetary sovereignty and exchange rate stability

One of the main objectives of European monetary unification was to definitively solve the problem of erratic exchange rate fluctuations between European currencies, and the best way to reach it was assumed to be to shelter them from speculation. Getting rid of national currencies, however, has also the potentially negative effect of cancelling monetary sovereignties. This would not represent too serious a threat if countries adopting a new, single currency had already reached a high level of economic convergence. This not being the case, the loss of monetary sovereignty has proven disastrous, and has substantially increased the gap between European countries. To stick at any price with the decision to replace national currencies with the euro will only worsen the situation and accelerate the collapse of the European Union. It is therefore of the greatest importance to let EMU countries recover their monetary sovereignty as quickly as possible.

However, if the recovery of monetary sovereignty was to expose national currencies to a renewed instability of their exchange rates, we would be caught between two almost equally unsatisfactory alternatives: lose monetary sovereignty and reach exchange rate stability, or recover monetary sovereignty and lose exchange rate stability. It is true, as shown in Part I, that the euro is not really a single currency, yet it is considered as if it was one, and no exchange rate fluctuations are allowed to occur between different euros. If euro-area countries were to restore their national currencies without adopting a system of international final payments, monetary instability would most certainly settle in again, undermining the advantages due to the recovery of monetary sovereignty. A viable solution based on EU countries leaving the Monetary Union must deal with this problem, and show how exchange rate stability can be obtained even when each country manages autonomously, that is, independently from any other, its own national currency.

The solution proposed in this paper is the result of a decade-long research work on the nature of monetary payments, and is consistent with the banking origin of money as well as with the principle of double-entry book-keeping. The founding idea goes back to Keynes's suggestion (Keynes 1980) to let countries use their own national currencies to convey payments between national residents, while introducing an inter-national currency to convey payments between residents of different countries. In the case of European member countries, this could easily be done by asking the ECB to convey payments between member countries by means of the euro, and by allowing each country to recover its monetary sovereignty and re-introduce its national currency within its national boundaries. *The euro will be issued by the ECB and will act as a means of inter-national final payments*.

A fundamental requirement of the solution is that the euro be used in conformity with the flow nature of money, as dictated by double-entry book-keeping. This means that, whereas every payment between member countries will have to be carried out using the euro, in no circumstances will the euro itself be the 'object' of an inter-national payment. The role of the ECB will be that of an *intermediary*, and the euro will act as the monetary 'vehicle' through which this intermediation can be carried out. The reader can better understand this idea by remembering how a system of national payments works and, more specifically, how inter-bank

payments are carried out through the intermediation of the central bank. In the same way as payments between banks operating in a national economy cannot be carried out directly, but require the intervention of the central bank, payments between countries have to be mediated by a 'supranational' bank in order to be final. The reason for this is that, outside its national boundaries, a currency defines the acknowledgment of debt of the issuing banking system, and, by extension, of the country itself. It is therefore enough to extend to countries the principle according to which no one can pay by remitting its own acknowledgment of debt (for the simple reason that to pay means to discharge a debt, and not to incur one) to understand that final payments between countries require the introduction of a payment system preventing the use of one or more national currencies as if they were 'assets' allowing for the discharge of a debt.

To be more precise, in order to avoid the pathological usage of money, payments between any two countries must be carried out in compliance with the circular flow of the currency chosen as inter-national means of final payment. As long as a new system of inter-European payments respects this logical constraint, any currency, national or supranational, may be chosen as the European means of inter-national payments. For practical reasons, however, the simplest and clearest solution is to have recourse to a *supranational* European currency, which we may still call *euro*, while asking the ECB to function both as a monetary and a financial intermediary between any two euro-area member countries.

In his plan for the establishment of an International Clearing Union (ICU) presented at the Bretton Woods conference (1944), Keynes (1980) advocated the use of the bancor as an international currency, issued by the ICU, and accepted by countries in exchange for their net exports. In reality, such a system is not entirely viable, for there is no reason to believe that being paid by the remittance of an IOU emitted by the ICU is any better than accepting as a payment the IOU issued by a national banking system. Arguably, this is one explanation for why Keynes's plan was rejected to the benefit of White's proposal, which propounded the use of the US dollar as international unit of payment. Now, it is only fair to acknowledge that Keynes was probably aware of this problem, and that the principles of its solution were already present, albeit implicitly, in his idea to base the international payment system on a mechanism of multilateral clearing. Indeed, this is precisely what is needed in order to guarantee both the circular flow of the currency chosen as international means of payment, and the final payment of international transactions.

If countries already members of the euro-zone are to recover their monetary sovereignty, it cannot be a question of a single monetary policy managed by the ECB, yet the latter can be asked to create and operate a payment system based on a real-time gross-settlement mechanism applied to every payment between residents of different countries. No major obstacle can be reasonably foreseen in this respect. From a theoretical standpoint, such a system is analogous to the one existing in most countries, and from a practical standpoint, the changes to the structures that are already available can be easily implemented. To make it easier to understand both the principles of the solution advocated here, and the way it would concretely work, let us consider a simplified numerical example based on the transactions between a country (A) and the rest of the European countries adopting the new payment system, RE. Suppose A's residents to import goods and services from RE. Assuming that they own the necessary bank deposits, they ask their banks to carry out the payment on their behalf, and to the benefit of the exporters, residents of RE. Instead of crediting directly the banks of RE's exporters, the banks of A involved in the transaction ask their central bank to act as an intermediary. If the amount of the payment is of x

units of money A (MA), A's central bank is credited with *x* MA by the banks of the importers (Table 4).

Domestic banks of country A

Assets			*Liabilities*
Importers	x MA	Central bank	x MA

Central bank of country A

Assets			*Liabilities*
Domestic banks of country A	x MA		

Table 4 *Payment of imports via the central bank*

A's central bank, in turn, asks the ECB to carry out the payment in favour of RE's central bank. For the sake of clarity, let us introduce a distinction between a domestic and an international department within each national central bank. Hence, it is the domestic department of A's central bank that is credited in money A by the domestic banks of country A, while it is the international department of A's central bank that gets indebted to the ECB (Table 5).

Central bank of country A (Domestic Department)

Assets			*Liabilities*
Domestic banks of country A	x MA	Central bank of country A (International department)	x MA

Central bank of country A (International department)

Assets			*Liabilities*
Central bank of country A (Domestic Department)	x MA	European Central Bank	y euros

European Central Bank

Assets			*Liabilities*
Central bank of country A (International department)	y euros		

Table 5 *The intermediation of the ECB: step 1*

At this point, the ECB acts as a settlement institution applying the real-time gross-settlement mechanism, which requires each debit-payment to be financed by an equivalent credit. In our simplified example, where A's central bank has not yet a positive credit with the ECB, the payment order addressed to the ECB is not carried out until country A benefits from an equivalent payment from another member country of the new European payment system. This is indeed the principle of a clearing system applied to a bilateral example: RE's payment clears A's payment, and vice versa. In other words, A can pay RE only if RE pays A, and vice versa. Suppose RE's residents to invest in country A a capital equal to *z* units of money RE – equivalent to *x* MA as well as to *y* euros – through the purchase of bonds issued by A's domestic economy. The payment order of RE's residents, importers of financial assets, is carried out by their banks, which address the payment to the domestic department of RE's central bank. Conveyed then to the international department of RE's central bank, the payment order is immediately passed on to the ECB (Table 6).

Domestic banks of RE

Assets			*Liabilities*
Investors	z MRE	Central bank of RE (Domestic Department)	z MRE

Central bank of RE (Domestic Department)

Assets		*Liabilities*	
Domestic banks of RE	z MRE	Central bank of RE (International Department)	z MRE

Central bank of RE (International department)

Assets		*Liabilities*	
Central bank of RE (Domestic Department)	z MRE	European Central Bank	y euros

European Central Bank

Assets		*Liabilities*	
Central bank of RE (International Department)	y euros		

Table 6 *The intermediation of the ECB: step 2*

Being simultaneously asked to pay *y* euros on behalf of RE, and to pay *y* euros on behalf of A, the ECB can now carry out the payments in compliance with the principles of the real-time gross-settlement system (Table 7).

Domestic banks of country A

Assets		*Liabilities*	
Importers	x MA	Central bank of country A (Domestic Department)	x MA
Central bank of country A (Domestic Department)	x MA	Sellers of bonds	x MA

Central bank of country A (Domestic Department)

Assets		*Liabilities*	
Domestic banks of country A	x MA	Central bank of country A (International Department)	x MA
Central bank of country A (International Department)	x MA	Domestic banks of country A	x MA

Central bank of country A (International Department)

Assets		*Liabilities*	
Central bank of country A (Domestic Department)	x MA	European Central Bank	y euros
European Central Bank	y euros	Central bank of country A (Domestic Department)	x MA

European Central Bank

Assets		*Liabilities*	
Central bank of country A (International Department)	y euros	Central bank of RE (International Department)	y euros
Central bank of RE (International Department)	y euros	Central bank of country A (International Department)	y euros

Central bank of RE (International department)

Assets		*Liabilities*	
European Central Bank	y euros	Central bank of RE (Domestic Department)	z MRE
Central bank of RE (Domestic Department)	z MRE	European Central Bank	y euros

Central bank of RE (Domestic Department)

Assets		*Liabilities*	
Central bank of RE (International Department)	z MRE	Domestic banks of RE	z MRE
Domestic banks of RE	z MRE	Central bank of RE (International Department)	z MRE

Domestic banks of RE

Assets		*Liabilities*	
Central bank of RE (Domestic Department)	z MRE	Exporters	z MRE
Investors	z MRE	Central bank of RE	z MRE

Table 7 *The complete payment via the ECB*

As shown in Table 7, the ECB, as well as A's and RE's central banks, act as mere intermediaries. Country A's and RE's entries with the ECB are perfectly cleared, and the euro is nowhere to be found, neither in A's nor in RE's banking systems. The currency chosen as a means of international payments between European countries members of the new system, and between them and the rest of the world, is never transformed into a positive asset, and nor is any of the national currencies involved in the transactions. Each currency – money A, money RE, and the euro – is used as a numerically expressed 'means' or 'vehicle' to convey payments between country A and RE. Finally, the terms of the reciprocal payment between A and RE are 'real', RE's commercial goods and services being exchanged for an equivalent amount of A's financial assets. From a book-entry point of view the end result is as shown in Table 8.

Domestic banks of country A

Assets		*Liabilities*	
Commercial importers	x MA	Sellers of bonds	x MA

Domestic banks of RE

Assets		*Liabilities*	
Investors	z MRE	Commercial exporters	z MRE

Table 8 *The domestic payments of international transactions*

The perfect balancing of each monetary inflow and outflow is the best guarantee that the new payment system will no longer feed the financial bubble, thus reducing exchange rate instability without any need for costly interventions on the foreign exchange market. This is not to say that the new payment system will guarantee a total or absolute exchange rate stability, since such a goal would require a wider reform, involving a greater number of countries and providing a plan allowing to gradually reabsorb the already existing financial bubble. Until then, exchange rate fluctuations will continue to be one of the disrupting effects of the speculative transactions nurtured by the pathological capital defining the financial bubble, and countries will be forced to onerously intervene in the foreign exchange market. However, it is important to observe that, thanks to the new payment system, the growth of the financial bubble will be substantially reduced, which is a first yet crucial step towards greater monetary and financial stability.

Section 2. The ECB and the emission of Euro-bonds

Advocated by several countries, the emission of Euro-bonds by the ECB has been so far refused by Germany on the grounds that it would contribute to putting Germany into the increasingly precarious situation created by the growing credit it would have to grant to countries more and

more on the brink of collapse and in need of bailing out. The reform expounded in this paper permits to reconsider the intervention of the ECB as active participant in the financial market, while dispelling Germany's fears.

In fact, what the ECB could do, without forcing any country to lend to any other, is to issue Euro-bonds directly on the financial markets of every country, whether member of the new system or not. Suppose, for example, that the ECB intervenes in order to help Greece out of its present economic and financial crisis. Instead of doing so by printing money (a self-defeating solution that would increase monetary disorder further) or by forcing central banks to purchase Euro-bonds, the ECB would simply sell its newly issued Euro-bonds to whoever resident wants to buy them. Let us confine our example to the euro-zone. Residents of any European member country would be offered to purchase these bonds, Greek residents included. If the ECB succeeded in selling its Euro-bonds, it would be able to lend its proceeds to Greece.

The ECB would be thereby a financial intermediary between European residents, lending to some of them (Greek residents, in our example) what is saved by anyone of them (Greek residents included). Contrary to what happens when it simply acts as the European clearing house, however, this time the ECB plays an active role, and remains involved in the transaction. This clearly means that it will have to assess the risks involved in its direct intervention, and take the necessary measures to avoid excessive exposure. It is nevertheless safe to predict that, owing to the increased monetary stability granted by the new system of inter-European payments and to the recovery of monetary sovereignty, the financial risks involved could be better assessed and managed than under the present non-system.

It is true that if member countries of the euro-zone were to recover their monetary sovereignty, their national currencies would undergo an important change in their parities. Yet, it is also highly probable that the present situation will soon end up anyway with the demise of monetary unification, in which case the change in parities will be far more dramatic and uncontrollable. Moreover, if the euro was transformed from a single into a supra-national currency before the implosion of the euro-zone, devaluations would not only be discussed and decided collectively by member countries, but they would drastically reduce the disincentive to invest in countries considered on the verge of bailing out under the present regime.

From a purely pragmatic and policy-oriented point of view, it is beyond doubt that in the euro-zone there are countries in great need of foreign investments, as well as countries in search of profitable ways to invest part of their capital abroad. A system of international final payments should simply allow this to happen in the most liberal way, without negative side effects of its own making. *Forcing better-off countries to lend to poorer countries is no viable solution. What is required instead is a framework encouraging individuals and institutions to invest*. The present European system is proving ill equipped to fulfil this task, and it is no mystery that recession is the most likely scenario for the years to come if European countries stubbornly stick to their present model of monetary unification. Thus, it can confidently be maintained that monetary sovereignty is a fundamental requisite for economic recovery. Yet, it must also be added that this is so only if the retrieval of monetary sovereignty is accompanied by a monetary reform guaranteeing an increased exchange rate stability. The emission of Euro-bonds may be a useful instrument to direct investment towards poorer countries, on condition that the financial intervention of the ECB respects the neutrality of money, and is inserted into an orderly system of inter-European payments.

The emission of Euro-bonds could be useful also in solving one of the problems that would be caused by European countries leaving the euro-zone. In fact, bank deposits denominated in euros are held all over Europe, and the owners of part of these deposits are residents of non-euro-member countries. If the euro were to be abandoned, how could these deposits be converted? In which national currency, and at what exchange rate? The simplest solution would be to convert these deposits into Euro-bonds. No exchange rate problem would arise, and the European countries adopting the new system would be collectively involved in the transaction through the ECB.

However, what will substantially modify the present situation, provide new financial resources, and promote a renewed process of economic growth in the countries implementing the reform illustrated here, is not the emission of Euro-bonds, but the eradication of the pathology defined by the duplication of these countries' sovereign debts. This is by far the greatest benefit to be derived from the reform, and it is to its analysis that the next section is devoted.

Section 3. The gains resulting from the solution of the sovereign debt crisis

Apart from restoring countries' monetary sovereignty, the greatest advantage of the new system of inter-European payments concerns external debt servicing, and will grant a substantial gain (valued in billions of US dollars) to the countries joining it. In fact, the advantages will be twofold: on one side foreign loans will no longer entail a loss in official reserves for the borrowing countries, and, on the other side, debtor countries will no longer have to pay twice the interests due to foreign creditors (the second payment being carried out to the benefit of the financial bubble). By getting rid of the mechanism that (pathologically) multiplies their external debt by two, European member countries will also be rid of the second, unjustified payment of interest.

To illustrate how the new system prevents the pathological doubling of a country's sovereign debt, let us consider again our numerical example, where country A's domestic economy benefits from a loan of x billion dollars from country R, A being a European country that has adopted the new system, and R a country representing the rest of the world. Since R is not a participant in the new system, its banks will carry out their payments as usual, with the one substantial difference that their payments to a European country having adopted the reform will have to be channelled through the ECB. R's domestic banks may credit the ECB and be credited by it, either directly or through the mediation of their central bank. To avoid distinguishing the two cases, which would weigh down the analysis pointlessly, we regroup R's domestic banks and its central bank under the heading of country R's banking system. Finally, we denominate the credits and debits with the ECB concerning the payments between A and R in dollars instead than in euros. This change in denomination is perfectly harmless, as long as the ECB, consistently with its role of clearing house, acts as a simple intermediary. As we have already observed, even when payments occur between European countries having adopted the new system, the choice of the euro by the ECB is not a must. So long as payments between countries are conveyed through a circular flow of money granted by the ECB, any currency denomination is as good as any other. Yet, for strategic reasons, it is worth using a currency called *euro* to convey payments between European countries, whereas it is arguably preferable to denominate in dollars or in another foreign currency the payments conveyed by the ECB between European countries and the rest of the world. To simplify our example, let us suppose the exchange rates

between money A and money R (dollar) to be of 1 MA for 1 MB. Entries in country A's bank ledgers, in ECB's accounts, and in the ledgers of country R's banking system are as shown in Table 9.

Domestic banks of country A

Assets			*Liabilities*
Central bank of country A (Domestic Department)	x MA	Borrowers	x MA

Central bank of country A (Domestic Department)

Assets			*Liabilities*
Central bank of country A (International Department)	x MA	Domestic banks of country A	x MA

Central bank of country A (International Department)

Assets			*Liabilities*
European Central Bank	x dollars	Central bank of country A (Domestic Department)	x MA
Banking system of R (deposits)	x dollars	European Central Bank	x dollars
Banking system of R (deposits)	x dollars	Central bank of country A (Domestic Department)	x MA

European Central Bank

Assets			*Liabilities*
Banking system of R	x dollars	Central bank of country A (International Department)	x dollars
Central bank of country A (International Department)	x dollars	Banking system of R	x dollars

Banking system of R

Assets			*Liabilities*
Investors	x dollars	European Central Bank	x dollars
European Central Bank	x dollars	Central bank of country A (International Department)	x dollars
Investors	x dollars	Central bank of country A (International Department)	x dollars

Table 9 *Payments related to a foreign loan*

Once the payments have taken place, the ECB is no longer involved in the transactions. The central bank of country A (its international department) acquires a positive deposit denominated in dollars on behalf of A's official reserves, while the domestic banks of A's residents, benefiting from the external loan granted by R's residents, are credited with a positive deposit denominated in their national currency. Hence, country A exchanges IOUs or bonds valued *x* billion dollars against an equivalent sum of bank deposits denominated in dollars, whereas A's residents exchange *x* billion dollars of bank deposits formed with R's banks against equivalent bank deposits formed with A's banks. Now, what matters the most is that these real exchanges are conveyed through monetary flows that are 'neutral', that is to say, that do not generate any pathological deficit. Indeed, no difference can be found between country A's monetary outflows and inflows. The payment of A's IOUs by R being associated with the payment of R's bank deposits by A, and both being carried out through the intermediation of the ECB, A is debited and credited with *x* billion dollars *only once*. The same is true for R, whose banking system is credited-debited with *x* billion dollars by the ECB.

The loan of x billion dollars obtained by A's domestic economy gives thus rise to an external debt equal to x billion dollars, and not, as is the case today, to a further increase by the same amount due to the loss suffered by A's official reserves. As a consequence, debtor countries will no longer have to pay interests on their pathological external debt, which means that their economies will stop losing billions of dollars to the benefit of the financial bubble. This will happen in two different ways, according to whether a European country adhering to the new payment system borrows from another European country (also adhering to the new system), or from the rest of the world.

In the first case, the second, pathological payment of interests will never take place, its very formation being prevented by the new inter-national payment system. The gains resulting from the disappearance of this totally unjustified payment will be spread over A's economy taken as a whole, and contribute to its further development. Hence, for example, the gain obtained by A's official reserves, whose amount of bank deposits denominated in foreign currencies is no longer pathologically decreased, could be transferred to A's Treasury, and 'invested' in the reduction of A's public debt or in the financing of new public expenditures within country A.

In the second case, the pathological payment of interests cannot be countered at the moment of its very formation, for R does not participate to A's new system of inter-national payments. This means that A will have to go on paying interests on the pathological debt resulting from the monetary deficit formed as a consequence of its foreign borrowing. The lack of a satisfactory system of payments between European countries and the rest of the world is a most serious problem that can be solved only if both parties agree on a reform implying the implementation of a multilateral settlement mechanism operated by a supranational bank. While waiting for a new Bretton Woods conference, the difference between the monetary outflows and inflows incurred by any European country borrowing from the rest of the world, and vice versa, will remain an unavoidable fact all countries have to deal with. In our example, country A, taken as representative of any European country adopting the reformed system of inter-European payments advocated here, will do so by channelling its international payments through the ECB. Having borrowed *x* billion dollars from the rest of the world, country A will be credited with an equivalent deposit in euro formed with the ECB. Since the ECB will act as a mere intermediary and in compliance with the mechanism of real-time gross settlements, country A will avoid every monetary deficit arising from its foreign borrowing. This is tantamount to saying that the pathological loss suffered at present by A's official reserves will be prevented, owing to the intermediation of the ECB.

Interposed between A's and R's banking systems, the ECB will take over and neutralize A's pathological external debt. The rest of the world will still carry a credit on A's economy, and will go on being paid the interests falling due on the amount of foreign currencies lent to A, namely *x* billion dollars. However, contrary to what is currently the case, country A will no longer lose an amount of *x* billion dollars of its official reserves to the financial bubble, and, consequently, will also no longer pay the interests on this amount. The debt incurred at present to the financial bubble by the European countries borrowing from the rest of the world will be replaced by a debt assumed by the ECB, which will balance it with the credit denominated in foreign currencies obtained from R.

The payment of interests on the pathological debt taken over by the ECB calls for a specific solution, which will have to be implemented until the rest of the world will have either joined the new system of international payments adopted in Europe, or created one or more systems analogous to it. For the time being, let us not go into the details of this solution, and merely observe that every single country could take it on, independently from the others, and thus protect itself from the iniquitous loss derived from the payment of interests on that part of its external debt incurred to the financial bubble. European countries may therefore choose between two alternative solutions:

(1) stick together and adopt a common system of international final payments; or
(2) let every single country protect itself by implementing a reform concerning its own international final payments to and from the rest of the world.

The first solution is the one we have developed in this paper. Its main advantage would be to create a zone within which payments between countries will no longer give rise to monetary disorders. Besides, it would also allow member countries to avoid losing part of their domestic resources in favour of the stateless, financial bubble. The second solution is more circumscribed, for it benefits only the country that chooses it. A system of international final payments can see the light only if a group of countries agree to implement it. No single country can, alone, create a new system of international payments, yet it can protect itself against the negative effects of the old system. More specifically, any single country could modify the way its external payments are carried out, and thus retain for its own use the amount corresponding to the interest due on its pathological external debt. Creditor countries will go on being paid the interests accruing to the capital initially borrowed by debtor countries. However, the indebted country adopting the solution sketched here will stop losing, to the benefit of the financial bubble, the interests accruing to the pathological capital.

In order to give just an idea of the sums involved, and of the gain European countries could derive from either one of these solutions, let us refer again to the gross external debts accumulated so far by France, Germany, Italy, Spain, and the UK. Rounding off the official statistical data, we have the amounts shown in Table 10.

Countries	**Gross external debt position (2010), bn USD**
France	5,100
Germany	5,220
Italy	2,440
Spain	2,320
United Kingdom	9,710

Source: data elaborated from The World Bank (2011) *World Development Indicators & Global Development Finance*, databank.worldbank.com (accessed December 2011)

Table 10 *Gross external debt of France, Germany, Italy, Spain, and the United Kingdom in 2010*

Assuming an average interest rate of 3 per cent, the amount of interest each of these countries would have to pay on its external debt is shown in Table 11.

Countries	Interests on external debt (2010), bn USD	Pathological interests (2010), bn USD
France	153.0	76.5
Germany	156.6	78.3
Italy	73.2	36.6
Spain	69.6	34.8
United Kingdom	291.3	145.6

Source: data elaborated from The World Bank (2011) *World Development Indicators & Global Development Finance*, databank.worldbank.com (accessed December 2011)

Table 11 *Pathological interest payment*

Since, as shown in this paper, the total amount of a country's external debt is twice what it should be, half the sum paid in interest is pathological. The third column of Table 11 gives an approximate estimate of the amounts unduly forgone yearly by France, Germany, Italy, Spain and the UK if their external debts did not grow further. These same amounts define the gain that the countries chosen in our example would derive from the reform called for in order to neutralize the pathological duplication of their sovereign debts. There is little need to stress how important it would be for these countries, as well as for any other country in the world, to benefit from such amounts. Public deficits could be partially reduced, and/or it would again be possible to finance some of the structural investment required to boost economic recovery.

Conclusion

The analysis presented in this paper is the result of more than forty years of research in the field of monetary macroeconomics. The study of bank money and the principles governing monetary payments are at its core. Thanks to them the problem of European monetary unification and the present economic and financial crisis can be explained and given a solution. This is what we have attempted to do in three successive steps, namely by:

(1) clarifying the terms of the problem;
(2) proposing a new approach to and a new explanation of the sovereign debt crisis;
(3) advocating a monetary reform and the implementation of a new system of inter-European payments.

Each step introduces something new, and suggests an alternative view of the subject matter. Thus, in the first step the idea is put forward that the euro as a single European currency is but a pervasive, yet deceptive, figment of collective imagination. The lack of a real-time gross-settlement mechanism run by the ECB and applied to every payment between residents of different countries has led us to consider the problem of monetary sovereignty differently. In particular, it appears that the sacrifice of monetary sovereignty has been pointless: euro-area countries have given up the chance to adopt the monetary and fiscal policies best suited to their specific situation without becoming part of a single currency area.

From the outset of our analysis it has emerged that the question asked by the promoters of Lord Wolfson's Economics Prize has to be addressed within the framework of the present system of both inter-European and inter-national payments. This has been confirmed by the analysis of the sovereign debt crisis. Once it has been clearly established that a country's sovereign debt is the debt of the country taken as a whole, that is, as the set of its residents (of which the State is but one element), an accurate analysis of the monetary flows involved in any new sovereign or external debt reveals the presence of a disturbing pathology. The sovereign debt theorem states

that when a country benefits from a foreign loan, of say *x* billion dollars, its external debt increases by twice this amount, i.e. by 2*x* billion dollars. The demonstration rests on the double-entry book-keeping nature of bank money, and applies to every conceivable case. In fact, the existence of a monetary gap between outflows and inflows is the unavoidable consequence of the implementation of double-entry book-keeping. In other words, a difference between monetary outflows and inflows arises every time an economic agent benefits from a loan, whether foreign or domestic. What makes all the difference between what happens when loans are obtained from abroad or from within a domestic or national economy is the presence or the lack of a system of final payments. In the case of domestic loans, the duplication is neutralised by the system of national payments, which provides at zero cost the missing monetary inflow required to balance monetary outflows and inflows. In the case of foreign loans no such a system exists up to now, and the missing monetary inflow is compensated through a loss of the country's international or official reserves.

The analysis of the sovereign debt crisis supports the relevance of a solution capable of eradicating the root causes of the present economic and financial breakdown. Speculation has unanimously been pinpointed as one of these causes. It is clear, however, that if no speculative capital were formed, speculation could never represent a serious threat for the economic system as a whole. If this is still not the case, it is because some anomalous mechanism allows for the formation of a pathological capital and for its unfettered growth. The sovereign debt theorem explains how foreign borrowing feeds the financial bubble, and how countries are regularly obliged to pay interests to this very speculative bubble.

If a viable solution to the crisis affecting European countries is to be proposed, it must incorporate a monetary reform dealing with the sovereign debt problem, as well as allow for the recovery of monetary sovereignties, and for an increase in exchange rate stability. The system of inter-European payments proposed in this paper is closely related to the one presented by Keynes at the Bretton Woods conference in 1944 (Keynes 1980). The idea to call for a supranational bank (the International Clearing Union in the case of Keynes, the ECB in our case) to issue an international currency (the bancor or the euro) according to the principles of banking, and with the explicit purpose to convey payments between monetary sovereign countries, is the same. The novelty consists in the fact that the new system advocated here calls for the circular use of the euro, coupled with the implementation of a real-time gross-settlement system making sure that all payments are final. In Keynes's plan, international transactions were paid in bancor, creditor countries acquiring a bank deposit with the ICU. This is not a satisfactory solution, for money, whether national or supranational, should never be transformed from a means of payments into their object.

Even though it was already present in the work of Adam Smith (1776/1991), the flow nature of money is still a largely unknown concept, which is why the shortcomings as well as the strengths of Keynes's plan have not been spotted for such a long time. Yet, recent developments in the banking systems have paved the way to a better understanding of bank money, and have made it clearer that, while money is necessary to convey payments, it is not itself one of the terms in a relative exchange. Goods (commercial and financial) are exchanged with other goods via the intermediation of money; this is the principle every system of payments must comply with. In the case of a European system, every payment between member countries must be conveyed by the ECB through the emission of the euro, and be financed through a mutual exchange of commercial and financial goods.

If implemented, the new payment system outlined in the paper would achieve four objectives:

(1) allow for payments between countries to be final;
(2) permit countries to recover their monetary sovereignty;
(3) increase exchange rate stability;
(4) prevent countries from losing part of their resources to the benefit of the financial bubble.

All these objectives are essential for the future economic growth and prosperity of European countries. They imply abandoning the euro as a single currency, and would not be without cost. Yet, their advantages would be substantial, and largely trump the costs. Moreover, the political project of European unification would not be impeded by the reform:

- first, because the new payment system would provide a barrier against the present economic and financial crisis, which, if not effectively countered, will bring the European Union to a dramatic end; and
- second, because the solution contemplates the use of the euro as an international *means* of payment, and requires the intervention of the ECB both as a settlement institution and as a financial intermediary.

The best way to promote European unification is to create the conditions for a renewed process of economic growth. As long as economic convergence between member countries has not been achieved, a single currency will do more harm than good. This is what most countries of the euro-zone are currently experiencing, and to call for an increased involvement of the ECB as lender of last resort amounts to a desperate attempt to avoid a disaster by postponing it, without realising (or concealing to one's own eyes the fact) that it will manifests itself even worse than before. Economists have for too long been dealing pragmatically with economic and financial crises, in the belief that fundamental research had already fulfilled its task, and nothing new could be discovered conceptually. Facts are telling us that mere pragmatism is not enough, that there are concepts, such as money, which remain inadequately understood, and that the systems of national and international payments can be themselves at the origin of serious anomalies. This essay has addressed the problem of the present European crisis by showing that something is fundamentally wrong in the euro-system, and suggests a reform that would provide European countries with a sound system of international payments. I submit this critical appraisal to the judges of Lord Wolfson's Economics Prize, and to the scientific community at large, in the hope that it can promote a fruitful debate and contribute to a much needed collective effort to understand what needs to be done to structurally ensure a sustainable economic recovery worldwide.

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Appendix 1. The 'sovereign debt theorem': case 1

Let us analyse in more detail the case when a country's foreign loan (*x* billion dollars) obtained by its domestic economy (EA) is transferred to the country's official reserves (RA) in exchange for a deposit denominated in national money. The country considered is country A, and its economic partner is the rest of the world, R.

As a result of EA's 'sale' of IOUs to R, the external debt of EA increases by *x* billion dollars. The first apposite question that presents itself to the economist's mind is: what does EA obtain as a counterpart for its export of domestic IOUs? Is the increase in EA's external debt matched by the *x* billion dollars it is credited with by R's banks? Our previous analysis of bank payments leaves no room for hesitation: the only answer consistent with logic and facts is *no*, for EA is necessarily credited *and* debited with *x* billion dollars all at once. EA is credited by the banks of R because of its 'sale' of IOUs worth *x* billion dollars to R's residents, and it is debited by the same banks and for the same amount because of its 'purchase' of equivalent bank deposits. EA's new external debt is thus matched by a sum of *x* billion dollars in bank deposits formed with R's banks. EA is simultaneously credited and debited by R's banks for *x* billion dollars, so that the sum of foreign currency it obtains in exchange for its exports of IOUs is strictly nil: $\pm x$ billion dollars = 0. *The payment of EA is a zero sum transaction in terms of money; yet, it gives EA the ownership over a deposit formed with the banks of R.*

Up to this point, two equivalent monetary flows have been singled out, namely an inflow of *x* billion dollars to the benefit of EA, and an equivalent outflow to the benefit of R. We have now to turn our attention to the monetary flows involved in the transaction allowing EA to change its deposits denominated in dollars into equivalent deposits denominated in money A.

Through its 'sale' of IOUs to R's residents, EA obtains a deposit with R's banks, which gives it the right to ask these same banks to carry out a payment on its behalf. In particular, EA can ask R's banks to pay a sum of *x* billion dollars to A's official reserves, RA. The first point to clarify is therefore how EA can 'transfer' *x* billion dollars to RA. To begin with, it has to be observed that EA cannot transfer *directly* this sum to its country's reserves, for it never gets hold of any foreign currency whatsoever. If EA could be credited with a positive sum of dollars or of any other foreign currency without being simultaneously debited, then a transfer would be conceivable, the foreign currency held by EA being transferred to RA. Yet, money is a simple flow, and cannot be 'stopped' in its circulation. EA cannot transfer any sum of money to RA, for it does not and cannot have any. *What EA owns is not a sum of foreign currency, but a foreign bank deposit*. Can the transfer of *x* billion dollars be interpreted, therefore, as the transfer from EA to RA of the foreign bank deposit owned by EA?

The answer to our latest question could be *yes* only if EA's deposit was not formed within R's banks. In fact, what EA can do is simply to ask the banks of R to credit RA with *x* billion dollars. By doing so, EA gives definitively up its ownership over a foreign bank deposit, which is thus immediately destroyed. Following up EA's payment order, R's banks credit A's official reserves with a sum of *x* billion dollars. As imposed by double-entry book-keeping, this inflow of dollars is immediately matched by an equivalent outflow, RA being at the same time credited and debited with the same amount of foreign currency. Let us repeat it: it is because money is nothing but a flow acting as a 'vehicular' means of payment that it cannot 'move' or be transferred from the 'payer' to the 'payee'. Like EA, A's official reserves are not paid *in* money,

but *through* money, notably through a circular flow allowing RA to become the owner of a new deposit formed with the banks of R. As soon as it is debited by R's banks, RA acquires a bank deposit, which is nothing other than a property right over part of R's domestic output. The 'object' of RA's deposit is an undifferentiated quantity of R's national product, and not a sum of money.

A sum of foreign currency equal to *x* billion dollars flows simultaneously in and out of RA, without increasing or being deposited into its assets. Through the debit it is submitted to by the banks that credit it, RA pays for the imports of an equivalent deposit with the banks of R. As observed already, RA's bank deposit is entirely new, since it is formed by the debit imposed to it by the banks of R at the very moment they credit it with *x* billion dollars on behalf of EA.

The payment of A's official reserves, which the banks of R carry out following A's domestic economy decision to transform its bank deposit denominated in dollars into an equivalent bank deposit denominated in money A, gives rise to the debit-credit of EA, and to the credit-debit of RA. A's domestic economy is debited because the payment in favour of A's reserves is carried out on its behalf, and it is simultaneously credited because it gives up its deposit of *x* billion dollars with R's banks. A's official reserves are credited, since EA's payment is addressed to them, and they are debited because of their 'purchase' of a new bank deposit formed in R's banks. Since it is indifferent whether the payment of RA is first addressed to EA or it is directly carried out in favour of A's official reserves (for in both cases the credit payment of RA is the one resulting from the disposal of EA's foreign bank deposits), let us retain the credit-debit of RA only. If we consider the monetary flows involved in the payment of RA, we observe that, as was previously the case for EA, an inflow of *x* billion dollars is matched by an outflow of exactly the same amount. Everything seems therefore to work smoothly, no difference being apparently detectable between outflows and inflows. Now, in order to establish whether this is indeed the case, we have to consider the monetary outflows and inflows for country A taken as a whole, that is, for the set of EA and RA.

*The debiting of A's domestic economy and the debiting of A's official reserves define a total outflow of 2*x *billion dollars*

What has to be established is whether, for country A taken as a whole, the outflow of *x* billion dollars defined by the debit of its domestic economy adds up to the outflow of *x* billion dollars defined by the debit of its official reserves or not. The question is clear cut, and the answer straightforward: the two debits, one imposed to A's domestic economy, and the other to A's reserves, are distinct and separate (they are even separated in time); since each of these debt payments is the 'outflow' of *x* billion dollars from country A, the total outflow is of 2*x* billion dollars.

The credit of A's domestic economy and the credit of its official reserves define a total inflow of x *billion dollars only*

The first credit takes place when the IOUs 'sold' by A's domestic economy are 'purchased' by the rest of the world; the second credit occurs when EA's bank deposit with the banks of R is cancelled and a payment of *x* billion dollars is addressed to A's official reserves. If this credit adds up to the first credit of EA, we are faced with *two* distinct and separate credits, which, by adding one to the other, precisely match the two debits imposed on EA in the first place and on

country A (its reserves) in the second place. Yet, it is certain that it would be incoherent to consider the second credit as *additional* to the first, for it is only its pure and simple *reproduction*. Accounting-wise, tracking the transactions and their meaning is simple: EA is credited because of its export of IOUs valued at *x* billion dollars; the debt accompanying it (as per double-entry book-keeping rules) gives EA ownership of a foreign bank deposit valued at *x* billion dollars. It is exactly this very deposit that is destroyed on EA's request; the destruction by R's banks of the deposit of *x* billion dollars owned by EA gives rise to an equivalent credit in favour of EA, this credit is but *the reproduction of the credit initially obtained by EA as payment of its IOUs subscribed abroad*. The outcome is made to appear as if R's banks *freeze* the credit payment of EA during the period of time separating the payment of its export of IOUs from the instant this payment is credited to A's official reserves. It is only one and the same credit payment of EA that is concerned.

It is an ascertainable fact that the credit of which A's official reserves finally benefit is merely the reproduction of the credit payment initially aimed at A's domestic economy, since the export of IOUs whose value is equal to *x* billion dollars can only elicit a credit payment equal to *x* billion dollars. *If the credit payment of RA was to be added up to the credit payment of EA, then the same IOUs would be paid by R* twice, *thus doubling their value, which is absurd*.

The difference between A's outflows and its inflows defines a monetary deficit that is covered through an equivalent decrease in A's official reserves

Since its total outflows amount to 2*x* billion dollars while its total inflows are only equal to *x* billion dollars, country A suffers from a loss of *x* billion dollars, which takes the form of a decrease in its official reserves: RA loses at once the deposit of *x* billion dollars that it acquires when it is paid by the banks of R on behalf of EA. The final result of this state of affairs is highly pathological: *country A's external debt increases by* x *billion dollars, while the country obtains nothing as a 'counterpart'*. This is so not only because the newly borrowed foreign currency is nowhere to be found in A, either in its domestic economy or in its official reserves, which is consistent with double-entry book-keeping, but also because the bank deposit of *x* billion dollars obtained by RA is immediately swallowed up by the monetary 'black hole' formed by the difference between A's outflows and its inflows, which is totally anomalous.

Although well established on logical grounds, this conclusion might still be difficult to accept, or it might even be thought to apply only to the particular case we have analysed so far, the foreign currency borrowed abroad by EA being finally conveyed to RA. In order to dispel any possible doubt, it is opportune to briefly consider the case when the *x* billion dollars borrowed abroad by A's domestic economy (public and private sectors altogether) are used to finance EA's commercial imports from the rest of the world. This is done in Appendix 2.

Appendix 2. The 'sovereign debt theorem': case 2

As in the previous case, let us suppose that the domestic economy of country A obtains a loan of *x* billion dollars from R's residents in exchange for an equivalent sum of IOUs. This time EA does not exchange the *x* billion dollars for a sum of national currency of equal value, but uses them to pay for its imports of real goods and services. In terms of 'real' (as opposed to monetary) flows, the IOUs issued by country A's domestic economy and valued at *x* billion dollars are exchanged against a part of R's national output, also equal to *x* billion dollars. So far so good. *Yet, exchanges do not occur in the form of barter, but through monetary payments*. It is therefore necessary to consider the monetary flows implied in this transaction between A and R in order to verify if they are 'neutral' or if they are the source of an anomaly entailing a supplementary, pathological cost for A and/or R.

The first monetary flow is a circular and instantaneous 'movement' of money R (dollars in our example) from and to the banks of the rest of the world. In fact, R's banks credit the domestic economy of A with *x* billion dollars following EA's cession of equivalent IOUs to R, and debit the same EA following its acquisition of a bank deposit of *x* billion dollars. The result of this circular flow of dollars is the exchange between IOUs issued by EA, and a bank deposit formed into the banks of R.

The second monetary flow is also a circular impulse whose point of departure and arrival is the banking system of the rest of the world. When EA gives up its bank deposit, it is credited with *x* billion dollars by the banks of R, and it is simultaneously debited for the same amount because of the payment these banks carry out on its behalf. EA orders the banks of R to pay R's residents for their export of real goods and services; when the order is executed, EA's bank deposit is annulled, and EA is credited with *x* billion dollars. At the same time, EA is debited by the same amount, for it is on its behalf that the payment is carried out. Through this second circular flow of dollars, EA gives up a bank deposit and acquires part of R's national output.

Considered independently, these two monetary flows do not show any anomaly. Is that still the case even when they are taken together? If this were so, country A's increase in debt, due to the cession of IOUs issued by A's domestic economy to the rest of the world, would be matched by its imports of goods and services from R, and that would be it. In the absence of a system of international final payments, however, we cannot assume axiomatically that no monetary disorder can arise to upset the final result of the transaction. In fact, when A's total inflows are compared to A's total outflows a discrepancy appears, which the present non-system of international payments cannot account for and which entails a pathological duplication of A's external debt.

The criterion by which monetary flows have to be assessed is as follows: are the debit payments of country A as a whole equal to its corresponding credit payments?

- If the answer is *yes*, we will have to conclude that monetary flows are perfectly neutral, and that nothing alters the exchange between country A's IOUs and R's national output.
- If the answer is *no*, in particular if the debit payments of country A exceed its credit payments by *x* billion dollars, we will be forced to admit that even when used to finance commercial imports, foreign loans entail a pathological reduction in the official reserves of the borrowing country.

Let us consider the debit payments and credit payments of country A in detail.

Debit payments of country A: monetary outflows

The domestic economy of country A is initially debited by the banks of R with *x* billion dollars, because of its acquisition of an equivalent bank deposit. Then EA is again debited for *x* billion dollars when the banks of R pay for its commercial imports. There can be no doubt that the two debit payments add up to one another, since they are distinct events concerning two distinct transactions. On the whole, the domestic economy of country A is therefore subjected to a total debit of 2*x* billion dollars, which is the amount of A's outflows of foreign currency.

Credit payments in favour of country A: monetary inflows

The domestic economy of country A is initially credited by the banks of R, yet the final beneficiary of the credit is not EA, but the residents of R who export their goods and services to A. In other words, A's domestic economy finally relinquishes to the benefit of R the credit payment initially addressed to it. It does so by asking the banks of R to pay for its commercial imports. The credit payment is thus 'diverted' from its initial destination (EA) and conveyed to the foreign sellers of commercial goods and services. It becomes clear that the second credit payment of EA, which takes place at the moment EA gives up its deposits of *x* billion dollars, is nothing else than the reproduction or replication of the first credit payment.

The addition of the credit payment addressed to EA, because of its cession of IOUs, to the credit payment accompanying the destruction of its bank deposit, obtained in exchange for its IOUs, would amount to an unacceptable 'double-deployment', that is, to counting of the same inflow twice. The IOUs given by EA to R are equal to *x* billion dollars, and not to twice this amount. Hence, country A (its domestic economy) benefits from a single inflow of *x* billion dollars: the replication of the inflow of dollars occurring when EA's bank deposit is cancelled out does not define a *new* inflow of foreign currency to the benefit of A. Hence:

$$\textit{excess outflow of dollars} = \textit{outflows} - \textit{inflows} = 2\text{x}\ \textit{billion dollars} - \text{x}\ \textit{billion dollars} = \\ = \text{x}\ \textit{billion dollars}$$

The difference between foreign currency outflows and inflows defines a monetary deficit, which is necessarily covered through a decrease in A's official reserves. A foreign loan of *x* billion dollars leads inevitably to a total increase in A's external debt equal to 2*x* billion dollars: *x* billion dollars are due to the disposal of IOUs by A's domestic economy, and *x* billion dollars result from the loss of official reserves suffered by country A.

Annexe 1

Evolution of the gross external debt of France, Germany, Italy, Spain, and the United Kingdom as a percentage of GDP, 2002-2011

Evolution of gross external debt position in terms of current USD-GDP (France, Germany, Italy, Spain, United Kingdom), as a percentage (%)					
	France	**Germany**	**Italy**	**Spain**	**United Kingdom**
2002	119	137	92	103	–
2003	128	137	96	111	291
2004	139	138	95	118	306
2005	143	129	94	119	324
2006	169	145	113	146	378
2007	187	154	120	160	401
2008	172	142	104	146	343
2009	197	155	121	173	433
2010	199	159	119	165	432
2011	201	155	120	167	396

Source: data elaborated from The World Bank (2011) *World Development Indicators & Global Development Finance*, databank.worldbank.com (accessed December 2011) and International Monetary Fund (2011) *World Economic Outlook Database*, September 2011 edition, www.imf.org (accessed December 2011)

Annexe 2

Amounts of the justifiable increase in external debt of France, Germany, Italy, Spain, and the United Kingdom, 2002-2010

Monetary Discrepancies, FRANCE (2002-2010)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Foreign direct investment, net (BoP, current bn USD)	**Portfolio equity, net inflows (BoP, current bn USD)**	**Current account balance (BoP, current bn USD)**	**Total reserves (includes gold, current bn USD)**	**Gross external debt position (bn USD)**
2002	-1.045	-4.369	18.007	61.697	1,726.658
2003	-10.316	20.708	12.860		
2004	-24.074	31.772	11.030		
2005	-28.829	64.149	-10.260		
2006	-39.576	94.047	-12.988		
2007	-68.781	-10.371	-26.610		
2008	-93.405	-18.099	-49.877		
2009	-67.961	75.139	-39.866		
2010	-50.722	-8.442	-44.499	165.852	5,091.260
TOTAL		**-140.175**	**-142.203**	**104.155 (variation)**	**3,364.602 (variation)**

2002-2010
Currency inflows: 0
Financing requirements (= increase in total reserves + current account deficit + FDI + PEF): 386.533
Justified increase in external debt stocks: + 386.533

Monetary Discrepancies, GERMANY (2002-2010)

	(1) Foreign direct investment, net (BoP, current bn USD)	(2) Portfolio equity, net inflows (BoP, current bn USD)	(3) Current account balance (BoP, current bn USD)	(4) Total reserves (includes gold, current bn USD)	(5) Gross external debt position (bn USD)
2002	33.978	13.816	41.105	89.142	2,749.856
2003	25.780	25.234	46.930		
2004	-29.764	-7.882	128.000		
2005	-30.483	22.064	140.615		
2006	-62.571	35.659	182.675		
2007	-91.142	76.961	249.096		
2008	-76.447	-65.476	228.115		
2009	-39.056	11.985	188.631		
2010	-60.189	-1.991	188.373	215.978	5,217.014
TOTAL		**-219.524**	**1,393.540**	**126.836 (variation)**	**2,467.158 (variation)**

2002-2010
Currency inflows (= current account surplus): 1,393.540
Financing requirements (= FDI + PEF + increase in total reserves): 346.360
Justified increase in external debt stocks: -1,047.180

Monetary Discrepancies, ITALY (2002-2010)

	(1) Foreign direct investment, net (BoP, current bn USD)	(2) Portfolio equity, net inflows (BoP, current bn USD)	(3) Current account balance (BoP, current bn USD)	(4) Total reserves (includes gold, current bn USD)	(5) Gross external debt position (bn USD)
2002	-2.548	-6.268	-9.369	55.622	1,116.957
2003	7.551	-2.014	-19.407		
2004	-2.457	17.183	-16.455		
2005	-21.144	2.631	-29.744		
2006	-3.471	13.558	-47.828		
2007	-52.076	-14.873	-51.574		
2008	-79.002	-29.015	-66.252		
2009	-3.177	20.902	-41.004		
2010	-10.784	3.826	-71.229	158.478	2,435.220
TOTAL		**-161.178**	**-352.862**	**102.856 (variation)**	**1,318.263 (variation)**

2002-2010
Currency inflows: 0
Financing requirements (= increase in total reserves + FDI + PEF + current account deficit): 616.896
Justified increase in external debt stocks: + 616.896

Monetary Discrepancies, SPAIN (2002-2010)

	(1) Foreign direct investment, net (BoP, current bn USD)	(2) Portfolio equity, net inflows (BoP, current bn USD)	(3) Current account balance (BoP, current bn USD)	(4) Total reserves (includes gold, current bn USD)	(5) Gross external debt position (bn USD)
2002	6.340	2.810	-22.239	40.303	708.055
2003	-3.152	-3.649	-30.885		
2004	-36.712	10.918	-54.865		
2005	-17.349	-9.573	-83.388		
2006	-72.311	-24.005	-110.874		
2007	-72.863	15.595	-144.540		
2008	3.926	-2.489	-154.529		
2009	0.233	9.179	-75.309		
2010	4.102	-4.790	-64.342	31.872	2,316.691
TOTAL		**-194.150**	**-740.971**	**-8.431 (variation)**	**1,608.636 (variation)**

2002-2010
Currency inflows (= decrease in total reserves): 8.431
Financing requirements (= FDI + PEF + current account deficit): 935.121
Justified increase in external debt stocks: + 926.690

Monetary Discrepancies, UNITED KINGDOM (2003-2010)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	Foreign direct investment, net (BoP, current bn USD)	**Portfolio equity, net inflows (BoP, current bn USD)**	**Current account balance (BoP, current bn USD)**	**Total reserves (includes gold, current bn USD)**	**Gross external debt position (bn USD)**
2003	-38.025	32.609	-30.002	39.550	5,406.413
2004	-36.612	3.594	-45.415		
2005	96.615	12.452	-59.406		
2006	68.497	-18.343	-81.98		
2007	-126.017	34.458	-71.079		
2008	-69.640	70.908	-41.159		
2009	30.060	78.845	-37.050		
2010	36.280	3.599	-71.604	82.365	9,714.329
TOTAL		**179.280**	**-437.695**	**42.815 (variation)**	**4,307.916 (variation)**

2003-2010
Currency inflows: 179.280
Financing requirements (= increase in total reserves + current account deficit): 480.510
Justified increase in external debt stocks: + 301.230

Source: data elaborated from The World Bank (2011), *World Development Indicators & Global Development Finance*, databank.worldbank.com (accessed December 2011)

In the case of Germany, the surplus of its current account vastly exceeds its financing requirements as measured by the deficit of its foreign direct and portfolio investments (–219 billion dollars) and by the increase in its official reserves (127 billion dollars). This clearly means that, from 2002 to 2010, Germany's external debt should have *decreased* by 1,047 billion dollars. France, Italy, Spain, and the UK have run a current account deficit, which, together with the deficit of their net foreign direct and portfolio investments (with the exception of the UK), and the increase in their official reserves sets the amount of their respective, *justifiable* increase in external debt.