Leaving the euro: *A practical guide*

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by Capital Economics

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1 INTRODUCTION

1.1 Our approach to the question

This is a practical document designed to answer the question:

If member states leave the Economic and Monetary Union, what is the best way for the economic process to be managed to provide the soundest foundation for the future growth and prosperity of the current membership?

Accordingly, each of the main sections concludes with recommended actions, which are then brought together at the end of the paper in a step-by-step plan.

We interpret 'leaving Economic and Monetary Union' to mean withdrawal from the most important element of the third stage of EMU, the euro. Euro withdrawal is theoretically straightforward but practically treacherous. Over the years, much work has been done on the economics of devaluation and of currency redenomination. Moreover, there is a wealth of experience of both of these in practice. There is even experience of the break-up of monetary unions.

From this combination of theoretical knowledge and practical experience you can distil what can be regarded as an established orthodoxy. It should not be lightly dismissed. It is the established orthodoxy for a reason: it happens to be broadly right. To address the issues surrounding the break-up of the euro, therefore, we believe that we should not seek out some novel or clever "solution" to the euro issue. Rather, the task requires careful application of the lessons of both theory and historical experience to the specifics of the euro.

Even so, the established orthodoxy is not the end of the story. The financial markets are now both more important and more integrated than they were in supposedly similar episodes in the past. And the euro is a much more important currency than the subjects of previous monetary union break ups.

The euro-zone accounts for 13% of global GDP, a far bigger share than the 5% or so of the worst-affected Asian countries during the 1997-98 crisis. And the dollar-euro is by far the most active currency pair, comprising 28% of all trades.

These factors mean that we cannot blithely assume that a euro break-up, or even the departure of a single member, would be childishly easy, along the lines of some past monetary break-ups, or currency devaluations.

Furthermore, the euro comes with legal complications. It is unique in being a currency without its own government. It is the common international currency of the EU, but some EU member states do not use it, and the group that does use it can change. The legal aspects figure much larger in any euro-zone break-up than in previous break-ups of monetary unions. Indeed, some commentators have been so impressed by the legal identity of the euro that they have thought break-up impossible. The countries of the euro-zone, they remind us, have joined an "irrevocable" union.

This is less conclusive than it seems. Before and during the short life of the euro, several things have been done which are of questionable legality. Indeed, in Germany there was a constitutional challenge to the establishment of the euro, while many have queried the legal grounding for some of the monetary operations of the ECB. But the philosophy of the authorities seems to have been that when needs must, legal qualms can be laid aside. Nor does the word "irrevocable" have a legal meaning which rules out an end to the arrangement in all circumstances.[1]

In affairs of state, "irrevocability" has often proved to be anything but. Although it did not use the word "irrevocable", when Great Britain united with Ireland, the Irish Act stated:

"...the kingdoms of Great Britain and Ireland shall, upon the first day of January which shall be in the year of our Lord one thousand eight hundred and one, and for ever after, be united into one kingdom, by the name of "the United Kingdom of Great Britain and Ireland.... "

This Act did not stop civil war in Ireland in the years immediately following the First World War over the subject of secession, nor the subsequent split between southern and northern Ireland, which continues to this day, such that Great Britain is manifestly not united with Ireland.

In the case of the euro, hopefully, solving the problem of an indissoluble union that needs to break up will not involve violence, let alone civil war. A legal problem can surely be made to yield to a legal solution.

Yet any clever solution to the legal aspects of the euro issue must also resolve the fundamental economic problems. And when dealing with scenarios which may involve declines in output equal to, or greater than, those that occurred in the Great Depression, economics must trump law. The task of economists, policymakers and politicians faced with such scenarios is not to ignore the undoubtedly tricky legal issues, but neither is it to obsess about them as though only they matter. Rather, they must devise ways which ensure that legal problems pose the minimum possible barrier to the establishment of economic stability and prosperity across Europe.

Accordingly, our approach here is to draw on both established theoretical knowledge and practical experience to develop a plan for leaving the single currency which, acknowledging the unique circumstances of the euro, seeks to deal with the inevitable practical difficulties in a pragmatic manner.

What gives the euro issue its particular flavour and intense interest is not some theoretical nicety but rather the interplay between theoretical necessity and the demands of these practical issues. It is on that interplay that this essay seeks to make a helpful contribution to answering the Wolfson question.

1.2 The form of break-up

The euro was put together by agreement between its founding member countries. The grouping was then expanded by the voluntary accession of new members, with the agreement of the existing ones.

Taking the union apart would not necessarily be like this. There are several ways in which the currency union might split. *One* of these ways does amount to the same process as the one by which the currency union was forged in the first place – only in reverse. In this scenario, all the member countries decide to dissolve the euro and return to something like the *status quo ante*, with sovereign national currencies.

However, just because this is merely the reverse of the process used for construction does not make it easy. It would be the equivalent of unscrambling an omelette. The task of achieving this raises some fascinating questions which other break-up scenarios do not, including how you forge agreement between the member countries on the terms of the dissolution, how you do this in secret, and if, by contrast, the negotiations are conducted in the open, how you prevent this from causing financial collapse.

Equally, the nature of the solution is likely to be quite individual. If you assume that all countries want the union dissolved, and that they can agree on the fundamental issues concerning relative prices which will affect their relative prosperity, then so many of the different economic and practical questions which bedevil other forms of break-up dissolve. Indeed, the issue condenses into a technical puzzle.

Unravelling it can be a fascinating exercise – but it is relevant to only one break-up scenario. Moreover, this appears not to be the break-up scenario envisaged by the question posed for Wolfson Prize contestants: “If member states leave the Economic and Monetary Union” is not the same thing as “If all member states agree to dissolve the Economic and Monetary Union”.

Furthermore, mutually agreed dissolution is just about the least likely of all possible break-up scenarios. There isn't a widespread desire throughout the union to dissolve the euro. Rather, there is substantial pressure on particular countries to leave it. It would seem extraordinary for the other members who wish to keep the euro to undergo all the costs of adjustment just to accommodate a minority of members – or perhaps only one member – which wants to leave. Accordingly, for any of those countries which want to leave the euro, and are daunted by the practical and legal issues which this would entail, it is hardly helpful to be told: "first secure the agreement of all other euro members to dissolve the single currency". This would be rather like the Irishman who, when asked the way to Cork, replies, "I wouldn't be starting from here."

So, in what follows, we pay no more attention to this interesting, but only marginally relevant, scenario, and instead concentrate on the situation facing individual member countries which want to leave the euro, while the other member countries wish to continue with it. Such an exit may take place in the teeth of opposition from the other members, or with their active co-operation and encouragement. Our central case is one where a country leaves rather than is pushed, but at various points we consider the differences between the case where it leaves messily, accompanied by ill-feeling, and where it leaves with the blessing of the other members. We also briefly consider other forms of break-up.

1.3 The plan of this essay

How the process can best be managed depends critically upon the nature of the economic problems faced by the current members and how these problems could be tackled by leaving the euro. Accordingly, the essay begins with a section which sets the scene by briefly laying out these factors. This section includes a brief discussion of some key theoretical issues, although (as elsewhere in the paper) the most detailed material is left to appendices.[2] It sets out a framework for thinking about exit from the euro as two distinct events: the adoption of a new currency, requiring the redenomination of domestic wages, prices and other monetary values; and a change in the external value of that currency on the foreign exchange markets.

To avoid tedious duplication which would result from examining every conceivable type of break-up, our approach is to conduct the analysis in regard to the issues thrown up by a weak country leaving. We then examine the position that this puts strong countries in and their likely response in section 2.4. In Appendix 5, we briefly discuss how far these problems would be significantly different if it were a strong country that left the union.

To keep the drafting simple, we assume that Greece is the weak country that is first to leave, and that its new currency is called the drachma. Similarly, we use 'peripheral countries' to describe those vulnerable members which are sometimes referred to by others as the PIIGS (Portugal, Italy, Ireland, Greece and Spain). But when we refer to 'Greece' this should be taken as shorthand for any, or all, of these peripheral countries. Similarly, when we refer to the 'drachma', this should be taken to refer to the new national currency of any country exiting the euro, or all of them.

The rest of the document is divided into four sections, each with specific policy recommendations. The first considers some of the political and legal practicalities of the decision-making and the implementation process itself; the second is focused on the practical issues raised by the redenomination;

the third section is about devaluation; and the fourth assesses the implications for those countries remaining within the monetary union.

The paper concludes with a summary of the practical steps that should be taken to manage the process of leaving the euro and an indicative timetable.

2 THE LOGIC AND STRUCTURE OF EURO BREAK-UP

2.1 Why the euro-zone needs radical economic adjustment, and the case for break-up

The predicament of the euro-zone is both financial and economic. The financial element centres on debt. Several countries have public debt burdens which are unsustainable. In some cases, private debt is also overwhelming. Meanwhile, excessive debt in the public and/or private sectors threatens the stability of the banking system.

The economic problem is that whereas monetary union was supposed to bring convergence, in several members costs and prices continued to rise rapidly relative to other members of the union, and indeed the outside world, thereby causing a loss of competitiveness. This resulted in large current account deficits and the build-up of substantial net international indebtedness. Often it is the same countries that suffer acutely from both the financial and economic problems.

As a result of poor competitiveness and/or the burden of excessive debt, several members of the euro-zone suffer from a chronic shortage of aggregate demand, which results in high levels of unemployment. This worsens the debt position of both the private and public sectors, thereby weakening the position of the banks. Meanwhile, other countries enjoy current account surpluses, often accompanied by more favourable debt positions in both the public and private sectors. Moreover, the favourable position of the surplus countries is partly the direct result of the weaker members' loss of competitiveness.

Clearly, the financial and economic aspects of the crisis are closely inter-twined. Full adjustment for the euro-zone and the establishment of stability for both the member countries and the rest of the world requires that both these problems be addressed.

These problems confronting the euro-zone make its plight look much like an old fashioned balance of payments crisis under a fixed exchange rate system, such as the Gold Standard. Moreover, just as under that system, the burden of adjustment falls completely on the debtor countries, which are forced to cut spending. The system therefore has a deflationary bias.

Central to the analysis of the economic problem is the interplay between competitiveness and domestic demand. All of the troubled countries of the euro-zone unambiguously need a depreciation of their real exchange rate to achieve both balance on external trade and full employment with stable inflation. Whether they also need higher or lower domestic demand is not clear *a priori*, although in the case of Greece and Spain, their economies are so depressed that it is likely that they *do* need an increase in domestic demand. Of course, the scope to deliver such a boost is limited both inside and outside the euro. But outside the euro there might be some scope through the operation of quantitative easing. Moreover, the higher inflation unleashed by devaluation would reduce real interest rates and thereby tend to boost spending.

Germany and several of the smaller core countries unambiguously need a rise in their real exchange rate to achieve these two objectives. But they would also need an increase in domestic demand to offset the loss of aggregate demand from lower net exports. (See Appendix 2 for a fuller discussion.)

Nominal and real flexibility

It is possible to lower the real exchange rate through either exchange rate depreciation or domestic deflation. Indeed, if nominal prices and wages were perfectly flexible downwards, these would be equally effective. But if real wages and prices were perfectly *inflexible* downwards, devaluation would do no good: a lower nominal exchange rate would be exactly offset by higher domestic wages and prices, leaving the real exchange rate unchanged. So what makes the case for devaluation – or in this case, leaving the euro – is the combination of nominal downward wage inflexibility and real wage flexibility.

If the troubled peripheral economies of the euro-zone were able successfully to deploy this adjustment mechanism then they would not only improve their own GDP outlook but would also help to allay concerns about the long-term sustainability of their debt situation and, in the process, perhaps bolster the long-term stability of the 'core' countries as well.

But devaluation carries clear downsides and dangers. History is littered with examples of devaluations that have failed or even brought chaos — such as those in Argentina (1955, 1959, 1962 and 1970), Brazil (1967), Israel (1971) and numerous others, as well as those that have brought a form of solution, e.g. the UK in 1931 and again in 1992.

Equally, though, it is otiose to compare the difficulties that would face a country that leaves the euro-zone with an assumed sylvan path if she stays in. For all the peripheral countries, continued euro membership seems bound to bring continued economic hardship, accompanied by a significant risk, or in some cases the inevitability, of default. So it is a choice between evils.

What would make the difference between success and failure, and what steps could the government of a peripheral euro-zone member take to ensure success rather than failure? This paper will try to answer these questions.

The austerity solution

The attempt to work down the debt burden and regain competitiveness through austerity – i.e. the reduction of aggregate demand through public expenditure cuts and/or tax rises – is fraught with difficulty. It reduces demand both at home and abroad. Countries pursuing this policy risk finding that they are pedalling ever harder to remain in more or less the same place, that is to say, although GDP may be lower, the public sector deficit may not be.

Of course, austerity may bring increased competitiveness through the process of internal deflation, that is to say, falling wages and prices. Depreciation of the exchange rate, which in this case requires leaving the

euro, only makes sense if the economic outcome is superior to whatever can be achieved under internal deflation. This is by no means certain *a priori*.

There are recent examples of countries — e.g. Singapore, Latvia and Ireland — successfully cutting wages and prices. Often this has occurred as the result of direct government action to reduce public sector wages and charges and to influence private sector wages and prices lower.[3]

But this evidence does not make a strong case that deflation would work well in the euro-zone. In Singapore, the strategy relied on exchange rate depreciation as well as internal deflation, in an economy already benefiting from sustained high rates of productivity growth. Latvia's 'successful deflation' coincided with a fall in output of about 24%, and a rise in unemployment to just over 20%. Moreover, when recovery came, net exports contributed little or nothing, thereby undermining the argument that a successful internal devaluation was at the root of recovery. And the euro-zone's own deflation poster-boy, Ireland, has recently slipped back into recession, its debt problems are intensifying and its ratio of government deficit to GDP is still about 10%.

In addition, even if price deflation were relatively rapid and could occur without a substantial slump in real output, it would still suffer from a significant drawback: it raises the real value of debt and thereby worsens the financial problem, which both intensifies downward pressure on aggregate demand and exacerbates the fragility of the banking system. Furthermore, because there is a lower bound to nominal interest rates, deflation raises real rates. And it redistributes wealth from debtors to creditors — from those with a higher marginal propensity to consume to those with a lower propensity. So the objective of improving competitiveness through deflation is at odds with the objective of reducing the debt burden and reviving the economy.

Nor do "reform" and attempts to raise productivity offer a viable way out, desirable though they are for other reasons. For a start, raising productivity growth is notoriously difficult. If a government were to succeed in raising it by ½% per annum, that would count as a miracle. Yet at ½% per annum, it would take decades for the benefits of reform to counter a competitiveness

gap of 30-40%. Moreover, without some offsetting monetary change, for any given rate of growth of wages, faster productivity growth would work by bringing about weaker growth of prices. This would therefore run into all the problems of deflation discussed above.

Interestingly, as Table 1 shows, Germany's success in the competitiveness stakes has not been won by securing particularly rapid increases in productivity. Indeed, its productivity growth has been average – and lower than Greece. Of the peripheral countries, only Italy has had poor productivity performance. The peripherals' weakspot (and the source of Germany's strength) has been not productivity growth but wage growth.

This lays bare the importance of monetary and price phenomena in a monetary union. It is not that exchange rate changes can wave a magic wand over a country's real deficiencies, but rather that, when nominal values have got seriously out of line with the fundamentals, the scale of the adjustment is utterly beyond what any real improvements can achieve. Nominal disequilibrium requires a nominal solution.

Table 1: The sources of unit labour cost performance, average % y/y, 1999-2011

Country	Wages	Productivity	Unit Labour Costs
Germany	1.8	0.9	0.9
France	3.5	0.7	2.8
Italy	3.3	0.0	3.4
Spain	5.0	0.7	4.3
Neths	4.0	1.1	2.9
Belgium	3.9	0.7	3.1
Austria	3.2	1.1	2.1
Greece	6.1	2.1	3.9
Ireland	6.0	1.9	4.1
Finland	4.2	1.3	3.0
Portugal	3.7	1.1	2.6
Euro-zone	3.5	0.7	3.1

Source: Eurostat

The merits and demerits of currency depreciation

For countries afflicted by the twin problems of excessive debt and uncompetitiveness, leaving the euro and letting their new currency fall offers a potential way out. If successful, it would help support an economic

recovery through increased net exports, while not increasing the burden of debt as a share of GDP through domestic deflation. It might also allow some further expansion of domestic demand (through quantitative easing and lower real interest rates), which is probably necessary for full employment.

Mind you, there would be some disadvantages to take account of. Exiting the euro would lead to losses from increased transactions costs and currency volatility. (We briefly discuss these in Appendix 3.) There are also some possible losses if the exiting country were forced to leave the EU. Mind you, not only do we think such an outcome unlikely but we also believe that if it were to happen the losses would be comparatively small. (See Appendix 4.)

And there are some important limitations. The whole point of devaluation – or indeed other methods of improving competitiveness – is to alter relativities. If all prices, wages and other money values went up *pari passu* then nothing would be achieved. In practice, this would simply amount to a pure redenomination – swapping *pengos* for *pongos*.

There are two relativities that might need to be shifted: the relation between overseas and domestic costs and prices; and the value of debt relative to current production. Under certain conditions, it would be possible to reduce the latter by engineering or tolerating a high rate of inflation. This might be set in train by a lower exchange rate or, at least, a lower exchange rate could be an integral part of the inflationary process. With regard to the objective of reducing the debt burden, therefore, if the exchange rate falls, it is most helpful if increased inflationary pressure spreads throughout the economy, thereby raising nominal values by the maximum possible extent.

By contrast, securing the objective of increased competitiveness depends upon the full inflationary impact of devaluation **not** being passed through the system. If it is, there will be no improvement in competitiveness and the devaluation will fail.

In the case of the euro-zone, vulnerable countries face both a lack of competitiveness and a huge overhang of debt. But euro exit, on its own,

cannot address both, or rather, to the extent that it addresses one, it doesn't address the other. A successful devaluation which left a lasting impact on competitiveness would depend upon any inflationary upsurge being kept in check. So even if inflation were a viable and successful way out of the debt problem (which is itself debatable) the need to improve competitiveness rules it out. This means that excessive debt would need to be addressed by other means.

Devaluation and default

Leaving the euro would almost certainly result in some form of default. For most developed countries which devalue this is not a problem because their governments normally borrow in their own domestic currency. Accordingly, when their currency depreciates there is no change in the value of their debt or in the government's ability to service and repay it. This is the position of the United States and the UK, for instance.

But in most of the emerging markets, by contrast, governments can only borrow on international markets in foreign currencies, usually the dollar. This means that when they devalue, the value of the debt rises in terms of domestic currency. Putting this the other way round, when they devalue, the value of their GDP and their tax revenue falls when expressed in foreign currency. For this reason, it is common for emerging markets to default when their currencies experience sharp drops.

This is the position that a country leaving the euro would be in. As the exchange rate fell, the ratio of debt denominated in euros to domestic GDP, now denominated in drachma, would rise. Given the perilous position of the public finances, such an increase would not be acceptable. The choice would be between an explicit default and an implicit default, that is to say, simply to redenominate the debt into domestic currency.

Such a redenomination would prevent what would otherwise be a damaging surge in the debt to GDP ratio but it would not, of itself, reduce the debt to GDP ratio below what it was before the redenomination. This means that if the debt to GDP ratio was unsustainably high before the euro exit, it would still be unsustainably high afterwards.

Accordingly, it might well be advisable for the exiting country to default on a part of this debt explicitly, in order to reduce indebtedness to a sustainable level. This would be a suitable platform from which to borrow from the markets later and might help to boost confidence that the euro exit would eventually work to revive the economy.

But if this happens, such a default would not be the direct result of leaving the single currency. It would have been on the cards anyway. Moreover, even the implicit default created by the redenomination does not derive uniquely from redenomination itself but rather would be mirrored by an explicit default if there were to be an internal devaluation, i.e. domestic deflation. For that strategy would also lead to a rise in the debt to GDP ratio as domestic wages and prices (and the tax base) fell, while the nominal value of the debt was fixed. Only the timing of the increase in debt and the need to default would be different.

Indeed, because euro exit and depreciation would bring considerable economic gains, which would both reduce deficits (and therefore the rate of growth of debt) and increase GDP, the scale of any implicit and explicit default following a euro exit is likely to be smaller than if the country stayed in the euro. (See Appendix 20.)

In later sections we discuss both the likely inflationary response to a lower exchange rate (and how to manage it) and how to deal with the debt and default problem.

Is there a third way?

Is there some way of finessing the unattractive choice between internal and external devaluation? There are four leading candidates, which we consider (and reject) below.

1. Higher inflation in the core

One possibility is for the core members to inflate faster, while the peripheral countries maintained their current low inflation rate. But this would be difficult to engineer in a single monetary union. Moreover, if it

were possible to secure German support, it would surely be for only a small increase in core members' inflation. That would imply that the process would take decades.

2. Exit and rejoin immediately

Another touted possibility is that a country leaves the euro but it is known from the start that it will rejoin quickly; it spends a matter of hours, days or weeks outside the currency union, and then rejoins at a more competitive exchange rate. If achievable, this would be a clever trick which would effectively keep the country tied to the euro-zone but which would nevertheless allow a more or less instantaneous improvement in competiveness, as though it were not tied to the euro.

The fundamental problem with this idea is one of credibility and economic compatibility. What confidence could markets and, importantly, other members of the euro-zone have that, once tried, the trick isn't attempted again if the country becomes uncompetitive once more? Indeed, how would the authorities know by how much to devalue? And what would stop other countries from doing the same thing, or stop markets from believing that other countries would do the same thing? Far from solving the euro problem, recourse to such a clever 'technical' ruse would quickly cause the monetary union to become little more than a fixed exchange rate bloc, with all the attendant difficulties that such blocs experience, and then probably soon to disintegrate. Partly for this reason, the other members of the euro-zone would be highly unlikely to countenance such an arrangement.

3. Exit and rejoin much later

There is, though, another 'third way' solution: a country leaves the euro, with the intention of rejoining, but only after it has seriously 'put its house in order'. In this option, the country operates under a new national currency long enough to embed a lower real exchange rate, a low inflation culture and conservative fiscal habits — and then, after a suitable period of demonstrating that the changes are permanent, rejoins the currency union.

This is feasible. People do sometimes withdraw from clubs and then rejoin. Sometimes they even divorce and remarry the same partner. The barriers to it happening here are political rather than economic. Would the exiting country's electorate want such an outcome after everything they will have gone through? Would the rest of the euro members welcome back the prodigal son?

In any case, even if such an outcome were on the cards, it would not really constitute a separate case from the one considered at length in this paper, namely how a country can successfully and relatively painlessly exit the euro. After all, in order to be able successfully to rejoin, it has first successfully to exit, and to manage through the ensuing difficulties. Whether it can, would and should want to rejoin the euro is a subject which we can safely leave to one side.

4. Instant internal devaluation

Another possible clever solution is for the country to keep the euro as its currency, but to undertake a one-off adjustment to its prices and wages. This would, in effect, be an immediate 'internal devaluation'. By this we do not mean a normal internal deflation as prices and wages are dragged down painfully slowly by the forces of excess supply. The drawbacks of that option are analysed above. Rather, the idea here is of something akin to the instantaneous external devaluation which euro exit would bring. This would involve an internal redenomination and would achieve its results through the force of law rather than through gradual pounding by economic forces.

In essence, the government would decree that all domestic monetary amounts were to be reduced by a certain percentage, 10%, 20%, 30%, or whatever, including bank accounts, pension funds and mortgage obligations, as well as wages and prices.

The advantage of this option is that it enables a country to retain membership of the currency union. But it suffers from some of the disadvantages of ordinary deflation (although not the rise in real interest rates, since the price adjustment is instantaneous, and not the need to depress the real economy); it is legally troublesome; and it is likely to be

extremely unpopular as people feel that they have been cheated out of their own money. It is not accidental that instantaneous internal devaluation by fiat has not been tried in practice.

Of course, there have been more or less successful internal devaluations which have involved cuts in public sector wages and charges, e.g. in Singapore, Latvia and Ireland, which we discussed above. But these really amount to ways of speeding up the conventional deflation process rather than being part of an alternative "third way". In particular, the cuts were not imposed on all prices and wages across the whole economy and there were no enforced reductions in nominal wealth or debt obligations.

In conclusion, although it *might* be possible to make a full internal devaluation by fiat work, without any practical experience to rely on for support, any government which tried it as a way of achieving adjustment while staying in the euro would be taking a massive gamble. If it failed, as we suspect that it probably would, this would severely damage the government's credibility and in the process make the adoption of one or other of the conventional means of adjustment more difficult and more costly.

Simply to explore the workings of this proposal reveals the characteristics of internal and external devaluations which make them work – the plodding ineluctability of the one, and the dazzling (but dangerous) magic of the other. When push comes to shove, these are the only methods of adjustment on offer. The notion of some clever, technical third way that offers an escape from the nasty choice of external devaluation or internal deflation is a chimera.

2.2 A central scenario for break-up

Although we contend that a break-up of the euro is required to help unwind the structural imbalances within the currency bloc, there are numerous possible reconfigurations of the euro-zone. We consider these in Appendix 5. Analytically, the most straightforward case is the departure of a single country. At the other extreme lies a complete break-up in which all current member states return to national currencies. In the middle, a number of countries might exit, leaving behind a 'core' euro, or the euro-zone might split into two separate currency unions – perhaps a northern bloc and a southern bloc. Below we summarise our thoughts and conclusions on the different sorts of break-up and our analytical approach to how the varying possibilities are best dealt with.

Our analysis concludes that the economically optimal reconfiguration of the euro-zone would be the retention of a core northern euro-zone incorporating Germany, Austria, the Netherlands, Finland and Belgium. These countries have converged and they have compatible economic structures. They come close to being an 'optimal currency area'. France's economic credentials for membership of this group are less clear but, in reality, it appears likely that political considerations would dictate that it was also a member.

However, we do not subscribe to the idea that the peripheral economies should (or would) remain together in a southern euro. Their economic diversity, and mostly limited levels of trade with each other, suggests that the benefits of being able to set their own domestic policy and allow their exchange rates to float would outweigh those of continued exchange rate stability. From a more practical perspective, those countries would probably not want to continue to be closely associated with each other.

The euro could be reduced to something like the northern core through a process of the southern countries leaving, either individually or *en bloc*. This is similar to the scenario envisaged by Goodhart.[4] But it would be possible for the euro-zone to break up via the departure of the strong core economies to establish their own union. (See Appendix 5.) Moreover, this might reduce transition costs. It would mean that the stronger northern

economies, rather than the weaker southern ones, would bear the costs of leaving the currency union. More importantly, there would be less need for debtors in the weaker economies to default as they could continue to service euro liabilities in euros as their home currency. However intellectually compelling, this scenario looks unlikely as Germany and other core countries are not (yet) prepared to make the political decision to part with the single currency.

In terms of transition, there might be a case for a two-step process in which a group of countries leaves the union as a bloc and then individual countries peel off from the remaining rump one by one to re-establish national currencies. Countries might even peel off from the original departing bloc. There are all sorts of possibilities but we do not think that they are sufficiently different analytically to be worth separate consideration.

Leaving the euro would involve a combination of two distinct monetary events:

(i) a currency conversion and redenomination of domestic wages, prices and other domestic monetary values into a new currency; and

(ii) a change in the exchange value of that currency. In the case of a weak country, that change would be a depreciation.

It has to be both of these. There can't be devaluation alone because the euro can't be devalued against itself, and a mere redenomination into a new currency would achieve nothing. It would be like measuring the distance from Paris to Berlin in miles rather than kilometres. The numbers would be different but there would be no change in the spatial relationship between the two places.

Would there be anything to be gained from separating the two operations in time, i.e. redenominating the currency first and then depreciating the exchange rate later? This would be impossible. For a euro-zone member to introduce a new national money would be in effect to leave the euro. Moreover, once a new currency was in existence the markets would have it in their power to depreciate it, and they surely would do so.

2.3 Historical examples

Some economists claim that there are numerous historical examples of monetary break-ups which have involved both redenomination and depreciation and which therefore provide us with a template for how a euro exit or break-up should be done, and what consequences we should expect from it. Indeed, some argue that this experience demonstrates that the process should be relatively straightforward. Andrew Rose, for example, has listed 69 countries which he claims have left currency unions since the Second World War. He compares these countries to 61 others which remained continuously within currency unions and goes on to argue, on the basis of statistical analysis, that "there are typically no sharp macroeconomic movements before, during or after exits." [5]

On the face of it, this sounds reassuring for any government considering leaving the euro-zone. And it is true that in most of the cases Rose cites, new currencies were introduced successfully and without disruption. However, a closer look shows that the countries included in the study have little in common with the euro-zone. They are mostly small, post-colonial economies which used the currency of a larger neighbour or a colonial power. Many used currency boards which continued to issue their own currency but pegged it firmly to an "anchor" currency. What's more, few if any of these countries had large external or public debts and few, if any, had uncompetitive currencies. But it is these issues of debt and competitiveness which are the key problems faced by the euro-zone.

Another misconception is that something *called* a monetary union necessarily *is* a monetary union in the way that the euro-zone is. For example, members of the nineteenth century Latin Monetary Union – France, Belgium, Italy, the Vatican and briefly Greece – each maintained its own separate currency and central bank with power to issue banknotes. The currencies were linked only in the sense that they were all pegged to gold and silver at the same rate. The Latin Monetary Union broke down in the way that many fixed exchange rate systems collapsed, largely because of excessive fiscal deficits and monetary expansion in some of the member

countries. The Scandinavian Currency Union was a similar arrangement. (See Appendix 6.)

Useful historical comparisons

Three cases which have closer parallels to the euro-zone are the break-ups of the Austro-Hungarian Empire, the rouble zone and Czech-Slovak monetary union. Each of these consisted of two or more sovereign countries which shared a single currency for a short period after the political dissolution of a state.

These cases bring out a number of lessons for the euro-zone. For example, they highlight the importance of capital flows within the currency union *before* a break-up occurs. These capital flows have on several occasions forced governments to introduce a new currency sooner than they had intended – for example in Latvia in 1992 and the Czech and Slovak Republics in 1993.

These cases also suggest that countries will need to restrict the right to withdraw money from bank accounts and introduce capital controls to prevent capital flight or excessive *inflows* of currency seeking to benefit from redenomination and currency appreciation. They also provide additional evidence about the *mechanics* of creating a new currency – for example, the time taken to print new notes, the process of dividing central bank assets and the policies which can establish the credibility of a new currency after it is launched. We refer to these experiences where appropriate throughout this essay.

Nevertheless, the three cases listed above were all different from the euro-zone. In all three, the split occurred for political rather than economic reasons. In none of them was there a problem of competitiveness or a build-up of excessive debts between different parts of the currency union. So the cases we have mentioned so far can illuminate only one part of euro-zone break-up – the redenomination or introduction of a new currency – but not the thorniest issues, which concern devaluation and default.[6]

Moreover, in the historical examples of monetary break-ups, neither the old currencies, nor the new ones, were of great global significance. Nor was the financial system as large and inter-dependent as it is today. This means that these examples need to be treated with caution, with regard to both the type of problems encountered and their scale.

To gain an understanding of the process of devaluation in a country with high levels of external debt it is most helpful to consider not monetary break-ups but the numerous historical episodes of large-scale devaluation and external debt default by emerging economies, such as Argentina (2001/02), Russia (1998), Indonesia, Malaysia and Thailand (1997). In all these cases, the collapse of fixed or closely managed exchange rates triggered large balance sheet losses for many households, companies and banks, and in most cases also for the government.

Devaluation was followed by private and public bankruptcies and a steep fall in incomes. However, the change in relative prices which resulted from devaluation also restored the competitiveness of exporters and producers of tradables more generally. This in turn generated an improvement in the current account balance. The crisis also usually had a cathartic effect on the domestic economy, allowing credit conditions to ease. In many cases, there followed a period of rapid output growth. There are numerous useful parallels from these cases which we draw on during this essay.

Legal problems

The combination of the two phenomena of currency redenomination and devaluation does give rise to a set of problems which do not exist in either pure redenomination or devaluation: i.e. legal difficulties. These do not arise in the case of a pure redenomination or currency conversion because no one loses from this process. It is a simple matter to declare that 100 *pengos* equal one *pongo*. Similarly, they don't arise in the case of straightforward devaluation because although there are people who do lose from the change (as well as some who gain) that is their risk. They made a contract in a certain currency, *pengos*, and if there are now more *pengos* to the dollar then there is nothing more to be said. We examine the legal issues surrounding euro exit in Section 3.2.

2.4 Winners and losers

If a country leaves the euro there would be bound to be winners and losers. How well a departure worked out after the event, and whether it seemed practical or desirable in advance of it, would depend partly on how extensive these redistributions were, how damaging, and what could be done to alleviate or offset them. (We discuss the issue of possible compensation in Section 5.6.) Incidentally, one clear group of winners would be the lawyers. As always! Amusingly for euro-sceptics, the leading beneficiaries would be overwhelmingly based in London. (See Appendix 7.)

In thinking about the redistributive effects, we have to face an important difficulty: it can sometimes be unclear who the winners and losers are. Specifically, the question has to be: winners and losers compared to what? One possible answer is "compared to the situation ruling immediately before the euro exit." And we can indeed make some headway on this basis.

Yet this procedure will not give a wholly satisfactory answer. Indeed, it may be downright misleading. Economic affairs are dynamic and asset values are not always transparent. Suppose that before euro exit a person has an asset (say a bank deposit) whose nominal value is 100. And suppose that after euro exit there is a bank default or currency redenomination which reduces the value of their deposit to 50. Superficially, the scale of loss is clear: 50. But suppose that continuing in the euro would have meant that default by banks would have reduced the deposit's value to 40. In that case, euro exit would have produced a *gain* for the depositor of 10.

This is problem of "the counter-factual". Trying to estimate gains and losses compared to what would have happened can potentially lead to umpteen different answers, as it is obviously unclear quite how things would pan out in the euro-zone without some countries leaving. (See Appendix 8.) In Table 2 we lay out our analysis of winners and losers relative to the *status quo ante*, interpreted straightforwardly, but in the text below we comment on how different this redistribution could look on a different interpretation of "the counter-factual".

Table 2: Winners and losers from Greece leaving the euro and redenominating domestic debts and assets.

Losers	Winners
Holders of all euro-denominated fixed price assets in Greece, including bonds and bank deposits. This could include the ECB.	Foreigners owing euro-denominated debt to Greek banks, including mortgages.
Greeks with net euro-denominated debt receiving Greek income, now received as drachma. This applies mainly to firms and banks.	Greeks holding net wealth outside Greece, in euros, or any other currency, or euro cash but living in Greece, and spending money, now in drachma. This applies mainly to households.
Greek companies and households buying goods or services originating outside Greece, or which are produced domestically but are in competition with goods and services produced outside Greece (tradeables).	Greek companies selling goods and services outside Greece, or inside Greece in competition with goods and services produced outside Greece (tradeables). (Includes tourism.)
Exporters in the rest of the euro-zone (and indeed the rest of the world) who will now find the Greek market less profitable.	Importers of Greek goods and services in the rest of the euro-zone (and indeed in the rest of the world) who will now find Greek products and services cheaper (including consumers).
Workers in industries which use a high proportion of imported, or importable, goods or services who may now lose their jobs or suffer lower pay as a result of their employment being less profitable.	Workers in these industries, whose employment and income prospects improve.
People employed in other industries, who suffer a fall in real wages as price inflation rises above wage inflation.	Currently unemployed Greek workers who can now get jobs.
Retired people in general, and recipients of state benefits – unless these are increased in line with the increase in inflation.	Perhaps Greek holders of Greek equities and property, assuming that the economic outlook improves.

The devaluation and default will produce two sorts of loser in Greece – those whose capital is reduced by redenomination or default, and those whose real incomes are reduced by the higher inflation unleashed by the devaluation. Admittedly, the latter could be offset by real income gains enjoyed by those involved in producing tradeable goods and services. But given the current account deficit, and the likelihood of a deterioration in the terms of trade (i.e. a fall in the price of exports relative to imports) following upon the devaluation, the gains of the winners are unlikely to cancel out the losers' losses.[7]

Given this, how can leaving the euro bring an advantage for Greece? First, the assessment of capital losses could be thoroughly misleading. If Greece stayed in the euro there would in any case have to be defaults and/or bank failures which would damage wealth. Under the euro exit strategy at least Greece is able to offload some of the capital losses onto foreigners.

Second, the price changes which cause the immediate loss of real income should in time bring about a volume response: higher levels of net exports,

output and employment. These will take time to develop, but once there, they should continue year after year.

The most important beneficiaries of all, namely currently unemployed Greek workers, don't have an asset market on which their improved prospects can be registered. Their gains consist of the prospect of future income, in contrast to a presumed near-zero income if the present path continues (the counter-factual). Accordingly, a conventional totting up of winners and losers will tend to grossly underestimate the net gains.

Winners and losers outside Greece

If there was a net surplus of Greek gains over Greek losses, this could easily be mirrored by an excess of losses over gains in the rest of the euro-zone and/or the wider world. In that case, a Greek exit from the euro could readily be opposed by other countries as something that would redistribute income to Greece, while leaving overall welfare the same, or even lower.

But on the other hand, there could be circumstances that would produce a net gain for the euro-zone – or the world – as a whole, even though some individual countries might be net losers. In some extreme cases, all countries might gain from a Greek exit, devaluation and default.

There are four ways in which a net overall gain might come about:

(i) In conditions where output is demand-constrained, the redistribution of incomes is towards people with a higher propensity to spend than those who lose out;

(ii) Ditto those who gain from the change in real capital values;

(iii) The decline in the real exchange rate of the weaker country releases it from a policy bind which is more serious than the position facing surplus countries after the change in the exchange rate (i.e. there is a policy asymmetry); and

(iv) The loss of competitiveness and attendant reductions in aggregate demand in the remaining euro member countries persuade them to take action to stimulate domestic demand.

In practice, the effect of the euro departure and devaluation of Greece on the German economy would be tiny since Greece is so small and the trade relations between the two countries minor. However, since in this study Greece stands for any or all countries that leave the euro, and since the direction of the effects would be the same whether the countries leaving were small or large, in what follows we analyse the effects of a Greek departure on the German economy without any further mention of the probably small magnitude of the effects.

The gain of competitiveness by Greece necessarily implies a loss by other countries (here referred to as "Germany"). In principle, the effects on them would be the opposite of the effects described above for Greece. Nevertheless, even within Germany, there would be net gainers – although, without other changes (discussed below), the country overall would usually be a net loser. German consumers would benefit from cheaper Greek exports (e.g. Greek holidays). German companies would be net losers. Because of this, the overall effect on German consumers could easily be negative once companies had adjusted to their loss of competitiveness by reducing their headcount and squeezing wages.

Certainly, the initial effect on overall German GDP should be negative. The only way this could *not* happen would be if the spending response of the gainers in Germany (consumers) exceeded the spending response of the losers (companies).

But much would depend upon how the German authorities responded to weaker German GDP. In some core countries, there remains scope for additional public borrowing to fund government current spending, investment and/or tax cuts. Finland and Luxembourg both have budget deficits (at 2% and 1% of GDP respectively) and levels of government debt (48% and 19% of GDP) well within the limits set out in the Maastricht Treaty. But for most members of the northern core, increased borrowing would be problematic. Other options are needed.

The second option is to use expansionary monetary policy. There is currently only limited scope for monetary expansion through reductions in interest rates. Moreover, concerns, especially in Germany, about the consequences of quantitative easing have left the European Central Bank unable to utilise the range of monetary policy instruments.

These arguments against quantitative easing would weaken, though, as countries left the single currency. With rates of unemployment continuing to rise across the euro-zone and CPI inflation well below two per cent, there is little to suggest that a well managed programme of quantitative easing would cause significant worries about inflation.

A third option is to loosen business regulations and introduce other structural market reforms to enhance market flexibilities, thereby increasing the attractions of investment and boosting business confidence, without the government necessarily spending more. Indeed, some types of reform might even save the government money over time. In Germany, reforms need to focus on boosting consumer spending. These might include relaxing restrictions on access to credit.

So the net result could be to maintain German GDP at the pre-Greek exit level (but with the balance shifted away from net exports towards domestic demand); to leave it lower; or even to increase it. If German GDP were maintained at the same level, then there would be an overall gain for the euro-zone as a whole because, *ex hypothesi*, GDP will have risen in Greece.

3 MANAGING THE DECISION

3.1 Secrecy versus openness

In theory, keeping a country's planned exit secret for as long as possible would help that country to minimise the disruptive effects likely to be caused by the disclosure of its plans to leave. Such effects might include: large capital outflows from the country as international investors and domestic residents withdrew their funds; associated falls in asset prices and increases in bond yields; runs on banks, perhaps causing a banking crisis; and negative effects on consumer and business confidence.

Together, these effects could make it more difficult for a country to leave the currency union in an organised and orderly manner. In addition, one key part of the transition to a new currency, namely the printing of new notes and the minting of new coins, takes organisation and time. If it were known that such preparations were going ahead, this would reveal that a redenomination and devaluation were in store and precipitate the dangerous consequences outlined above.

The disadvantages of secrecy

There are also some disadvantages associated with keeping exit plans secret. This would prevent a broader discussion and debate on the best way for a country to leave, which would probably result in a sub-optimal plan for exit.

It would also preclude or limit public involvement in the decision, potentially damaging the democratic process and leading to social and political unrest. There could, for example, be no referendum on the question. This might also preclude the possibility of a cross-party political consensus, hence weakening the new policy arrangements and reducing confidence among both the public and international markets that the new monetary framework would succeed.

Secrecy would also prevent or hinder firms and households from making plans and taking action to protect themselves against the negative consequences of a departure. Mind you, this is a double-edged sword. Knowledge of the change could precipitate actions which would be bad for the overall process (e.g. if they involved mass bank deposit withdrawals). Moreover, it might lead to increased speculation that other countries were secretly making plans to exit the euro, hence increasing market pressure on those countries and making a bigger, disorderly form of break-up more likely.

Would it be possible to keep a planned euro exit a secret?

In the case of the euro, keeping a planned exit secret would be much more difficult than in numerous historical examples, not least because so much would be at stake. (See Appendix 9.) Nevertheless, the early stages of planning could probably be undertaken in secret. Studies could be carried out by a small group of government officials or (although this is more risky) commissioned from other organisations on a confidential basis. Indeed this may already be happening.

This exercise would be akin to the preparation of government budgets and other policy measures such as interest rate changes, which are regularly known by a number of people beforehand (for example, advisors, authors, printers), and yet are still (mainly) kept confidential before release and publication.

However, there would be a clear danger that such plans would eventually become public or be ‘leaked’. The key would be to keep the number of people who knew as small as possible and the delay between decision and implementation fairly short. Preparations such as the printing of new currency would be difficult to keep secret. There have, after all, already been a number of rumours and stories in the media — albeit unsubstantiated — about Greece and other euro-zone countries printing new currencies.

What would be the consequences?

The implication of this is that measures such as capital controls and bank closures would probably need to be introduced at an early stage of the implementation process in order to limit the disruption associated with the disclosure that a country was planning to leave. Once these measures were in place, there would be the opportunity for a conversation with political leaders, officials, opposition leaders and key opinion formers, and time for both an explanation of why this was happening and how it was going to work. It would not be possible, however, to discuss the change in advance, or to seek endorsement of it.

3.2 Legal implications

The decision to withdraw from the euro would essentially be an economic and political one. Nonetheless, the exit would also raise a number of potentially serious legal problems. (In considering these, we have taken account of opinions published by leading legal practices and have benefitted from conversations with Nigel Ward (Ashurst LLP) and Philip Wood QC (Allen & Overy LLP) but the conclusions that follow are our own. Appendix 10 looks at the legal issues in much greater depth and Appendix 11 lists the legal sources that we have used.)

Does leaving the euro mean leaving the EU?

Despite much confusion on this point, there does not appear to be any insurmountable legal barrier to a country leaving the euro and remaining within the European Union (EU), even without the prior agreement of other member states. Nor is it absolutely necessary to be a member of the EU to benefit from free trade within Europe or to enjoy many of the non-economic benefits of closer European integration. But whatever the legal technicalities, we would expect a country like Greece to seek to remain within the EU even after exiting the euro, and we believe that this position would be endorsed by other members.

Legality of emergency measures

Even if euro exit is permissible, some of the emergency measures that a country might need to take alongside leaving the euro could still be in clear breach of EU laws. One immediate stumbling block is that any country that seeks to impose capital controls could be in conflict with its existing treaty obligations. After all, the free flow of people, goods and capital is fundamental to the EU. However, the EU Treaty (Article 59) does allow for the temporary imposition of capital controls for a period not exceeding six months, if approved by the Commission and the ECB and agreed by a qualified majority of states.

There would also be domestic legal issues to consider. A special session of Parliament might be needed to pass laws governing the exit. However, this would depend on the specific constitutional position in each country exiting the euro. In practice, many, if not all, of the necessary legal steps can probably be taken by the government and/or Head of State, via executive orders or decrees, or using powers under existing legislation.

In the case of Greece, for example, the President may be able to enact the necessary legislation using Article 44 of the Constitution. This allows the President "under extraordinary circumstances of an urgent and unforeseeable need" to take emergency measures on the recommendation of the Cabinet. Parliamentary approval would then only be needed retrospectively, with a grace period of up to 40 days.

Legal status of the new currency

An even bigger issue is the legal status of any new currency and the impact this would have on contracts which are originally specified in euros.

The principle of '*Lex Monetae*' states that everything which governs the currency of a country can legally be determined by the national government concerned. Major legal problems arise, however, because the euro is both the national currency of Greece, for now at least, and the common international currency of the EU as a whole. Hence, it may be uncertain whether any reference to the "euro" should be interpreted as meaning the national currency of Greece at the time that payment is due, and hence as the new drachma, or as the common international currency of the EU as a whole, in which case it would remain the euro.

As it happens, most sovereign debt is issued under local laws. (Greece has only recently become an exception, as transfer to English law was a condition of the recent debt restructuring.) In this case, an exiting government could simply redenominate its debt into the new currency at the official conversion rate, applying *Lex Monetae*. The government could also legislate to redenominate all private sector debt governed by local law from euros to the new domestic currency. We recommend that it should do this for financial sector debt, to reduce the risk of a banking sector collapse.

However, for non-financial corporations it may be better to let the parties find their own solution. (See Section 5.3.) In practice, any party will probably have the right to insist that a contract governed by local law should be redenominated into the new domestic currency. But while this would establish the starting points for negotiations, it may not necessarily be the best solution if it means that one or more parties are unable to meet their obligations.

The presumption for contracts governed by foreign law is that they should remain denominated in euros. But again this may only be a starting point for negotiations, and cooperation among all EU member states could have a role to play. It would be helpful for the EU to issue some guidelines on how contracts originally specified in euros should be treated, allowing the courts and the individual parties concerned to do the rest. In the case of courts within the EU, including English courts, some of these guidelines could be given the force of law, although a little flexibility may still be desirable. These guidelines may not be legally binding elsewhere but they would probably be taken into account by foreign courts.

What would happen to the euro?

As the common international currency of the EU, the euro is not dependent on any particular country using it as its national currency. After all, some EU member states have already opted out and the number of countries using the euro has changed over time (albeit, so far, only by increasing). The upshot is that, unless the EU itself decides to wind up the euro, any contract involving the euro should still be valid even if the group of countries using the euro shrinks.

3.3 Relations with other EU members

While planning their exit from the euro, the Greek authorities should consider how best to retain constructive relations with other members of the EU. The effect on relations with other EU and euro-zone members would depend on how and why the exit took place. A hasty exit about which other members were not warned and which involved huge defaults on international debts would be the most damaging, materially reducing the country's influence within the EU if, indeed, it managed to stay in. But a long-winded debacle involving numerous bail-outs ahead of eventual departure could be just as damaging.

The best way to minimise ill-feeling would be to honour as many international debts as possible, especially to official creditors. But we explain elsewhere that, in order for the departure of a weaker economy to be successful, that economy would have to default heavily on its international debts.

Six steps to soften the blow

Subject to that, then, there are at least six steps that a departing government could take to help matters:

First, pre-warn. The government in question should allow others as much time as possible to arrange their affairs. It would not be possible to inform other governments much in advance as the news would leak into the press and financial markets, causing capital flight. But, by imposing bank holidays, a window can be created between the announcement of its departure and the point at which the new currency was operational. In that period, other governments could decide how to shore up their own finances and support their private sectors.

Second, coordinate planning. In this short window, plans for the economy's departure could be made in conjunction with other euro-zone and EU governments. For example, while large defaults would be necessary,

creditor countries could be offered a menu of default options involving longer maturities or immediate haircuts etc.

Third, stay within the law. Wherever possible, the country in question should attempt not to break EU laws or render treaties obsolete. In practice, of course, the spirit of numerous laws would have to be broken in order to exit at all. But laws could be circumvented rather than ignored entirely. For example, as explained earlier, a country can legally impose capital controls within the EU for a limited period if it wins the votes of a qualified majority of its members beforehand. In this instance, it would not be able to seek qualified majority approval before imposing controls, but it would be possible to do so afterwards. But if it imposed longer-term controls, it would be acting outside the law and would face substantial penalties if it wished to remain within the EU.

Fourth, stay within the EU. Leaving the euro-zone and establishing a new currency would be an enormous shock. It would be as well not to compound this by leaving the EU too – even if this ultimately proved to be desirable or unavoidable. At the point of announcement, the government should declare the country's intention to remain in the EU.

Fifth, leave quickly. Once it has become clear that a country needs to leave the euro-zone, it should waste no time doing so. Accepting more bail-outs before finally deciding that membership is impossible, then leaving and defaulting, could be far more damaging than simply leaving immediately. So far, best practice has certainly not been followed on this front. There is already clear evidence that the core euro-zone governments are tiring of Greece's financial requirements and would prefer a speedy exit.

Alternatively, it might be argued that staying in the euro-zone until the other countries became desperate for you to leave would ultimately lead to better international relations than an immediate departure. However, we doubt that the shock of a surprise announcement would be as damaging to a country's reputation and international standing as the financial cost of bail-outs in a long-winded exit.

Sixth, manage the media. Any departing economy should stress in public appearances that its departure had been amicable and that it still had great trust and admiration for the euro-zone, EU and its member countries. To leave and then deride the experiment publically would be a mistake.

3.4 Recommendations

- Conduct early stages of planning for a euro exit in secret.
- Implement exit swiftly once plans are in place.
- Be ready to use capital controls and similar measures early in the preparation stage if news of the impending withdrawal gets out.
- Confirm intention to remain within the EU and secure public endorsement from other member states and/or European Council quickly. Conclude treaty amendments later where necessary.
- Seek endorsement of other member states for any emergency measures that it needs to take, e.g. temporary capital controls.
- Avoid parliamentary decision-making at time of exit unless absolutely necessary under the national constitution.
- Redenominate sovereign and financial debt into the new national currency, where this debt is governed by local law. Allow the denomination of corporate debt to be determined by the parties involved.
- Work with EU institutions to agree guidelines for how debts governed by foreign law should be handled.
- Preserve good relations with other EU members using the ‘six steps to soften the blow’.
- The EU should confirm that the euro will continue to exist, albeit with a smaller membership. This should negate the need for the euro to be replaced by an alternative, such as ECU-2.

4 MANAGING THE REDENOMINATION

4.1 Choosing the conversion rate

At the point of departure, the Greek government would need to declare a conversion rate from euros into drachma. What should it be? In one sense, the conversion rate is largely irrelevant. If everything was redenominated at the same rate, it would not matter to Greek people whether the drachma was introduced at 100 or 1 per euro. If a household's weekly shopping bill of 100 euro became 10,000 drachma and its income of 200 euro became 20,000, the shopping would be just as affordable as it was before.

Moreover, whatever the conversion rate, the foreign exchange markets would be able to depreciate the new currency to whatever level they thought appropriate. If the conversion rate were 100 drachma per euro, it would be just as easy for the exchange markets to trade it at 200 per euro as it would to trade it at 2 per euro if the conversion rate had been 1-for-1.

There are some second order considerations, however, which mean that the rate of conversion does matter. Suppose that the conversion rate was 1.99 per euro and a taxi ride previously cost 5 euro, the new price should be 9.95 drachma. It would clearly be tempting for the taxi driver to round this up to 10 drachma. Rounding-up is common in cases of redenomination and can generate a pick-up in inflation. (See Appendix 12.)

Our suggestion is that the new currency should be introduced at parity with the euro. Where an item used to sell at 1.35 euro, it would now simply sell at 1.35 drachma. This would not only avoid the temptation for retailers to round-up, but it would also make clear to consumers that this had not been the case, and promote acceptance and understanding throughout the economy, as well as making a period without new notes more manageable. (See Section 4.2.)

4.2 Introducing new notes and coins

In an ideal world, new drachma notes and coins would be available to coincide with the launch of the new currency. In practice, though, there are long lead times — typically around six months — associated with printing notes and minting coins. It is unlikely that this can be reduced below a few weeks. (See Appendix 13.) It is doubtful that such printing and minting arrangements could be kept secret, thereby opening up all the downsides of openness discussed in Section 3.1.

Our analysis shows that a number of the solutions widely espoused are non-starters. For example, although Greek-issued euro notes can be identified by a Y prefix to their serial numbers, simply assigning these as the new drachma notes would be both legally and practically fraught. Similarly, overprinting or stamping euro notes as drachma is both cumbersome and, as it turns out, unnecessary: who would willingly hand over their currency to have its value substantially reduced? (See Appendices 14 and 15.)

Our proposed solution is: (i) as far as possible, to do without new national notes and coins while they are being produced and to rely on non-cash means of payment for the bulk of transactions; and (ii) to continue using euros for the remainder.

Doing without cash

In today's world, it is not necessary to have notes and coins to have a currency — and a country withdrawing from the euro could do so without having new physical currency in place. On departure, it would declare a new currency, and redenominate bank deposits and other assets into that currency. It would instruct banks and all other financial agents that from the transition point, say midnight on D-Day, all amounts that say euro should be re-expressed as drachma. An exchange market in drachma would commence and the drachma's exchange value would immediately fall below the conversion rate between euros and drachma announced by the authorities. All this could be accomplished without there being any drachma notes and coins.

Although the likely temporary absence of new notes and coins does constitute a difficulty, it is not as serious as it might seem at first. Cash has become less important over time as credit and debit cards have become more popular and electronic transactions have increased. The ECB reports that for around 70% of firms in the euro-zone, cash accounted for under 5% of total turnover. The overwhelming majority of business-to-business activity, financial transactions and payments of wages and salaries take place without cash. These would be unaffected by the absence of cash.

This marks a radical distinction from virtually every other occasion in history that monetary unions have broken up — when the economic damage that would have been caused by the unavailability of cash would have been much greater.

Admittedly, cash is still important for small purchases. The same ECB survey showed that 87% of purchases under 20 euros were made using cash. But a variety of electronic payment systems — from chip-and-pin credit cards through contactless debit cards to pre-paid cards like London's Oyster travel card — are now deployed widely in Europe and can handle low value/high volume transactions with minimal inconvenience or cost, although such technologies are less prevalent in Greece.

For small businesses where the administrative costs of card payments would be too high, or which might not have the technology (e.g. taxis or newspaper stands), cheques could be written or, where the relationship between buyer and seller was strong enough, informal credit arrangements could take place.

Cash is also still of overwhelming importance in the informal economy, which covers a huge proportion of domestic services, such as gardening, cleaning and babysitting. The solutions here would be to: (i) use euros (as explained below); (ii) run up debts, to be redeemed when new drachma notes were available (a form of trade credit); or (iii) formalise the transactions within the normal economy. The latter would have the advantage (especially valuable for an economy such as Greece) of increasing tax revenues.

Continuing to use euros

Where none of these solutions worked well and where it was absolutely necessary to transact in cash, the most convenient solution would be to allow these payments to continue to take place in euros. This arrangement would be made much more convenient by the adoption of our proposal that the conversion rate should be 1-for-1. This would mean that initially all prices and nominal amounts would be the same, and euro notes and coins could continue to be used in the same way, and in the same amounts, for all small transactions, thus meaning that slot machines and so forth would continue functioning without alteration.

A problem would arise with regard to banks. Knowing that euro notes and coins were worth more than their drachma equivalents, if after D-Day people could withdraw euro cash 1-for-1 against deposits that were now denominated in drachma, there would be a clear incentive for people to try to empty their bank accounts of cash. In the process this could cause a liquidity crisis for the banks which the national central bank could not allay.

One solution might be, at the point of redenomination, to allow a certain low fixed amount, say 100 euros, to continue to be denominated in euros. Euro cash withdrawals would only be permitted against these euro amounts.[8] Whatever steps were taken with regard to the ability to withdraw some euro notes at 1-for-1 against drachmas immediately after the currency conversion, pretty soon these arrangements would have to stop. At some point, euro withdrawals would have to be treated as a foreign currency transaction, just as they would be if Greek citizens were to withdraw dollars, and the amount of euros they could withdraw from their new drachma-denominated bank deposits would vary with the exchange rate of the drachma against the euro. Our recommendation is that this should happen at the time of conversion.[9]

A potentially more serious problem is that since the exchange value of euros would have risen compared to the equivalent in drachma, people might be reluctant to spend them. If the euro price of, say, a taxi ride, was unchanged it would become expensive compared to wages and other (drachma-denominated) prices.

But the scale of the disruption and disquiet that would be caused by this should not be overdone. As a result of euro exit, there would be some dramatic shifts in relative prices and relative wealth. So just because, in some cases, someone has to pay 30% or so more for their bus fare should be a relatively minor consideration. This would only apply in the comparatively short time period before drachma notes and coins became available. Furthermore, although in using their euro coins and notes for small transactions people would suffer an opportunity cost, it wouldn't seem that way to most people because the actual price in euros for their newspaper, bus ticket, taxi fare or whatever would be the same as it always had been.

Nevertheless, there would be a constant drain of euro cash out of circulation in Greece, with some consequent loss of economic activity.[10]

Dual pricing

There is a solution to this problem. It should be possible for vendors to accept a lower price for euro cash than for drachma payment via cheque, debit or credit card. Governments should ensure that legal tender laws do not inhibit the operation of a dual pricing system.

Of course, dual pricing has its own practical challenges, but it would be workable. There are many examples through history and today of countries — including the US, the USSR and Switzerland — using a dual currency system. In many cases where a monetary union collapses, the old money either becomes worthless or is at least deemed less desirable. Accordingly, it is impractical to expect stocks of the old currency to be used for transactions because retailers and other vendors will be reluctant to accept them. By contrast, in the case considered here, vendors would be delighted to accept euro cash because it would be worth more than electronic drachma of the same notional amount. (See Appendix 16.)

4.3 Preventing capital flight and banking collapse

In the run-up to exit, controls would be required to prevent capital flight and a banking collapse in Greece.[11] For as soon as people suspected that Greece planned to leave and/or default, they would want to withdraw bank deposits and realise other assets, fearing that they might otherwise be redenominated into a currency that would be worth far less than the euro. This isn't some hypothetical problem for the future. Greece and Ireland are already seeing huge contractions in their money supply as a result of deposit withdrawals.

In theory, under the current arrangements, a flight of money from a country's banking system would not necessarily induce a banking collapse because the country's banks can gain effectively unlimited finance from the ECB (provided that it is prepared to accept collateral of what might be dubious quality). However, the ECB might at some point stop access, or place limits on it, or insist on collateral which the troubled country's banks could not meet. Second, whatever support the ECB provided in euros would be due to be repaid in euros – making the problem of indebtedness and banking fragility after euro exit even more acute. (In practice, though, it is unlikely that a departing country's central bank would be in a position to repay these sums in full. See the discussion on the position of the ECB in Section 6.2.)

So, if a country planning a departure allowed its citizens to continue withdrawing euros from its banks, it might be worsening the problem of the government's indebtedness after departure and depreciation. At the least, this would intensify the difficulties with remaining euro-zone members and make it more difficult to establish good relations afterwards.

Accordingly, people should be prevented from withdrawing money from the country in the run-up to exit by effectively bottling it up within the domestic economy. In particular, from the announcement of the redenomination until banks were able to distinguish between euro and

drachma withdrawals, banks and cash machines would need to be shut down.[12]

The shutdown of ATMs can be administered relatively simply by the 'switching companies' that connect the machines to the various networks. The exiting country could simply declare a bank holiday in which all banking transactions, including those conducted electronically, were prevented. One approach would be to make the announcement of departure on a Friday, after the close of business, leaving the weekend, when most banks would be closed anyway, to make the necessary arrangements. But this could not be allowed to be a normal banking weekend as electronic transactions would still need to be prevented and ATMs shut down.[13]

Withdrawals could be permitted again as soon as arrangements could be made to treat these as withdrawals of foreign currency debited against drachma bank deposits according to the prevailing exchange rate.[14]

Wider controls

The need for more stringent capital controls has been argued by some commentators — with, for example, resident households and businesses forbidden from acquiring foreign assets, investing overseas or holding bank accounts outside their own country.[15]

But such drastic actions would in all likelihood be unnecessary for Greece. In our recommended approach, the critical period during which substantial capital flight is possible would only be a few days. Provided that the banks were closed for this period and electronic transactions were blocked, the most damaging aspect of capital flight, namely the threat to the banks, could be thwarted.

Of course, there is a risk that capital flight might begin sometime *before* the Greek authorities announced the euro-zone exit. There might be a leak during the planning stage or market forces might simply make it clear that exit was *inevitable* sooner or later. It is our recommendation that plans for exit be kept as secret as possible and that the decision to exit is made before market forces become too strong. However, if either of these conditions is

breached and capital flight begins, capital controls should be put in place to prevent it. Equally, though, they should be withdrawn as soon as possible once exit has happened.

4.4 Recommendations

- Redenominate all contractual nominal values at an official conversion rate of 1-for-1, including all bank deposits and loans with Greek resident financial institutions (including the Greek branches of foreign banks).

- Order printing of new notes and minting of new coins as soon as exit is announced but accept that there will be a period without new physical currency.

- Rely on non-cash means of payment for the vast majority of transactions.

- Allow euros to continue to be used where people so wish, and permit dual pricing.

- Close the banks and ATMs, and prevent any bank transactions, once the announcement of euro withdrawal is made.

- Avoid more drastic controls on financial institutions and transactions. But if news leaks outs early, impose wider capital controls and move quickly to exit.

- Treat all withdrawals of euros from banks and ATMs after D-Day as a foreign currency transaction debited from drachma accounts according to the prevailing exchange rate.

5 MANAGING THE DEVALUATION

5.1 The scale of devaluation

After leaving the euro-zone, it is inevitable, and necessary, that the new currency would fall sharply to restore the competitiveness that has been lost over the past decade or more. Greece and Portugal require a depreciation of their real exchange rate of about 40%; Italy and Spain of about 30% and Ireland about 15%. Moreover, since there is bound to be a significant pick-up in wages and prices, to achieve any given depreciation of the real exchange rate, the initial depreciation of the nominal rate needs to be larger: perhaps 55% for Greece and Portugal, 40% for Italy and Spain, and 25% for Ireland. (See Appendix 17.)

How could the fall in the currency be managed?

Past experience suggests that there is a strong chance that the new currencies would initially depreciate by more than these estimates, perhaps by as much as 70% or more. (See Appendix 18.) Given this, policymakers will want to have a strategy in place to try to prevent excessive falls in the exchange rate. The first prong would be introducing a credible monetary and fiscal framework, including an inflation target, just as the UK government did after it exited the Exchange Rate Mechanism in 1992. This should include limits to the use of quantitative easing and the establishment of some independent body to monitor the authorities' adherence to these targets (mirroring the use of independent members on the Bank of England's MPC).

Additionally, the government could publish a target range for the exchange rate to help guide markets' expectations. But if markets do not think that the target range is realistic, such a policy may only prevent the exchange rate overshooting if the government can persuade the markets that it is willing to take decisive action.

Of course, the authorities could raise interest rates if the exchange rate fell below its desired level. But given the bleak state of aggregate demand in these economies, policymakers would probably want a prolonged period of accommodative monetary policy. Accordingly, they would surely prefer other measures.

One option would be for the government to intervene on the exchanges, selling foreign currency against the drachma. But historical experience has regularly shown that this can end up being costly for taxpayers. Moreover, newly exited countries may not have enough foreign currency reserves to conduct such a policy for a sustained period. Indeed, their position would be more constrained by the fact they have had to surrender some of their foreign exchange reserves to the ECB.[16]

Using capital controls to manage the currency

Some analysts suggest that capital controls could be put in place after the new currency was introduced in order to prevent a destabilising (and potentially inflationary) currency slump, as well as extreme weakness of domestic asset markets as people scrambled to liquidate assets and sell the proceeds on the exchanges.[17]

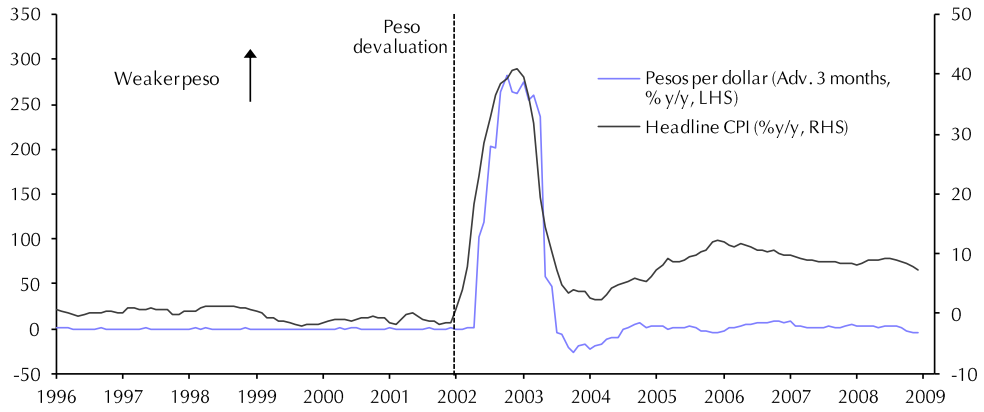
But the downsides outweigh the benefits of such an approach. First, capital controls may reduce the pressure on policymakers to implement painful reforms to improve the functioning of the economy and financial system. (After the introduction of capital controls, Malaysia delayed vital financial sector reforms.) Second, capital controls often encourage corruption, with government officials selling licenses to convert currencies or buy and sell assets. Third, they discourage inflows as investors are concerned about whether they will be able to get their capital, or any return that they earn on it, out of the country in question. Fourth, empirical evidence suggests that controls on capital outflows are ineffective in the medium term, because people find ways around them.[18]

5.2 Moderating the impact on inflation

It is likely that the scale of the exchange rate depreciation that we envisage would raise the price level by about 15% in Portugal, 13% in Greece and 10% in Italy, Spain and Ireland. Assuming that this adjustment takes place over a two year period, the effect would be to raise the annual inflation rate by about 7% per year in Greece, about 6% in Portugal, and 5% in Italy, Spain and Ireland. (See Appendix 19.)

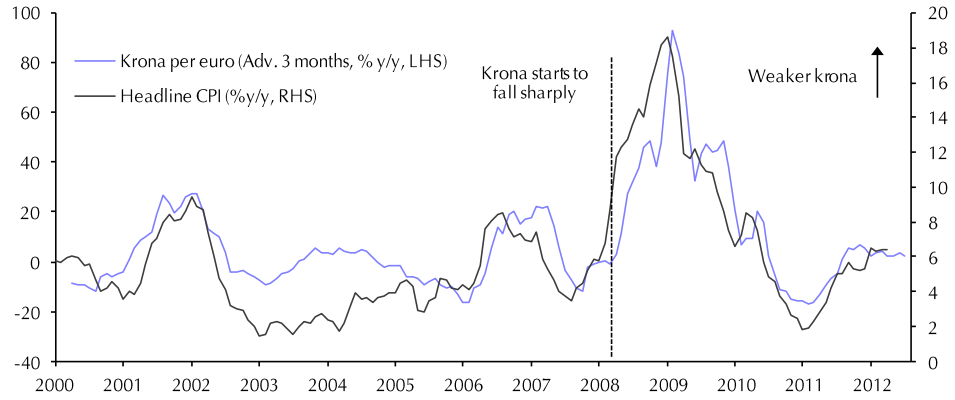
Nevertheless, the historical experience from Argentina in 2002 and Iceland in 2008, is that subsequently inflation is likely to fall back sharply. (See Charts 1 and 2.) Of course it needs to, if any real depreciation is to be secured from the large nominal depreciations. (See Appendix 18.)

Chart 1: Argentina's exchange rate and CPI inflation



Source: Thomson Datastream, Capital Economics

Chart 2: Iceland's exchange rate and CPI inflation



Source: Thomson Datastream, Capital Economics

The key factor is the amount of spare capacity in the economy. Although it is difficult to measure this with any precision, the relevant data suggest that there is currently substantial spare capacity in all the peripheral euro-zone economies, as indicated in Table 3.

Table 3: Indicators of spare capacity

	Italy	Spain	Greece	Portugal	Ireland
GDP (Q1 2012, percent below its peak)	6.0	4.2	16.8	5.1	11.6*
Difference between actual and potential GDP (%, 2011 OECD est.)	-2.6	-5.9	-12.0	-3.1	-9.1
Unemployment rate (Mar. 2012)	9.8	24.1	21.7**	15.3	14.5

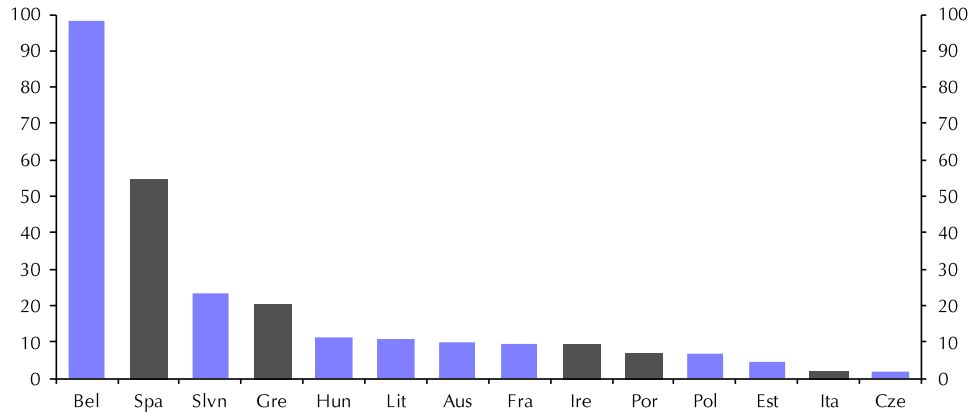
Source – Thomson Datastream, OECD. Note: * Q4 2011 **January 2011

Nevertheless, policymakers must remain on their guard to prevent any medium term sustained pressure on inflation. First, they must do their best to ensure that inflation expectations remain anchored by adopting a 1992 British style fiscal and monetary regime.

Second, the authorities should reduce the risk of a wage price spiral by eliminating real rigidities in the economy — especially indexation arrangements that tie wages to prices. This form of indexation was prevalent in Argentina and Brazil during their bouts of hyperinflation that began in the 1980s. Although rare in Italy, Portugal and Ireland, as Chart 3

shows, 55% of Spanish and 20% of Greek firms have wage deals automatically indexed to inflation.

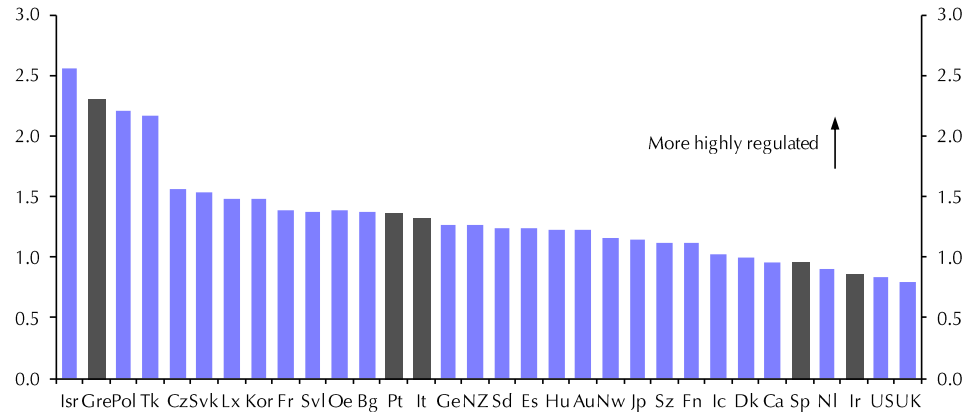
Chart 3: Firms with automatic wage indexation mechanisms, 2008 (%)



Source: ECB, Capital Economics

Third, the authorities should seek out and repeal any rules and laws that inhibit competition — as competitive markets are the best guarantee that firms cannot pass on excessive price rises. Greece, Italy and Portugal, who have more regulated product markets than many of their euro-zone and Anglo-Saxon counterparts, have work to do here. (See Chart 4.)

Chart 4: OECD product market regulation indices (2008)



Source: OECD, Capital Economics

5.3 Minimising the damage from default

There are two sorts of default that would occur after a country exited the euro: the implicit default due to a redenomination, and the explicit default over and above this which would be desirable in order to make the government's debt position sustainable. But it should be emphasised that the latter is not a direct result of euro exit; it would be desirable anyway. Moreover, with regard to the former, an explicit default would need to occur if the country stayed in the euro and staged an internal deflation in order to regain competitiveness. And, it would be likely to be larger and more damaging. (See Appendices 20 and 21.)

Devaluation would potentially lead to default in all main categories of debt:

- sovereign debt
- non-financial corporate debt
- banking sector debt
- household debt

The best way to handle these debts would depend among other things on the kind of debtor and the jurisdiction within which the debt was contracted. Table 4 summarises the approach we think would be appropriate for each category of debt. These proposals are consistent with the legal position set out in Section 3.2.

Table 4: Debt redenomination using Greece as an example

Debtor	Domestic Law	International Law
Sovereign	Greek government redenominates this debt unilaterally. As it is governed by domestic law, there is minimal risk of successful litigation to oppose this.* In some cases, the government may need to restructure or reduce the debt stock in addition to redenomination. In other cases, e.g. Spain, redenomination alone may be sufficient.	Greek government announces that this debt will be redenominated on the same terms as debt issued under domestic law. This would probably not be recognised by foreign courts but would be a starting point. If necessary, the government could simply default.
Non-financial corporations	Resolution of these debts should be determined by the parties involved. The legal position may need to be tested in court and may vary depending on the circumstances of individual firms and whether or not the creditor is based in Greece. But the presumption is that they would be redenominated into drachma.	Similarly, the courts would probably rule that debt contracted by Greek companies under international law and owed to creditors outside Greece should continue to be denominated in euro. However many companies may be unable to service these debts after exit and devaluation. In such cases creditors and debtors could be left to reach an agreement on how to restructure these debts through a mix of redenomination, restructuring and bankruptcy. But there may be a case for government involvement to coordinate and push for redenomination. The best solution may vary between countries.
Banking Sector	Government of Greece redenominates all assets and liabilities of domestic banks and subsidiaries operating in Greece into drachma to avert banking sector insolvency. Branches of foreign banks will be subject to the laws of the parent bank and the laws of Greece. Accordingly, from a legal perspective, it will probably be rather harder to force these banks to redenominate their assets and liabilities. But the Government might be able to "encourage" such banks to convert their balance sheets from euros to drachma, by threatening to implement windfall taxes or other measures.	Government announces redenomination of all banks' liabilities into drachma in order to avert banking sector crisis. This should be done in coordination with governments of creditor countries in the core of the euro-zone and with support of the EU and ECB. Legislation such as an EU Directive may be necessary, as well as moves to recapitalise creditor banks in Germany, France etc. Greek banks' subsidiaries in other countries would not have their balance sheets redenominated.
Household debt	Most of the household consumer loans and mortgages would be contracted under domestic law and would be redenominated.	Loans from core economies to households in Greece would be treated in the same way as corporate borrowing, described above. Ideally, they should be redenominated.

Source: Capital Economics. Note: *Since its recent restructuring, Greece is an exception in that most of its sovereign debt is now government by foreign law.

Sovereign debt redenomination

Any country which left the euro-zone should redenominate its public debt into the new local currency. From a legal perspective, this would probably be considered a 'default' even if the country continued to service its debt throughout.

As we explained in Section 2.1, the advantage of redenomination is that it would prevent public debt ballooning as a share of GDP in the way that it has done following past devaluations in many emerging economies. Recent cases include Argentina in 2002, Russia in 1998 and South-East Asia in 1997. Redenomination would also remove any currency mismatch from the public sector balance sheet.

Negotiated debt restructuring

Any government which needs substantial additional reduction in its debt should make clear its intention to renegotiate the terms of its debt with creditors and to begin servicing its debt again as soon as practically possible. To take the Greek example, it is clear that the government needs to cut the public debt stock sufficiently in present value terms to remove any reasonable doubt about its capacity to service its debt in future. In this respect, the current plan to cut Greece's debt stock to just below 120% of GDP by 2020 does not seem to us sufficient. A figure of closer to 60% may be more appropriate.

International institutions and coordinated action

To achieve a large enough debt reduction, it would be necessary for official creditors, including the ECB and European Financial Stability Facility, to accept some losses on their share of the debt. The euro-zone should follow a long established precedent for official creditors to accept an equivalent level of debt reduction to the private sector, although the IMF should retain its preferred creditor status as otherwise its future role as an international lender of last resort would be compromised.

Borrowing after euro exit and default

Some countries which exit the euro-zone would be in primary surplus, which means that could fund their expenditures through tax revenues, without needing to borrow. But not all potential euro leavers would be in this position, and Greece is apparently not there yet. Moreover, a government which redenominates its debt would still be making interest payments to bond holders, albeit now in drachma. Accordingly, the issue arises of how it would be able to fund itself after it has exited the euro and defaulted.

In practice, governments are often able to borrow remarkably soon after default, provided they set about regularising their relationship with creditors and provided their future debt service capacity looks adequate. This is perfectly rational because a country which has recently defaulted and written off some of its debt is more likely to repay in future.

It should be the objective of euro-zone governments to re-gain market access as soon as possible after reaching a satisfactory agreement with their creditors, in order to be able to manage government finances effectively and to re-establish the country's creditworthiness. Nevertheless, governments would need to be prepared for markets not being so keen to lend. There are a number of things they can do:

(i) Get their central bank to buy at least some of their debt either directly or indirectly. (Quantitative Easing.) But this is not an unlimited option if they are keen to regain credibility in the markets and obviate what could be a complete collapse of the currency and a dramatic surge in inflation;

(ii) Announce a plan to boost fiscal credibility to stimulate demand for debt, as described above;

(iii) Issue index-linked debt;

(iv) Impose requirements on domestic financial institutions to hold a certain amount of government debt; and

(v) Borrow from the IMF and perhaps the EU, if and when such funding is available.

Private sector debt

Finding a solution for private sector debt problems is one of the most important tasks facing policymakers if they are to restore peripheral economies to growth after exit from the euro-zone. The key distinction in tackling private sector debt is between a *laissez faire* approach and a *government directed* approach. There are reasonable arguments in favour of each of these, and the best approach may depend on the circumstances in the country concerned.

(a) The laissez-faire approach

In normal circumstances, the presumption is rightly in favour of a *laissez-faire* approach to restructuring corporate debt whereby creditors and debtors are expected to reach agreement on how to restructure and/or redenominate any debts which cannot be serviced according to the original contracts. The role of the governments is simply to enable this to take place with minimal fuss.

There are broadly three reasons to favour a *laissez-faire* approach. First, a government-imposed decision to redenominate all debts would have unintended and inequitable consequences because the situation of each company is different. While many Greek companies would make losses from drachma devaluation, there would be some companies which *benefited* because of the size of their foreign currency denominated assets and revenues.

Second, there could be legal challenges to any attempt to redenominate contracts governed by international law – although it might be possible for the EU authorities to influence the legal position, for example by passing a Directive or by issuing guidelines as to how banks should restructure their debt.

Third, the evidence is that after previous large-scale devaluations and systemic economic crises, e.g. the 1997 South-East Asian crisis and the Russian 1998 devaluation, the private sector has been able to resolve these issues without the government becoming heavily involved.

(b) A government-directed approach

The key argument for government involvement is that although the courts are well suited to dealing with bankruptcy in a normal situation, they cannot deal with *systemic* bankruptcies because:

(i) widespread corporate bankruptcy may threaten the stability of the Greek banking system;

(ii) the legal system could become clogged with bankruptcy cases, resulting in protracted litigation;

(iii) individual companies and creditors may have incentives to delay a settlement because they are holding out for a better deal, whereas there may be a collective, national interest in reaching an earlier agreement; and

(iv) there may be implications from slow progress in restructuring corporate debt for the speed with which a sovereign debt agreement can be reached.

If they felt there was a public policy case for doing so, governments in the core economies could require banks in Germany, France and elsewhere to redenominate their loans to Greek companies. They could achieve this by, for example, linking recapitalisation to a swift resolution of their exposure to peripheral economies.

Redenomination of corporate debt governed by domestic (Greek) law

For contracts in which both parties are Greek and are based in Greece, there would appear to be an overwhelming case in favour of redenomination, on common sense grounds. For contracts in which the creditor is outside the

country, the legal case may be less clear-cut, but there may still be a case for redenomination for the same practical and economic reasons that apply to the corporate debt governed by international law.

Redenomination of bank debt

It would be wise for policymakers to redenominate the entire balance sheets of domestic banks (excluding their subsidiaries) and subsidiaries of foreign banks located in Greece. If they do not do so, many companies in Greece would be forced to default on euro-denominated loans from these banks, and this could force the entire banking system into insolvency, as happened in South-East Asia in 1997, Russia in 1998 and Argentina in 2002.

From a legal perspective, it would probably be rather harder to force Greek branches of foreign banks to redenominate their assets and liabilities. But the creditor government might be able to "encourage" such banks to do so, perhaps by threatening them with windfall taxes or other measures.

Household debt

In practice, household debt, including mortgages, would be the easiest to deal with as the vast bulk of it is contracted within a single economy, such as Greece, and this would be redenominated. There would be an unavoidable increase in non-performing loans and defaults due to the recession accompanying euro exit, but redenomination would at least limit the damage.

5.4 Securing the banking system

In the event of a euro-zone break-up, without intervention the banking sectors of peripheral countries would be likely to become insolvent. There are many examples of a country suffering a large devaluation and sovereign default also experiencing a banking crisis, including Indonesia in 1997, Russia in 1998 and Argentina in 2002. In this situation, the banks suffer losses on government bonds, which typically constitute a large share of bank balance sheets, and on loans to companies which are adversely affected by the devaluation and default.

How large would the hit to banks be from a euro exit and default? The IMF estimates that Greece's debt restructuring earlier this year wiped out €22bn of the Greek banking system's capital of €23.8bn, with regulatory capital for four banks holding 44% of the banking systems assets wiped out completely and leaving the remaining banks severely undercapitalised.[19]

Data from last year's bank stress tests give us an indication of the likely size of other peripheral countries' bank losses in the event that their governments defaulted. We estimate that if banks faced a 50% haircut on their holdings of domestic government debt, then the southern euro-zone economies would suffer losses of up to 75% of their core tier one capital. (See Table 5.)

Table 5: Losses from a 50% haircut on domestic government debt holdings

	Losses as percentage of banks' core tier one capital
Portugal	43
Ireland	41
Spain	75
Italy	74

Source: EBA, Capital Economics

The impact from the redenomination of the currency and its subsequent devaluation is more uncertain since it is impossible to know exactly the size

of the depreciation, or which of the banks' assets and liabilities would be redenominated.

We estimate that around €260bn (out of €465bn) of the Greek banks' liabilities might be to domestic residents and around €350bn of its assets are claims on domestic residents. Accordingly, if these assets and liabilities were redenominated into drachma after an exit, but the remaining assets and liabilities were not, banks would potentially suffer large losses. If the drachma depreciated by 40%, we estimate that the associated losses for the Greek banks would be larger than those suffered after the Greek debt restructuring deal. And if domestic residents withdrew deposits in the build-up to an exit, forcing it to gain additional loans from the ECB, losses associated with the reintroduction of the drachma could be even larger.

A rise in banks' bad loans

The sharp fall in the exchange rate would also, initially at least, probably push the economy deeper into recession, potentially forcing the banks to make additional write-downs on their loan book. For every 1% of their domestic loan book that Greek banks wrote off, their core tier one capital would fall by 10%. Accordingly, substantial injections would be needed to cover rising bad loans.

There would also, of course, be some disruption to banks in those countries which remain in the euro-zone. We cover this in Section 6.1.

Government protection

There is a clear case for governments of exiting economies to shield banks from the impact of euro exit because of the potentially devastating consequences of bank failures for the rest of the economy.

Of course, to the extent that the Greek government had to recapitalise the banks, its own financial problems would be worse. We estimate that the Greek government might need to inject a sum equivalent to €80bn, which would increase its debt to GDP ratio by about 37%. This is one of the

reasons why the government may need to default on its debt over and above the implicit default of redenomination.

One option that the government could consider is the issuance of new bonds to recapitalise the banks. If the government is in default on the bulk of its sovereign debt, it would still be possible to service these new bonds in order to ensure that the banking sector remained solvent. This is something which the Argentine government did in both the 1980s and in 2002, and it made it a priority to service these bonds even when in default on some others.

On the whole, industrial companies should not be offered any specific government protection against losses because they do not have the same systemic role in the economy, i.e. there is no manufacturing sector equivalent to a run on the banks — although, if some economies were threatened with widespread bankruptcy of their industrial sectors, there might be a case for the government to take an active role in organising or incentivising debt restructuring.

5.5 Implications for household finances

An economy's exit from the euro-zone would have some complex indirect effects on household finances, depending upon how the economy performed after exit. But here we concentrate on the immediate effects on personal sector finances arising from redenomination, depreciation and default.

What would be redenominated?

There would have to be a redenomination of all nominal values, encompassing wages, retail and producer prices, property prices, equity prices, bank deposits, pensions, mortgages and bank loans.

These nominal amounts fall into three broad groups. Wages, bank deposits, pensions, mortgages and bank loans are all contractual values that could be redenominated by law into a specified amount of the new currency. Retail and producer prices are administered i.e. specified by the seller, so although at the point of redenomination they could be translated at exactly the officially specified conversion rate, in practice it would be open to sellers to set prices slightly higher (or even lower) than this. Moreover, even if firms do not immediately reset prices, many would do so over the succeeding period in response to increased costs arising from the depreciation.

Meanwhile, a third group, including equity and property prices, are market-determined. After D-Day they would probably be quoted in drachma (although they may continue to be quoted in euros) but their price may go up or down with economic forces and market sentiment.

Wages and prices

Our suggestion of adopting a 1-for-1 conversion rate simplifies the issue and obviates or minimises some of the problems. In purely mechanical terms, after the introduction of the new currency, prices and wages would be exactly what they were before, although now expressed in the new currency.

But, as we have argued, lots of prices throughout the economy would rise in response to the depreciation. Accordingly, there would be profound implications for real wages, and for the real value of all nominal amounts fixed in drachma. To make the devaluation work, i.e. to ensure that the real exchange rate fell as well as the nominal rate, it would be vital that wages did not rise to compensate. Although initially the euro exit might appear to leave real wages unscathed, in practice, in the days, weeks and months following the exit, real wages would fall.

The size of the fall would be dependent upon the extent of the drop in the currency, and the degree to which the effect of this fall was absorbed by producers. On the basis of the experience of previous devaluations and the likely scale of depreciations for the peripheral countries of the euro-zone, in the first couple of years after euro exit, real wages might readily fall by anything between 5% and 20%.

Bank deposits

The redenomination of bank deposits would imply that, just like wages, they initially had the same value, but it would quickly transpire that their purchasing power had fallen. Moreover, immediately after the euro exit, they would be worth less if used abroad and in the discharging of any foreign currency liabilities.

Greek residents' bank deposits abroad could not be redenominated, benefitting those in Greece that held them. Comparatively few households in peripheral euro-zone countries hold deposits abroad, but the numbers have been rising as speculation of a euro break-up has mounted. Those that do hold such deposits will tend to be in the upper income groups. Governments might consider imposing higher taxes on such deposits to avoid inequitable shifts in relative wealth, but this would be difficult to police and enforce.

Bank loans

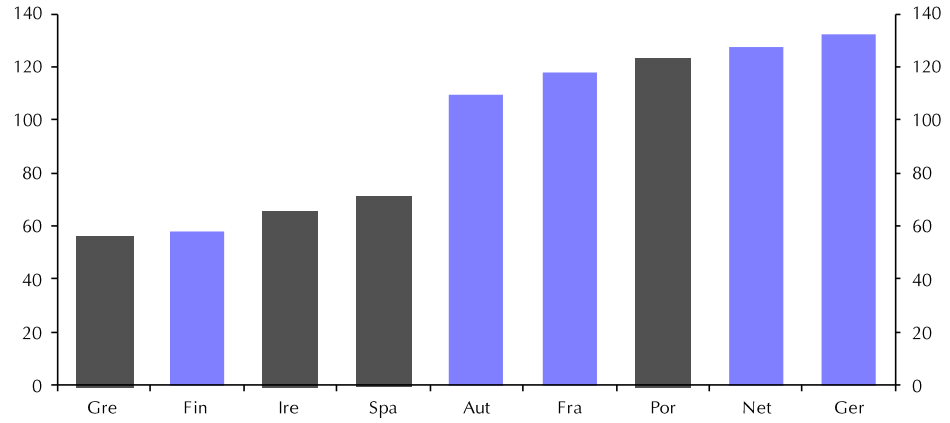
The redenomination of domestic bank loans would mean that their value compared to incomes and domestic bank deposits was initially the same as

before, but just as with other nominal amounts, their real value would soon fall.

Ideally, any loans involving a creditor outside the exiting country would also be fully redenominated, since the drachma's depreciation would prompt a large increase in the drachma value of euro debt. However, while Greece might try to insist that its private sector's international debts were redenominated into the new national currency, it might not achieve this, in which case such debts and assets would remain in euros, implying a sharp rise in the domestic value of both. (See Section 3.2 on legal implications.)

On the face of it, this might not actually be much of a problem for households in aggregate. Chart 5 shows that, even in Greece, which is a net international debtor at the aggregate level, households are net international creditors.

Chart 5: Households' net international assets (% GDP, 2009)



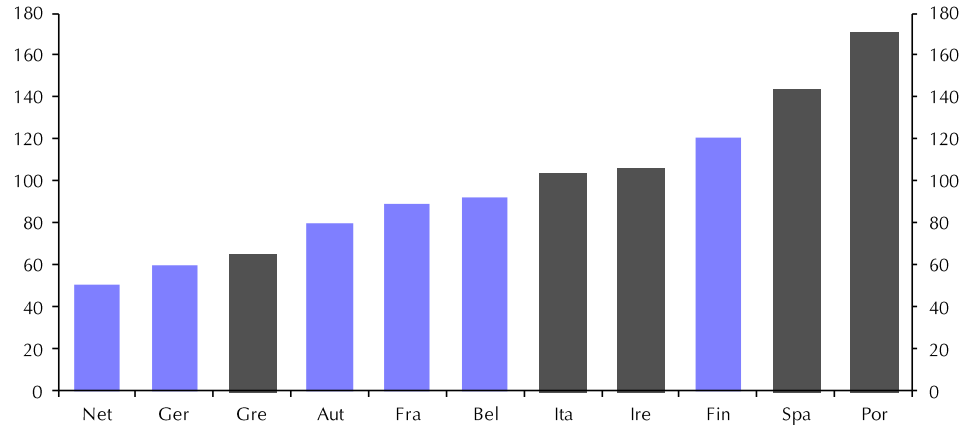
Source: Eurostat, Capital Economics

But within the average, there would be some households which are net debtors and would suffer greatly from a depreciation. Even some of the creditors might struggle, depending on which types of international assets and liabilities they held.

Households may suffer from firms' distress. Without redenomination, the domestic value of firms' large net international debts would become unmanageable as the new currency depreciated. (See Chart 6.) This, in turn,

could prompt mass bankruptcies and job cuts that would seriously damage households' finances. Accordingly, there is a strong case for the government encouraging redenomination of private sector debt, as discussed in Section 5.3.

Chart 6: Firms' net international liabilities (% GDP, 2009)



Source – Eurostat, Capital Economics

Mortgages

Like other domestic bank loans, the value of domestic mortgages would be converted into drachma at the official conversion rate. They would be the same after redenomination compared to wages, prices, assets and other sorts of liability. But their real value would soon fall.

Mortgages taken out in other countries may not be redenominated, implying a sharp rise in their domestic value compared to wages and (notably) to the price of the property on which they were secured. But it is rare for households to take out mortgages in other euro-zone countries to buy property at home. It is more common for households to have international mortgages on holiday homes. But even including these, the European Commission has estimated that cross-border mortgages account for less than 1% of the total mortgage market.

Where, for example, a Greek person had taken out a mortgage for a Greek property with a Greek subsidiary of a German-owned bank, the loan would

almost certainly be converted into drachma at the official conversion rate as the Greek government has regulatory control over such banks.

Property and equity prices

Any pre-existing contracts to transact in property would be redenominated into drachma and post D-Day transactions would normally be quoted and executed in drachma. But what happened to the drachma prices would be the result of economic forces, including market participants' expectations.

With the drachma having depreciated against other currencies, a given drachma value would now imply a lower price than before in foreign currencies. That would tend to boost demand for Greek property, notably from foreigners. Meanwhile, the country would be undergoing a surge in domestic wages and there would be powerful forces pushing up the drachma price of property.

Moreover, although the natural tendency would be for the foreign currency price of Greek property to fall (i.e. for the drachma price to rise by less than the percentage of the devaluation), Greeks and non-Greeks alike might take the view that, out of the euro, Greek economic prospects were much better, thereby justifying higher property prices, even in foreign currency terms. On the other hand, lower real wages and the destruction of a good deal of wealth would point in the opposite direction. The overall effect could go either way.

The same reasoning would apply to equity prices, although, the direction of the effect, never mind the magnitude, would be even less clear cut. In fact, the capacity for experiencing strength in equity prices after euro exit is greater, thanks to the greater potential for company profits, and hence equity values, to respond to improved economic circumstances.

The historical evidence on how property and equity prices are likely to respond is inconclusive. Interestingly, measured in pesos, equity prices started to rise before Argentina abandoned the peso's peg to the dollar in 2002, and rose by 200% in the next two years. Even in dollar terms, although equities initially fell, within six months they were recovering, and

within three years they were back to where they had been three years before the crisis.

Not all devaluing and defaulting countries, though, have had the same experience. In Iceland, Thailand and Indonesia, equity values plunged after the financial crisis and remained low. However, there are reasons to believe that Greece's experience might be similar to Argentina's after its 2002 crisis. (See Appendix 22.)

The devaluation would also cause foreign equity and property prices to rise in drachma terms. This would benefit some firms and households, relative to most citizens. If authorities felt it prudent politically to conduct some redistribution from euro exit winners to losers, they might consider imposing taxes on the beneficiaries. (See Section 5.6.)

Pensions

Defined benefit pension entitlements, and defined contribution pensions already in payment, would be converted into drachma and, like bank deposits, their initial nominal value would be unchanged. But, as with wages, their real value would fall as prices rose in reaction to the fall of the exchange rate.

The value of defined contribution pension funds, whose payouts depend on the performance of the assets in which they are invested, however, could be affected either way by euro-zone exit, depending upon what sort of assets the funds were invested in. As we argued above, equity and property prices might benefit from exit, implying that the value of some pension funds could rise. But, of course, a deep economic downturn would have negative effects. For pension assets invested abroad, the effect would unambiguously be a rise in their drachma value. Overall, the most probable outcome is that some funds would go up and some go down, with attendant (largely undeserved) effects on the incomes of different prospective pensioners.

5.6 Who to compensate?

Provided that the gains from euro exit exceed the losses, it would be possible, in theory, for the government to arrange for all losses to be fully compensated. In practice, however, this would be unlikely to happen – and rightly so.

For a start, any government programme of redistribution via tax and subsidy is bound to cause a good deal of collateral damage through the usual distortions.

Second, if there is scope to tax windfall gains, arguably the money would be better used to reduce the government's deficit, rather than disbursed to losers from devaluation.

Third, some of the windfall losses may be inflicted on people who had enjoyed windfall gains during the years of Greece's euro membership. (This is true, for instance, of anyone who had benefitted from a high real exchange rate.)

Fourth, given that so many of the losses occur in the present, whereas gains appear in the future, compensating now for current losses would imply further government borrowing on a large scale, which is not advisable, to put it mildly.

Fifth, it would be extremely difficult to offset all losses without undermining the change in the relative price structure which is supposed to bring the much needed adjustment.

The authorities would have a tightrope to walk. Getting both people and markets to accept the new regime would be critical to its success. Perhaps that acceptance could be promoted by softening the blow for some unfortunate losers. But equally, the more the government is seen to be softening it for some people, the more others may want recompense as well. Before you know where you are, all sections of society would want real income and wealth protection and that risks an upsurge of inflation which

could quickly undermine the competitive advantage brought about by devaluation.

Just because some people, or groups of people, are net losers in the period immediately after the devaluation, does not mean to say that the change should not go ahead. Their losses may be justifiable in pursuit of the greater good.[20] Moreover, even those individuals and groups who may lose initially may enjoy net gains over time as a result of the recovery of the Greek economy.

That said, there would clearly be scope to offset the losses, or at least some of them, suffered by vulnerable groups such as pensioners and certain categories of benefit claimant.

5.7 Recommendations

- Greece and Portugal need real exchange rate falls of about 40%; Italy and Spain about 30%; and Ireland about 15%.

- Act pre-emptively and put in place credible monetary and fiscal frameworks that anchor inflation expectations.

- Avoid manipulating the value of the new currency and allow the exchange rate to float freely.

- Outlaw wage indexation.

- Introduce structural reforms to reduce real rigidities and boost competition in product markets.

- Recognise that reductions in debt, as well as its redenomination, may be needed to achieve a sustainable debt ratio. This will be the case for Greece.

- Announce a moratorium on government debt service until debt reduction has been negotiated with creditors with the objective to bring down the ratio of debt to GDP to around 60%.

- Redenominate the balance sheets of domestic banks' and subsidiaries of foreign banks located in the exiting country. Subsidiaries of Greek banks located in foreign countries should not redenominate.

- Stand ready to assist or coordinate in the rescheduling of the external debt of the private sector, if that proves necessary, but let the parties themselves determine whether it should be redenominated.

- Provide liquidity to the banking system from the newly re-constituted central bank and leave sufficient 'fiscal space' for recapitalisation, possibly through issuing new government bonds

which would need to be treated as senior to other government bonds.

- Be ready to nationalise banks temporarily in extreme circumstances to avoid systemic collapse.

- Leave administered prices and market-determined prices to find their own level, according to market forces, although now expressed in drachma.

- Provide relief to firms which had large debts to creditors outside Greece, whose drachma value will have risen considerably.

- Official creditors other than the IMF should accept a pro rata reduction in their exposure to Greece.

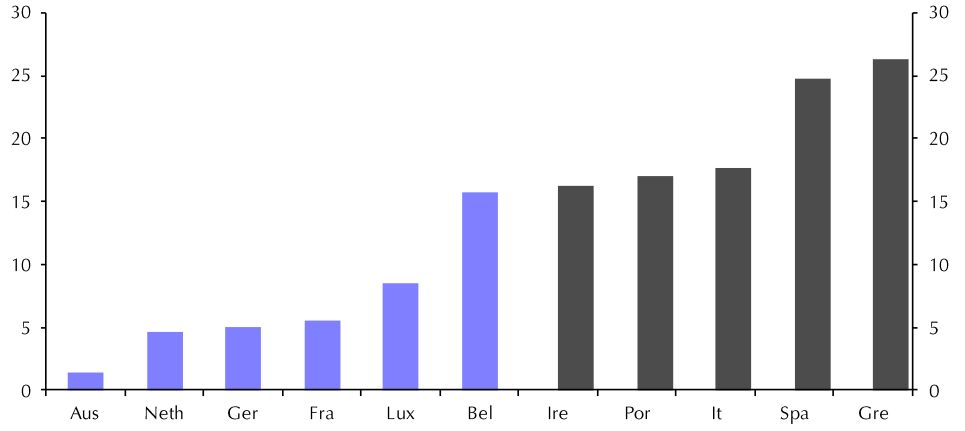
6 MANAGING WHILE OTHERS LEAVE THE EURO

6.1 Impact of bank losses on public debt

We considered the economic effect of a Greek default on other members, and the feasible policy responses in Section 2.4. Here we look at the pure financial effects.

The primary concern for the core countries would be their exposure to devalued and defaulting assets in Greece, and the potential for these to lead to bank runs or credit shortages. Banks in core economies are heavily exposed to the sovereign debt of peripheral countries, albeit to a much lesser extent than banks in the peripheral countries themselves. For example, at the end of 2010 German and French banks held peripheral euro-zone debt equivalent to about 5% of their GDP, as shown in Chart 7.

Chart 7: Banks' total exposure to peripheral countries' sovereign debt (end-2010, % of GDP)*



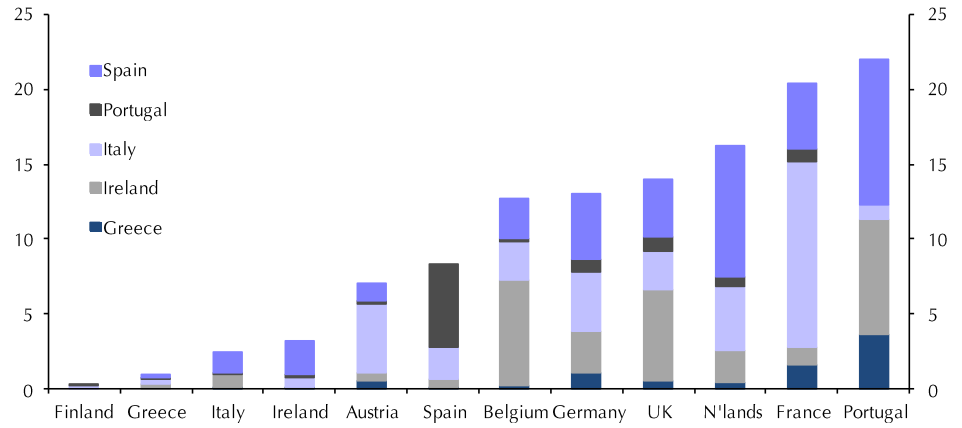
Source: European Banking Authority, Capital Economics. Note: * including exposure to the sovereign of the banking sector concerned.

However, the banking sectors in the Northern core have much larger exposure to the peripheral economies more widely. This consists of loans

from German banks to Greek corporations, for example, and German banks' exposure to their own subsidiaries in Greece.

As shown in Chart 8, this wider exposure is significant in some core economies. For example, French banks' exposure to peripheral economies is about 20% of GDP (a large part of it to Italy). German and British banks both have exposure of almost 15% of GDP. These are large enough amounts to pose a systemic threat. Moreover, while some of the exposure to sovereign debt has been marked to market or is insured through credit default swaps, this is not generally true of the wider exposure to peripheral economies.

Chart 8: Banks' total cross-border exposure to peripheral countries (end-December 2011, as % of 2011 GDP)



Source: Bank for International Settlements, Capital Economics

Estimating the impact of defaults in peripheral countries on the public finances of core countries is tricky. Clearly, if banks lost everything on their exposure to peripheral countries, and if their governments made good all their losses, then the impact on governments' indebtedness as a share of GDP would be equal to the size of banks' exposures as a share of GDP, as shown in Chart 8. So, on this basis, German banks' exposure of 13% of German GDP would end up increasing the German government's debt to GDP ratio by 13%.

But this is an extreme worst case scenario. It is more realistic to assume that losses would be much less than total. To come up with reasonable estimates

we have assumed different levels of haircut for different countries and for different assets. For Greece, for instance, our assumed rate of loss is 78% for government debt, 40% on loans to banks and 20% on loans to private non-banks. We then apply these rates of loss to countries' exposure to the different asset types to reach an estimate of the total loss. And we assume that governments in the northern core countries inject capital equal to 40% of the losses experienced by their banks, which is roughly equal to the proportion injected by the US government since 2008.

On the basis of these assumptions, Table 6 shows the consequences for various countries' government debt ratios of a departure by each of the five peripheral countries.

Even if all five peripheral countries defaulted and devalued, the impact on Germany would be to raise public debt by only 1.5% of GDP. Even if all losses were made good by the state, therefore, the impact on the German public debt ratio would be only 3.6%. For France, the comparable figure is 5.6%.

Of course, if our assumptions about rates of loss and the extent of state recapitalisation are too optimistic, the figures could end up being a multiple of those shown in the table. Most importantly, the larger the size of the loss, the greater the likelihood that the state will have to make good the whole amount. On that basis, the French figure would be 14% of GDP.

These numbers are not to be sniffed at. But neither are they of a catastrophic magnitude. They amount to 2 or 3 years public borrowing. In themselves, such sums would not radically transform the public finances of core members.

Nevertheless, it would be as well not to feel too comfortable about these figures. They refer to just the direct losses likely to be experienced. In practice, the indirect losses might be much bigger, resulting from economic deterioration and market turmoil. Moreover, it might not be sufficient for governments just to inject some capital; in extremis, they might have to nationalise the banks and/or guarantee bank deposits, or at least some part of them.

Table 6: The direct effect of a default and devaluation (% of GDP)

Greece exit: the effect on:	Germany	France	Italy	Spain	Netherlands	Belgium	Austria
Potential losses for banks	0.6	0.5	0.1	0.0	0.2	0.1	0.2
Gov't debt (2012 estimate)	80.0	89.0	124.0	75.8	45.3	97.3	75.8
Impact on the pub. finances*	0.2	0.2	0.0	0.0	0.1	0.0	0.1
Gov't debt afterwards	80.2	89.2	124.0	75.8	45.4	97.3	75.9
Ireland exit: the effect on:	**Germany**	**France**	**Italy**	**Spain**	**Netherlands**	**Belgium**	**Austria**
Potential losses for banks	0.3	0.2	0.1	0.1	0.6	2.0	0.1
Gov't debt (2012 estimate)	80.0	89.0	124.0	75.8	45.3	97.3	75.8
Impact on the pub. finances*	0.1	0.1	0.0	0.0	0.2	0.8	0.1
Gov't debt afterwards	80.1	89.1	124.0	75.8	45.5	98.0	75.9
Portugal exit: the effect on:	**Germany**	**France**	**Italy**	**Spain**	**Netherlands**	**Belgium**	**Austria**
Potential losses for banks	0.4	0.3	0.1	1.4	0.2	0.1	0.1
Gov't debt (2012 estimate)	80.0	89.0	124.0	75.8	45.3	97.3	75.8
Impact on the pub. finances*	0.1	0.1	0.0	0.6	0.1	0.0	0.0
Gov't debt afterwards	80.1	89.1	124.0	76.3	45.4	97.3	75.9
Spain exit: the effect on:	**Germany**	**France**	**Italy**	**Spain**	**Netherlands**	**Belgium**	**Austria**
Potential losses for banks	1.1	1.0	0.3	-	1.9	0.6	0.3
Gov't debt (2012 estimate)	80.0	89.0	124.0	-	45.3	97.3	75.8
Impact on the pub. finances*	0.4	0.4	0.1	-	0.8	0.2	0.1
Gov't debt afterwards	80.4	89.4	124.1	-	46.1	97.5	75.9
Italy exit: the effect on:	**Germany**	**France**	**Italy**	**Spain**	**Netherlands**	**Belgium**	**Austria**
Potential losses for banks	1.3	3.6	-	0.6	1.7	1.0	1.8
Gov't debt (2012 estimate)	80.0	89.0	-	75.8	45.3	97.3	75.8
Impact on the pub. finances*	0.5	1.5	-	0.3	0.7	0.4	0.7
Gov't debt afterwards	80.5	90.4	-	76.0	46.0	97.6	76.5
Greece, Ireland, Portugal, Spain and Italy exit: the effect on:	**Germany**	**France**	**Italy**	**Spain**	**Netherlands**	**Belgium**	**Austria**
Potential losses for banks	3.6	5.6	0.5	2.1	4.6	3.7	2.5
Gov't debt (2012 estimate)	80.0	89.0	124.0	75.8	45.3	97.3	75.8
Impact on the pub. finances*	1.5	2.3	0.2	0.8	1.8	1.5	1.0
Gov't debt afterwards	81.5	91.2	124.2	76.6	47.1	98.7	76.8

Source: Capital Economics, Thomson Datastream. Note: * It is assumed that these governments would cover 40% of direct banking losses via capital injections

6.2 The position of the ECB

The departure of one or more euro-zone economies would affect not only the remaining members but also the euro-zone institutions that are left behind. Most notably, there would be several serious issues for the ECB to address.

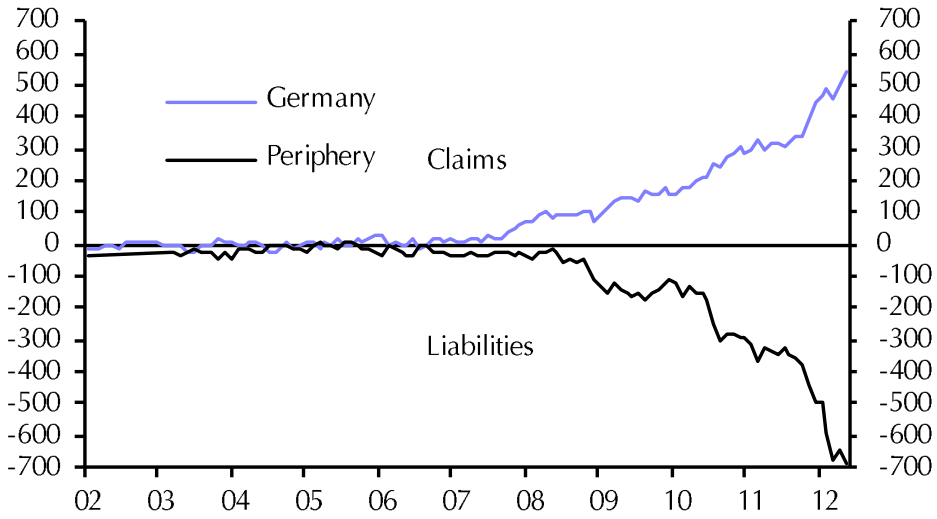
If Greece left the EU, presumably it would be entitled to a refund of its full capital subscription. Although these would not be particularly large amounts, whether it received any money would be the subject of some major legal wrangling. We discuss these issues in Appendix 23.

The threat to the ECB's capital

More importantly, the events surrounding Greece's euro exit would pose a serious threat to the ECB's capital base. The ECB's lending operations (mainly the LTROs conducted in December and February) have led to the build-up of large exposures to the peripheral economies' banks. At the end of April, total outstanding ECB loans amounted to over €1.1trn. Of this, it is estimated that just over half has gone to the peripheral banks. National central bank data show ECB lending of about €200bn to each of Italy and Spain, €80bn to each of Greece and Ireland, and about €50bn to Portugal.

These figures roughly tally with the recorded imbalances in the TARGET2 payments system, which show ECB claims against the peripheral banks of just over €500bn. As Chart 9 illustrates, these show up in the system as the claims of the Bundesbank, i.e. Germany, but they are actually the claims of the ECB and the Eurosystem, in which Germany is the largest, but by no means the overwhelming, shareholder.

Chart 9: TARGET2 balances, €bn



Source: National central banks

The extent of any losses from the ECB's lending (and associated TARGET2 imbalances) would obviously depend on which countries left the euro-zone and by how much their banks defaulted on their loans. If Greece left on its own and its banks defaulted on half of their ECB loans, the losses would be around €40bn.

If more countries left, including Italy and/or Spain, the losses would be much greater, and perhaps total close to €500bn. Note, though, that even if only Greece defaults, this could easily wipe out the ECB's capital of €10.7bn. The ECB holds collateral against those loans, but that could be rendered worthless if a euro exit was accompanied by a major sovereign default, as we have argued is likely, leaving the ECB insolvent.

In such a situation, the ECB would also make losses on the sovereign debt it has purchased in its Securities Markets Programme. These holdings amount to €220bn, of which around €40bn is estimated to be Greek bonds. Accordingly, a Greek euro exit and default could potentially result in overall losses to the ECB – from both its lending and bond holdings – of up to €140bn. This would wipe out the euro-system's capital and reserves of €85bn.

The ECB might also have exposures via the Emergency Liquidity Assistance provided by the national central banks of some countries like Ireland and Greece to domestic commercial banks. Although, on paper, the exposures belong to the particular national central banks rather than to the whole euro-system, it is likely that peripheral central banks needing to be recapitalised following associated losses would require the support of the euro-system and other euro-zone governments.

Would ECB insolvency matter?

In theory, in the event of capital losses, the ECB would need to be recapitalised by the remaining member states according to their allotted share. This was the case when the ECB made losses on its exposures to Lehman Brothers and several Icelandic banks.

This could be manageable. If a Greek exit were to result in ECB losses of €140bn, for example, that would be the equivalent of less than 2% of non-Greek euro-zone GDP. Admittedly, the burden would clearly fall most heavily on Germany. Its share of the ECB's capital is 27% but one way or another it would probably have to shoulder a bigger share to cover that of the weaker countries. Still, even if Germany shouldered half the bill, that would amount to less than 3% of German GDP. Again, more departures – or of bigger economies – would clearly place a far bigger burden on Germany and other euro-zone members. But in that case, additional support may be provided by other central banks outside the euro-zone, as well as by other international organisations such as the IMF.

The UK's share of the ECB's capital is 14%, similar to that of France. Note, though, that non euro-zone central banks have to actually submit only a small portion (around 4%) of their share. (The UK has paid only £58m.) Moreover, profits and losses made by the ECB are distributed only to the euro-zone central banks.

Could Seignorage plug the gap?

Some commentators have suggested that ECB insolvency would be merely a technical issue, rather than a practical one. The ECB could potentially

cover any capital losses by capitalising its projected earnings from "seignorage" – i.e. the returns it makes on assets it can purchase with the money it (costlessly) creates. (See Neumann for a helpful exploration of the concept.[21])

In theory, this could plug a pretty big gap. The limits on future earnings from seigniorage are dictated by how much new money a central bank could create without generating undesirably high rates of inflation, and on the prevailing rates of return on the assets. Some studies suggest that this could allow discounting future earnings derived from seignorage could amount to a capital sum of some €2trn to €3trn.[22] This would fully cover the ECB's exposure to peripheral banks a number of times over.

This idea has some appeal, although there are a couple of potential obstacles. First, even if this were a practical prospect, it still does not override the fact that the ECB, and therefore the countries owning it, will have lost sums equivalent to the amount of the default by Greece and/or other countries. For the potential income for the ECB from seignorage was there anyway, even if it was not recognised in the balance sheet. It will not have materialised as a result of the Greek default.

Second, the value of the ECB's future seignorage depends upon the euro continuing in existence and if it does, on the extent of its membership. These matters are clearly in dispute. Indeed, you could argue that a Greek exit potentially lessens the value of future seignorage as it makes the complete demise of the euro, or at least a sharp reduction in its size and importance, more likely.

Third, it is not clear that the ECB could reasonably risk its credibility by acting in this way, given that other central banks do not do the same. Regardless of the balance sheet effects, the perception would surely be that the ECB's true position was weaker both than that it had been, and weaker than other central banks.

Accordingly, in the event of a severe blow to the ECB's capital, it is likely that it would be recapitalised by the remaining member countries according to their allotted shares, just as happened after the Lehman debacle.

6.3 Preventing contagion

A key determinant of the impact of a euro-zone exit on those countries remaining within the currency union would be the extent of so-called "contagion effects". These might result both from the direct adverse economic and financial effects of an exit, but also from the increased perception that other countries might leave the euro. Accordingly, decisive measures to limit such effects would be vital to ensure both the continued economic and financial health of the remaining members and the future of the currency union itself.

Such measures would come in a number of forms. The first and most immediate would probably be substantial measures to support the banks of the remaining members, in order to prevent bank runs in the potential exiting countries. This would probably involve large injections of liquidity by the ECB along the lines of the recent LTRO operations seen in December 2011 and February 2012. But injections of capital from national governments may also be necessary. The ECB might also restart its SMP in order to keep sovereign borrowing costs down for countries perceived to be exit risks.

The second necessary measure would be a substantial increase in the firepower of the bail-out funds, the European Financial Stability Facility (EFSF) and its replacement, the European Stability Mechanism (ESM). The current lending capacity of €500bn would probably need to be at least quadrupled in order to be able to provide further bail-outs to the smaller peripheral economies, but also to support Italy and Spain if that became necessary. These measures might need to be supplemented by additional support from international organisations such as the IMF.

Third, it seems certain that the remainder of the euro-zone would need to take much more decisive steps towards some form of economic and political union. This might involve the implementation of commonly issued euro-zone wide bonds – "euro-bonds" – which would effectively allow the troubled peripheral economies to borrow at something close to the euro-

zone's average interest rate. But more direct forms of fiscal transfers from the core economies to the periphery may also be needed.

It might seem strange even to contemplate such measures after a Greek exit when Germany and some other core countries were so opposed to them beforehand. But Greece is widely regarded as a separate (and desperate) case. The German authorities might well feel that, with Greece out of the system, and presumably soon mired in a state of chaos, this would be a clear demonstration to other countries of their need to stay in the euro. That would then give Germany the scope and cover to relax its opposition to further measures to shore up the union, even if these threatened to cost Germany serious amounts of money.

Moreover, with Greece out, and Germany and its partners taking concrete measures, and throwing their arms around the other peripheral countries, and making declarations that the remaining members would all stay in, there is a good chance that the markets would come to believe this. Peripheral countries' borrowing costs could fall sharply.

But there would be another sort of contagion against which it would be impossible for the core countries to erect barriers, namely political contagion. Here everything would depend upon how Greece fared outside the euro. If the devaluation and default failed to provide a boost and the country remained mired in chaos and depression, then public opinion in the peripheral countries would surely line up behind whatever tough measures needed to be enacted domestically, helped by the flexibility now shown by Germany and its allies.

But suppose that Greece made a success of euro exit. Suppose that she managed to repeat what Argentina achieved after 2002, with growth surging and unemployment falling. In that case, it would surely be impossible for politicians in the peripheral countries to argue that there was no alternative to never-ending austerity within the euro. Parties advocating euro exit would gain in popularity and the market would react by pushing up peripheral countries' bond yields. At that point, contagion from Greece's exit could well prompt the exit of other countries.

6.4 Recommendations

- The ECB should provide significant liquidity injections, foreign exchange swap lines and loosen monetary policy. It may also need to restart its programme of government bond purchases to reduce the bond yields of other troubled economies within the single currency.

- Governments in core economies should stand ready to recapitalise banks and sanction an increase in the size of the firepower of the bail-out funds.

- The remainder of the euro-zone should also take steps towards closer fiscal and political union. Governments could sanction the implementation of Eurobonds, but more direct fiscal transfers may be needed too.

- ECB should accept that euros will continue to be used in Greece after euro exit and seek to reduce the surplus of euro currency only after Greece has distributed new national notes and coins.

- ECB should accept its share of any haircut on Greek sovereign debt default.

7 CONCLUSION

7.1 The way out of the euro

1. It will not be possible to be open about preparations to leave for more than a short period of time. The Finance Minister, Prime Minister, Central Bank Governor and a few other key officials should therefore meet to discuss and plan the exit in secret.

2. Only when planning is complete should they notify partners in the euro-zone, including the European Commission and the ECB, whose cooperation will be essential in minimising the disruption.

3. Other international organisations, such as the IMF and the world's major central banks, should also be warned so that they can stand ready to support the global financial system (for example by injections of large amounts of liquidity). But such warnings can plausibly be only a matter of hours before the announcement.

4. A public announcement should then be made that the changeover to the new currency will take place in a small, specified, number of days' time ('D-Day'). Immediately after this announcement, domestic banks and financial markets should be closed. It would be most practical for the announcement to be made on a Friday evening for implementation on Monday.

5. The closure of the banks should negate the need for other forms of capital controls, which might otherwise be required if the news leaks out to prevent mass withdrawals. More extensive capital controls may still be deemed useful in the immediate wake of the euro exit, in order to limit the size of the drop in the exchange rate, but at this point they won't be absolutely necessary and may be more trouble than they are worth. Ideally, capital controls should be avoided after D-Day and, if used, should be withdrawn as soon as possible.

6. On D-Day itself, we recommend that the new currency, say the drachma, is introduced at parity with the euro. All domestic wages, prices, bank loans, deposits and other monetary values are therefore to be converted 1-for-1 from the euro to the drachma.

7. The authorities should allow euro notes and coins to continue to be used for small transactions. But straight after the decision to leave the euro has been announced, they should commission new notes and coins to be produced as soon as possible.

8. On D-Day, or shortly afterwards, domestic banks and financial markets should be reopened. In any event, trade will be taking place in the new currency on international markets. The external value of the drachma would be free to depreciate and indeed it is vital that it should do so. In practice, this is likely to happen straightaway, thereby bringing about an immediate fall of the real exchange rate.

9. The government should redenominate its debt in the new national currency and make clear its intention to renegotiate the terms of this debt. In most cases, this will involve a substantial default – ideally sufficient to reduce the ratio of debt to GDP to 60%. But the government should also make clear its intention to resume servicing its remaining debt as soon as practically possible. Depending on the country circumstances, the government should also consider redenominating private sector debt, with agreement from the creditor governments e.g. Germany and France.

10. The national central bank of the exiting country should stand ready to inject a huge amount of liquidity into its own banking system, if necessary. The monetary authorities should also announce their willingness to recapitalise the banks if necessary.

11. In order to restore confidence further, the exiting country should announce immediately a regime of inflation targeting, monitored by a body of independent experts, adopt a set of tough fiscal rules, outlaw wage indexation, and announce the issue of inflation-linked government bonds. The government should also continue with

structural reforms designed to increase the flexibility of product and labour markets.

12. The authorities should provide as much clarity as possible on the legal issues, including the status of the exiting country's membership of the European Union and the impact on international contracts currently denominated in euros. EU approval would also be needed for any capital controls. All of this would require close cooperation with other EU member states and institutions.

13. For core countries sticking with the euro, once one or more countries have left, it would be pointless to try to maintain the fiction that euro membership is permanent or to penalise countries that have left. It is in the best interests of the core countries to cooperate with the exiting country.

14. This might well include agreeing to the introduction of an explicit mechanism within the EU Treaty for other countries that might want to leave, thus at least providing clarity on the steps that have to be taken, as well as legitimising what the exiting country has just done.

15. The ECB should be ready to provide significant liquidity injections. It must accept that euros will continue to be used in Greece after euro exit and seek to reduce the surplus of euro currency only after Greece has distributed new national notes and coins. And, it should accept its share of any haircut on Greek sovereign debt default.

16. To minimise the risk of contagion to other countries that might otherwise wish to remain within the euro, the Northern core may need to accept faster progress towards full fiscal and political union and take other steps to make continued membership more attractive.

17. Domestic economic policy may also have to adapt. Indeed, policymakers in countries sticking with the euro may have more freedom once they are no longer constrained by the need to set an example for weaker countries that have left. Since the value of the euro would rise, the Northern core would initially suffer from a loss

of aggregate demand, although it would enjoy a lower inflation rate. This combination would give it the incentive to undertake measures to boost domestic demand, especially through monetary policy and structural reforms.

18. The result would be that, even though there were some losers as well as winners from the exit of one or more members from the euro, the net effect overall would be distinctly positive for the future growth and prosperity of the current membership – and for the wider world.

7.2 Indicative timetable

With D-Day defined as the day when the drachma formally replaces the euro as the national currency of Greece, our indicative recommended timetable is:

D-Day minus no more than one month: Key officials plan the exit in secret. Capital controls implemented immediately and plan accelerated if news leaks out.

D-Day minus three days (Friday): Notification of partners in the euro-zone and other international monetary organisations. Followed shortly afterwards by public announcement that the changeover to the new currency will take place on D-Day. Closure of domestic banks and financial markets.

Over the weekend: Authorities announce new policy regime including inflation targeting, tough fiscal rules and outlawing of wage indexation. Government redenominates its debt and starts negotiations over the terms of this debt. Legal issues clarified as far as possible, with plan announced for resolution of those issues that remain. Commissioning of new notes and coins.

D-Day (Monday): At 00:01 hours, the drachma is introduced at parity with the euro. All domestic wages, prices and other monetary values converted 1-for-1 from the euro to the drachma. Euro notes and coins remain in use for small transactions.

D-Day or shortly afterwards: Domestic banks and financial markets reopened. Any other capital controls lifted as soon as practicable. Negotiations concluded on outstanding legal and other issues raised by redenomination.

Within 3 to 6 months: Sufficient notes and coins available in the new currency for the euro to cease to be legal tender in the exiting country. Conversion completed.

8 APPENDICES

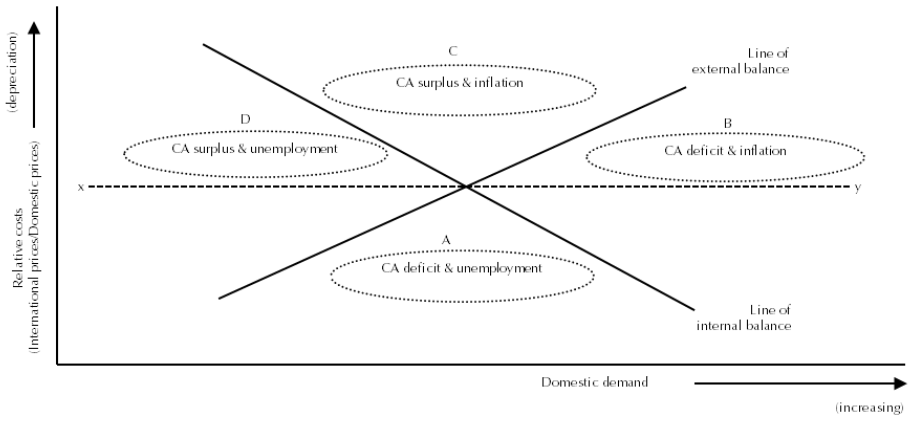
A1 List of appendices

A2 The Swan Diagram

This appendix develops the discussion in Section 2.1 of the main document. The essential analytical tool for an assessment of the inter-relationship between competitiveness and domestic demand comes from a rather old article in international economics, and one recently rather neglected, by the Australian economist, Trevor Swan (Swan, 1955), which gave rise to what is now known as the Swan Diagram. (See Chart 10.)

The diagram shows combinations of relative costs and domestic demand which can give 'external balance' – some sort of acceptable position of a country's balance of payments – think of it, if you like, as a zero balance on current account. It then juxtaposes this with the combinations of these two variables which give 'internal balance' – i.e. full employment without inflation, or the natural rate of unemployment (or call it what you will).

Chart 10: The Swan Diagram



Source: Capital Economics

The chart describes four types of economic 'unhappiness': current account deficit with unemployment (Zone A in our diagram); current account deficit with inflation (Zone B); current account surplus with inflation (Zone C); current account surplus with unemployment (Zone D).

The diagram does suffer from some serious theoretical defects. There is an artificial division between 'unemployment' and 'inflation', which may be

interpreted as some sort of desired point on a Phillips Curve, if such a thing existed. But if internal balance is interpreted as the NAIRU then in the 'unemployment' segments the inflation rate will be decelerating and eventually turning negative, and in the 'inflation' segments, it will be accelerating without limit. Thus, in the 'unemployment' segments, at some point the real exchange rate will be falling, through internal devaluation; and in the inflation segments, it will be rising. Despite these drawbacks, the diagram is an extremely useful heuristic device.

What the diagram makes clear is that although there are some states that an economy can be in where a change in only the level of domestic demand is what is required (specifically countries on the horizontal line X-Y depicted in the diagram), and some where only a change in relative prices is required (specifically countries on the vertical line U-V), the overriding bulk of cases will require changes in both domestic demand and relative prices (the real exchange rate) to achieve the desired combination of internal and external balance.

All of the troubled countries of the euro-zone are in section A of the diagram. This is not surprising. During their years of euro membership, domestic costs and prices have risen sharply, leaving them uncompetitive. They unambiguously need a depreciation of their real exchange rate to achieve both internal and external balance. Whether they also need higher or lower domestic demand is not clear *a priori*, although in the case of Greece and Spain, their economies are so depressed (i.e. they are well to the left within segment A) that it is likely that they will need an increase in domestic demand. Of course, the scope to deliver such a boost is limited both inside and outside the euro. But outside the euro there might be some scope through the operation of quantitative easing. Moreover, the higher inflation unleashed by devaluation would reduce real interest rates and thereby tend to boost spending.

Germany and several of the smaller core countries are in the upper part of Zone D or in the left hand portion of Zone C. Accordingly, they need a rise in their real exchange rate (i.e. a downward movement in the diagram) and an increase in domestic demand. Interestingly, France seems to be in Zone A, along with the troubled peripheral countries.

A3 The transactions and other costs associated with returning to a national currency

In 1990, the EC estimated that the reduction in transaction and hedging costs resulting from the introduction of the single currency could result in savings of as much as 1% of GDP per year for small open economies. Other studies typically conducted prior to, or shortly after, the introduction of the single currency suggested that the savings would be smaller, but still significant at about 0.5% of GDP per year.

At face value, then, if there was a complete break-up of the euro-zone then this might cause individual economies' transaction costs to rise by a similar amount. But the reduction in transaction costs associated with the formation of the single currency has probably been significantly less than the estimates presented above. After all, improvements in information technology and the increased use of electronic payments over the past decade or two have dramatically reduced the transaction costs of foreign currency transactions. These costs are likely to continue to fall.

Moreover, the implementation of the euro has not completely eliminated cross-border transactions costs. Other obstacles such as legal differences and national regulations mean that despite having the single currency, the euro-zone can still not be regarded as one single market. One example of this is that it normally costs less to make a domestic mobile phone call than a call to another euro-zone economy.

Furthermore, if one economy left the euro-zone, the rise in its transaction and other costs would be much less than whatever the true figure might be for the euro-zone as a whole. After all, it would still gain some benefit from the remaining euro-zone economies using the euro rather than 16 different currencies.

The second main benefit of having a single currency is that it will lead to more trade between the economies in the euro-zone, thereby bringing all the benefits of greater specialisation. But there is little evidence to suggest that

the euro's impact on trade has been huge. Between December 1998 and December 2011, intra-area export values have increased by 80%, compared to a 130% increase in extra-area export values. Admittedly, the weaker performance of intra-area trade may partly reflect the fact that euro-zone GDP has expanded at a slower pace than global GDP. Nevertheless, the consensus view is that the euro has boosted trade within the euro-zone by a total of only 5% to 10%, implying that the gains have not been enormous.

A4 EU membership

In Section 3.2, we argued that a country leaving the euro-zone could probably still remain a member of the EU. But this is not the final word. This Appendix considers three related issues. This first is whether the European single market could survive the departure of several countries from the euro-zone. The second is whether a country exiting both the euro and the EU could replicate most of the benefits of closer European integration in other ways. The third is what the cost of leaving the EU might be.

By way of background, it has been argued that a country exiting EMU could potentially remain within the European Economic Area (EEA). The EEA is an agreement between the EU members and three other European states: Iceland, Liechtenstein and Norway. It allows the last three to participate in the EU's single market in return for adopting the relevant EU legislation, which covers areas such as company law, consumer protection, environment and social policy, although they have been allowed to opt out of the rules on agriculture and fisheries. The non-EU members of the EEA have no representation in the institutions of the EU (such as the Parliament or Commission). They also still have to contribute to social and economic funds for poorer EU states.

The EEA is not the same as the European Free Trade Association (EFTA). EFTA comprises the three current non-EU members of the EEA, plus Switzerland, which has opted for a series of bilateral treaties with the EU which effectively replicate the essential parts of the single market without Switzerland formally being a member. Switzerland has no representation in the institutions of the EU, but nor does it contribute to EU funds. EFTA also has a large number of free or preferential trade agreements with other countries worldwide, which are similar to those enjoyed by the EU.

There are other options for non-EU members who want close links with the EU. For example, Turkey (as well as Andorra, Monaco, and San Marino) is in a customs union with the EU, meaning that imports from Turkey are exempt from EU tariffs. The non-EU EEA states (Iceland, Liechtenstein,

Norway), as well as Switzerland and Monaco, are part of the Schengen Area, which allows free travel within the borders of the area.

The Council of Europe is actually more important than the EU in many non-economic areas, such as legal standards, human rights, democratic development, and cultural co-operation. It currently has 47 member states and is an entirely separate body from the EU. The Council of Europe is responsible for the European Court of Human Rights and certain other important bodies such as the European Pharmacopoeia Commission (which sets common standards for the pharmaceutical industry). Other European cultural activities not dependent on EU membership include the UEFA Champions League and, crucially, the Eurovision Song Contest.

In summary, the European single market could survive the departure of several countries from the euro-zone. If we limit the definition of the single market to EU states, there are 10 members which are not also members of the euro. But if talking of a "European free trade area" it makes sense to add at least the three members of EFTA which are formally part of the single market, and arguably Switzerland too by virtue of the bilateral agreements. This makes a total of 14 non-euro countries which are part of a European free trade area, of which four are non-EU too.

So a country exiting the EU could replicate most of the benefits of closer European integration in other ways. Nonetheless, it would clearly be easier to remain within the EU. The alternative of negotiating a raft of new trade and other bilateral agreements would be much harder, especially if there has just been an acrimonious split with former partners in the euro-zone.

The costs of losing EU membership

Nevertheless, suppose that a country chose, or was forced, to leave the EU. How large would the costs be? These would have to be set against whatever benefits might flow from leaving the euro.

Greece receives approximately €3bn in EU funding per year (net of costs of membership). This is equivalent to 1.25% of annual GDP. This would be lost. Estimates of benefits to trade and foreign direct investment from EU

membership vary widely. But according to a 2000 study by the IOD for the UK, the two together are worth 1% of GDP per year. If the benefits to Greece were similar, this would imply a cost of EU exit of roughly 2.25% of annual GDP.

This would be a considerable overestimate if, once outside the EU, Greece could reduce trade barriers through membership of the EEA or bilateral trade agreements as we discussed above. Indeed, Switzerland (not a member of the EU or the EEA) has concluded in cost benefit analyses that the potential costs of EU membership exceed the benefits. Note, though, that it might be more difficult for Greece to achieve similar deals once it has upset other countries by leaving, defaulting and imposing capital controls.

A5 What would be the optimum re-configuration of the euro-zone?

This Appendix discusses in more detail the best form for the euro-zone to take — if *any* — following some sort of break-up involving the departure of one or more countries, as well as the different paths of transition. In other words, what form should the break-up take, how should it happen, and what should be left in place of the euro?

There are various possible configurations for the euro-zone. At the extreme, all countries would return to individual national currencies, leaving no currency union left at all. At the other end of the spectrum, the departure of just one or two countries would leave the vast bulk of the euro-zone intact. Alternatively, the euro-zone might split into two or more currency unions, each one including countries of similar economic characteristics. One often discussed possible formation is a split into a Northern or 'core' euro-zone and a Southern or 'peripheral' euro-zone.

Which of these configurations (and any others) might be considered to be the 'best' in overall terms is, of course, much more than just an economic issue. However, here we will concern ourselves solely with the economic considerations and, in that respect, there are three main considerations.

First, which new arrangement would best serve the interests of the current members of the euro-zone and give what remains of the currency union the best chance of survival and prosperity? Second, what are the likely economic and financial consequences of the transition to the new arrangement? And third, which arrangement might be best for those countries already outside the euro. These three questions, of course, might lead to conflicting conclusions. We look at each below.

Which new configuration would best serve member countries and promote prosperity?

The answer to this question rests on the extent to which different member countries are economically compatible with each other and would therefore

benefit from remaining in some form of currency union. A more formal way of putting this is to ask which countries, if any, might constitute something close to an 'optimal currency area' or at least a *feasible* currency area?

Table 7 below helps to give some indication of this by showing the behaviour of key economic variables – GDP growth, inflation, unemployment and the current account - for the main member states since the birth of the euro in 1999, as well as the most recent values (which mainly relate to Q4 2011 or Q1 2012). Note that we have included average data from 1999 even for recently joined members like Slovakia and Slovenia in order to illustrate their economic compatibility over a reasonable time period.

As the table shows, contrary to hopes and expectations at the time of EMU's inception, there has generally been a wide variation in economic performance among current member states during the euro's lifetime. Average GDP growth, for example, has ranged from an anaemic 0.7% in Italy to an impressive 3.7% in Ireland, while average inflation, unemployment and current account positions have also varied widely. Those variations have generally widened over time rather than narrowed, as indicated by the differences between the most recent values.

Table7: Key economic variables in EMU

Member State	GDP In EMU	GDP Latest	Inflation in EMU	Inflation Latest	Unemp in EMU	Unemp Latest	Curr Ac. In EMU GDP)	Cur Ac. Latest
	(%y/y)	(% y/y)	(%y/y)	(%y/y)	(%)	(%)	(%of GDP)	(% of GDP)
Germany	1.2	2.0	1.5	2.2	8.8	5.6	3.5	5.7
France	1.5	1.2	1.8	2.4	9.0	1.0	0.0	-2.2
Italy	0.7	-1.3	2.2	3.7	8.2	9.8	-1.2	-3.3
Spain	2.6	-0.4	2.8	2.0	11.9	24.1	-5.5	-3.5
Netherlands	1.9	-1.1	2.2	2.8	3.8	5.0	5.6	9.2
Belgium	1.8	0.5	2.1	2.9	7.8	7.3	2.2	-0.8
Austria	1.9	2.8	1.8	2.4	4.3	4.0	1.9	1.9
Greece	2.4	-6.2	3.3	1.5	10.1	21.7	-9.2	-9.8
Ireland	3.7	-0.3	2.5	1.9	6.1	14.5	-1.7	0.1
Finland	2.4	1.4	1.8	3.0	8.5	7.5	4.5	-0.7
Portugal	1.2	-2.2	2.5	2.9	7.6	15.3	-9.5	-6.4
Slovakia	4.2	3.2	5.3	4.8	15.5	13.9	-5.4	0.1
Luxembourg	3.7	0.8	3.0	3.8	3.8	4.6	9.2	7.1
Slovenia	3.1	-0.2	4.7	2.9	6.2	8.5	-2.5	-1.1

Source: Eurostat, Capital Economics

Table 8: Correlations between annual GDP growth rates since 1999

	Ger	Fra	It	Spa	Neth	Bel	Aus	Gre	Ire	Fin	Por	Slovak	Lux	Sloven	Mal	Cyp
Ger	1															
Fra	0.82	1														
Ita	0.86	0.95	1													
Spa	0.62	0.87	0.84	1												
Neth	0.85	0.89	0.84	0.82	1											
Belg	0.84	**0.92**	0.88	0.75	0.88	1										
Aus	**0.90**	0.89	0.87	0.76	0.90	0.94!	1									
Gre	**0.13**	0.42	0.46	0.75	0.36	0.27	0.27	1								
Ire	**0.55**	0.85	0.72	0.89	0.73	0.75	0.71	0.65	1							
Fin	0.87	0.75	0.90	0.82	0.88	0.87	0.91	0.36	0.72	1						
Por	0.63	0.80	0.78	0.74	0.80	0.72	0.69	0.32	0.70	0.74	1					
Slovak	0.54	0.36	0.44	0.45	0.48	0.37	0.51	0.50	0.26	0.63	0.27	1				
Lux	0.69	0.86	0.80	0.84	0.82	0.81	0.82	0.43	0.76	0.83	0.85	0.38	1			
Sloven	0.45	0.67	0.65	0.85	0.63	0.64	0.60	0.70	0.76	0.72	0.65	0.41	0.38	1		
Mal	0.59	0.74	0.69	0.85	0.83	0.65	0.68	0.57	0.66	0.77	0.72	0.48	0.78	0.70	1	
Cyp	0.71	0.78	0.85	0.79	0.63	0.69	0.76	0.56	0.74	0.82	0.47	0.55	0.68	0.62	0.61	1

Source: Eurostat, Capital Economics

Table 8 expands on this by showing the correlations between the annual rates of GDP growth between different member states since 1999. While there are some close correlations – for example between Germany and Austria or France and Belgium (emboldened) – there are some low ones too – Greece with virtually anywhere, or Ireland with Portugal.

One key factor behind these divergent economic performances has, of course, been the fundamental differences in competitiveness between different member states.

All of this has contributed, in turn, to the divergence in the fiscal positions of member states seen in the last few years. Table 9 (at the end of this Appendix) illustrates this in the form of a fiscal heat map, showing the key fiscal indicators for the major euro-zone economies.

The table confirms that the uncompetitive, slow growing economies of the South are generally in a poor fiscal position (as indicated by the

preponderance of red), while the more competitive Northern 'core' economies are generally in a healthier position (amber and green).

A Northern euro-zone

Needless to say, all of this has contributed to the widespread conclusion that, in its current full form, the euro-zone is a long way from being an optimal currency area. But that does not mean that some countries could not, and should not, remain together in some form of currency union following a euro-zone break-up.

Most obviously, it seems clear that at least some of the other core Northern economies like Austria and the Netherlands could remain in a union with Germany. The tables show that their economic and fiscal performance in EMU has been pretty similar to that of Germany. What's more, they probably at least partly meet the textbook criteria often advanced for an optimal currency area – namely, labour and capital mobility, wage and price flexibility. It also seems feasible for those countries to undertake and sustain the degree of fiscal and political union required for a currency union to function properly and not yet seen across the whole euro-zone.

Finland probably looks weaker on some of these criteria – if nothing else, language might be a bigger barrier to labour mobility – but its economic performance has perhaps also been similar enough to suggest that it too could survive and prosper in a German-led Northern currency union. It has had an 87% growth correlation with Germany within the euro-zone and is one of only three euro-zone economies with an AAA credit rating from S&P.

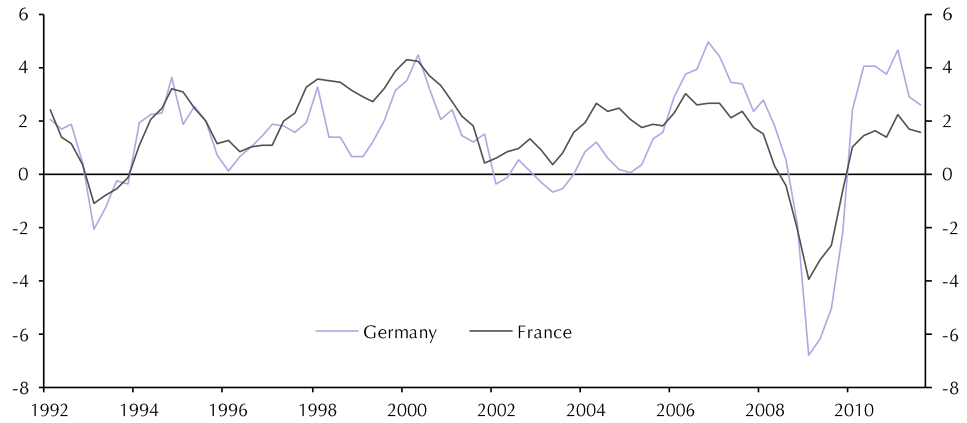
Belgium's position is also less clear. It has a high growth correlation with other Northern economies, but higher debt levels and a weak banking system. Moreover, its political system is extremely weak and there are even doubts about whether it can survive as a country. Indeed, in some ways it can be seen as the 'Greece of the North'. However, provided it tackles these problems and is prepared to engage in the required political and fiscal union, its close relationship with its neighbouring economies suggests that it could participate in a Northern currency union. Overall, we would rank

the countries most suited to joining Germany in a Northern euro as follows: 1. The Netherlands; 2. Austria; 3. Finland; 4. Belgium.

Where does France fit in?

Perhaps the most intriguing issue in all of this is the potential position of France. France is traditionally seen as Germany's close economic ally and partner, and Chart 11 shows that the two economies have tended to move quite closely together over time and their correlations are high.

Chart 11: German & French real GDP growth (% year on year)



Source – Thomson Datastream

However, France's recent economic and fiscal performance has in some ways more closely resembled that of some of the peripheral economies. It has a current account deficit as opposed to Germany's surplus and its primary budget deficit is close to that of Greece. It also has strong banking and financial links to Greece and the other peripheral economies.

Moreover, within a Northern euro-zone, France would probably need to take decisive action to improve its competitiveness relative to Germany and some of the other members, implying a possible need for deflation.

At the same time, France's competitiveness compared to other areas would be further damaged if, as seems likely, a Northern euro was stronger against other currencies than is the current euro. There might be parallels in all of this with France's decision to remain on the Gold Standard in the 1930s,

which delayed her economic recovery relative to competitors – like the UK and Scandinavia – which left the system earlier.

Given these points, there may certainly be some economic case for France to stay out of a Northern euro. Instead, there may be attractions for it in joining – and indeed, *leading* – a Southern euro, if one existed. However, the political and social obstacles to breaking away from Germany may prove to be insurmountable.

Should the peripheral economies stay together?

This leads to the question of what should happen to the peripheral economies. On the assumption that some or all of them should leave the euro-zone, should they form their own currency union (perhaps with France) or should they all return to their own national currencies?

The advantage of the former, of course, is that they would continue to benefit from some of the theoretical benefits of membership of a currency union, such as reduced exchange rate uncertainty. For countries with strong trade links, like Portugal and Spain, that might be an attractive proposition. At the same time, the existence of a Southern currency bloc would provide deeper and hence more liquid financial markets, e.g. bond markets, for those countries and hence reduce their sovereign borrowing costs and firms' cost of capital.

This configuration might also have political appeal. Both the Southern and the Northern euro blocs could be presented as legitimate successors to the old euro — albeit with different and smaller memberships. After all, this is not entirely different from the two-speed monetary union that most originally envisaged in the 1990s. This approach would make it easier to maintain continuity within the current institutional framework, especially if both currencies were legitimised by treaty amendments and were still managed by the ECB (with different interest rates for the two different currencies). An additional advantage that might appeal to some countries is that a division of the euro into two would be a sort of half-way house between staying in the current euro and abandoning it completely.

However, the previous tables underline that, while the peripheral economies are regularly lumped together because of their fiscal problems, they are actually different economies with distinct and disparate characteristics. This is the configuration, involving a Southern currency bloc called the "Medi", described by Charles Goodhart in "The European Collapse of 2012/13".

We have already noted, for example, that Ireland and Italy have been the fastest and slowest growing countries in the euro-zone. Their GDP growth rates have a fairly low correlation of just 0.72. Even Portugal and Spain, despite their close proximity and trade links, have performed quite differently in EMU, with a correlation of just 0.74.

Meanwhile, there has also been a wide variation between the different countries of the region in other economic variables such as current account positions, inflation and unemployment. And while countries like Greece and Ireland share some characteristics, their weak trade links suggest that they would gain little from maintaining a common currency with each other.

Given this, we do not believe that – starting with a blank sheet of paper – it would be economically optimal for the peripheral economies to be together in some form of currency union. The benefits of having their own currencies and being able to set their own policies to suit their diverse economies would probably outweigh the benefits of exchange rate stability with each other.

The costs of transition

The reality, though, is that we are not starting with a blank piece of paper. As such, the optimum re-configuration of the euro-zone would depend not just on what would ultimately be the 'best' arrangement on an *ex-post* basis but also on what economic and financial effects would stem from the *transition* to that position from the current one.

Generally speaking, the bigger the degree of change from the current arrangement, the greater the likely damage and disruption associated with the transition. This might mean that it would be better for the euro-zone to

undergo only modest changes, even if that meant what was left did not necessarily constitute an optimal currency area.

In practical terms, this might mean countries such as Italy and Spain should remain within the euro-zone on the basis that the damage — both to themselves and the rest of the area — likely to be caused by the process of their departure would outweigh the benefits of their eventual absence both to them and to the rest of the currency union.

This is largely a question of timescale, however. While in the short to medium term, the best option would no doubt be for any changes to be minimal, over the longer term the optimal course must be to move to something as close as possible to an optimal currency union. Indeed, even in the short to medium term, a less than optimal configuration might be damaging if it sustains speculation that further changes in the currency union are necessary and likely at some point in the future. Nonetheless, it is clear that any changes to the euro-zone would need to be managed carefully to minimise the damage during transition and maximise the chances of survival of the remaining currency union.

Should the core economies leave?

One possible course that might reduce transition costs would be for the euro-zone to break up via the departure of the strong core economies to establish their own union. This would presumably allow the remaining euro to fall, strengthening the economies of the remaining member states. It would also mean that the stronger Northern economies, rather than the weaker Southern ones, would bear the costs of leaving the currency union and printing a new currency and redenominating contracts and debt securities. There should therefore be less need for debtors in the weaker economies to default as they could continue to service euro liabilities in euros as their home currency.

Maintaining the legal continuity of the euro in these circumstances would not be straightforward, especially if large (core) economies such as Germany and France were to leave. This would open the door for legal challenges that the euro has become the rump currency of a smaller

(peripheral) bloc and that this is a fundamental change in the terms of the contract which represents a breach and/or default. At the very least, the existing legal framework and institutions supporting the euro as presently constituted (including the ECB) would have to continue to stand behind the currency under its narrower membership. Any Treaty amendment legitimising the exit of one or more stronger countries would also have to confirm the continuity of the euro as the currency of the remaining members.

What's more, the problem of currency mismatch would simply be transferred to the stronger countries leaving the euro. Debtors in these countries with obligations in euros would be better off, but creditors would be worse off. There would also still be problems of capital flight from weaker economies into stronger ones, in the expectation that the currency of the weaker economies would fall.

However, these flows might be reduced if the weaker economies kept the euro, because there would be less disruption to their financial systems and there would at least be some continuity in their institutional framework. A strong country leaving the euro is also likely to be in a better bargaining position with respect to other EU member states over any emergency measures it may need to take.

A two step process?

The departure of the stronger core from the euro may seem irrelevant given our previous assertion that the other economies should not remain together in a Southern currency union. However, there may be merits in a two-step process in which the first step is the departure of the core economies to form a Northern euro, leaving behind a Southern euro. The second step would then be the departure over time, if necessary, of remaining economies from this Southern union and the re-establishment of national currencies.

What would be best for the existing 'outs'?

A third consideration is which configuration would be best for countries currently outside the euro-zone, such as the UK, Sweden, Denmark, Norway and Switzerland. Given the importance of trade and other relations with those countries, this could help to determine whether any new configuration would be sustainable and successful.

Once again, the current 'outs' would presumably be interested in both the new configuration of the euro-zone and the impact on them of the transition to that new configuration. In terms of the former, they would presumably hope that the new arrangement would facilitate strong growth and free trade with outsiders. They may also hope that their currencies would be competitive against what remains of the euro or any new single currency.

In these respects, the 'outs' might prefer a fairly comprehensive break-up of the euro-zone, given the best chance that both the leavers and remaining countries would in time start to expand strongly. They may also hope that a bigger break-up would increase the amount of trade done by ex-member states with other countries. A bigger break-up may also help to improve the competitiveness of the 'outs' by allowing their currencies to fall against the biggest members of the current euro-zone. Switzerland, for example, would benefit if the franc fell back sharply against an appreciating Northern euro consisting of Germany and other current 'core' economies.

Against that, the economic and financial knock-on effects on the 'outs' would presumably be bigger in the case of a more comprehensive break-up. Once again, though, this is a matter of timescale. While in the short term a bigger break-up may have a more disruptive effect on the 'outs', over the long-run it would be more positive if it allowed current euro-zone economies to grow more quickly.

Conclusions

The optimal re-configuration of the euro-zone would be a move to a smaller currency union incorporating the 'core' Northern economies of Germany, Austria, the Netherlands, Finland, and Belgium. The economic case for

France joining this group is not very strong, but political considerations might deem that it should do so anyway.

We do not subscribe to the view that the peripheral economies should remain or join together in a Southern currency union. Their diversity suggests that they should all return to their own national currencies, though efforts should clearly be maximised to limit the economic disruption associated with the transition to this position. A two step process, involving first the departure of the core economies into a Northern euro, and then a gradual return of the Southern economies to national currencies, may have some merits.

Table 9: Euro-zone fiscal sustainability heat map

	Budget deficit (2010, % of GDP)		EC's suggested ann. fiscal tightening (2010-13, % of GDP)	Government debt (2010, % of GDP)		Gov't debt held abroad (% of total gov't debt)	Total external debt (Q1 2011, % of GDP)	Ave. debt maturity (years)	Debt maturing in 2012 and 2013 (% of GDP)	Credit rating (S&P)
	Overall	Primary		Gross	Net					
Greece	9.1	2.2	3.5('10-11)	165	133	60	175	6.9	31	SD
Portugal	4.2	0.4	1.25	108	76	56	222	5.8	21	BB
Ireland	13.1	9.7	2.0	108	65	63	316	6.2	8	BBB+
Belgium	3.7	0.4	0.75	98	80	63	261	6.7	27	AA
Spain	8.5	6.1	1.75	69	45	47	161	6.1	22	BBB+
Italy	3.9	-1.0	0.5	120	100	44	117	7.0	32	BBB+
France	5.2	2.6	1.25	86	63	62	193	7.1	21	AA+
Netherlands	4.7	2.6	0.75	65	38	61	301	6.2	16	AAA
Germany	1.0	-1.6	0.5	81	52	50	152	6.2	15	AAA
Austria	2.6	0.0	0.75	72	45	80	212	7.0	13	AA+
Finland	0.5	-0.6	N/A	49	-60	84	195	4.9	19	AAA
Criteria										
Red	>8	>5	>1	>80	>80	>60	>200	<6	>30	<A+
Amber	3-8	3-5	0.5-1	60-80	50-80	50-60	170-200	6-7	30-20	AA+ - A+
Green	<3	<3	<0.5	<60	<50	<50	<170	>7	<20	>AA+

Source: Thomson Datastream, World Bank, Bloomberg, OECD, Capital Economics

A6 Lessons from historical break-ups of post monetary unions

This develops the material on historical evidence discussed in Section 2.3 including a discussion of the arguments put forward by Andrew Rose (2007).

One of the reasons for confusion about the lessons from the history of monetary break-ups is that the term "monetary union" is often used to describe very different things. Given that we are interested in lessons for the euro-zone, we will define monetary union as something similar to the euro-zone itself: an agreement between independent countries to share a single paper currency which is controlled by one central bank. Under this definition, a monetary union has only one monetary policy and one exchange rate policy, though the countries within the union may well have independent fiscal policies.

Once this definition is agreed it becomes clear that there is no really close historical parallel for the euro-zone. As described in Section 2.3 of the main text, the numerous cases of post colonial countries creating their own currencies were not really "monetary break-ups" because they mostly used the currencies of neighbouring or colonial powers or else had currency boards. Their experience does provide some evidence about how to create a new currency, but it says little about monetary unions breaking. What's more, the countries involved did not have the significant imbalances, lack of competitiveness, or unsustainable levels of public or external debt which are critical features of the euro-zone's situation.

Rose's list includes Botswana's exit from a currency union with South Africa in 1977. In fact, Botswana was never part of a formal monetary union with South Africa; the population simply used the rand because they did not have their own national currency. In the 1970s the Botswanan government asked the South African Reserve Board (SARB) for a more formal arrangement by which they would share the profits earned on its foreign reserves. After failing to reach agreement, Botswana opted for monetary independence, which actually took place in August 1976.

It is true that the introduction of the new currency, called the pula, was successful: indeed, it was greeted "with jubilation" according the central bank governor and was later revalued against the rand. But the economy was dominated by subsistence farmers and migrant workers and there was virtually no financial sector and no evidence that the region was uncompetitive. Accordingly, Botswana's experience holds relatively few lessons for the euro-zone beyond the fact that it is quite possible for a country to introduce a new currency without triggering macroeconomic problems.

It is also an over-simplification to conclude that, because there was no macroeconomic turmoil, the whole process of introducing a new currency necessarily went smoothly. India and Pakistan, for example, used a common currency for a short period after independence in August 1947, before Pakistan introduced its own rupee in July 1948. There was no macroeconomic turmoil as a result of the currency split, so in that sense it was successful. But there were, not surprisingly, disputes between India and Pakistan about many of the issues which often come up during monetary break-ups. These included the division of assets of the central bank between the two new monetary areas; the potential for the Government of Pakistan to borrow from the Reserve Bank of India and from the markets prior to the currency being split; and the question of whether Pakistan should appoint a Deputy Governor of the Reserve Bank.

There are, however, some examples of countries splitting apart and of this *political* split being followed by the creation of new, independent national currencies. In these cases a monetary union often lasted for a short period after the political dissolution, often while preparations were under way to introduce new currencies. The three most relevant cases of this kind are the dissolution of the Austro-Hungarian Empire after 1918; the rouble zone after the USSR was dissolved in 1991; and the brief Czech and Slovak currency union in January and February 1993. These examples yield useful lessons about the technical aspects of how to split a monetary union into several new currencies and the economic issues which arise.

With these caveats in mind, five relevant historical examples are described briefly in Table 10 (at the end of this Appendix). Based mainly on these cases we have drawn six lessons for the euro-zone.

Lesson 1: Anticipation of break-up leads to large capital flows

The most striking lesson from Czechoslovakia, the rouble-zone, and Austria-Hungary is that there have always been large capital flows before the introduction of new currencies, driven primarily by expectations for the future appreciation or depreciation of the new currencies. These capital flows have been destabilising and difficult to control and have partly dictated the timing of new currencies being introduced.

In some cases, capital flows have also been affected by regulations such as taxation of new currencies as governments have used the currency conversion as an opportunity to raise revenue. After the Austro-Hungarian monetary union was broken up, several countries imposed a levy on the old currency before conversion into the new currency.

During currency break-ups, some countries have experienced an outflow of money but others received an inflow. There was, for example, a flood of savings into Czechoslovakian banks from other parts of the Austro Hungarian Empire in 1921 as people tried to avoid a 50% levy on old banknotes before they were converted into the new currency. This inflow led to a sharp drop in interest rates on bank deposits in Czechoslovakia.

More than seventy years later, in late 1992, there was once again an influx of capital into Czech commercial banks, this time from Slovak banks within Czechoslovakia. This occurred before a currency division had even been agreed. Czechoslovakian citizens correctly anticipated that the *currency* would be split once it had become clear that the *country* would be divided into two independent states following a referendum in 1992. These spontaneous capital flows helped to bring about the currency split because the central bank in the Czech part of the country found it increasingly difficult and risky to recycle this capital back to Slovak banks. The Bundesbank's concerns about growing imbalances within the euro-zone's

Target2 mechanism mirror Czech worries about recycling funds to Slovakia.

Lesson 2: The authorities usually impose strict capital controls and sometimes border controls around the time of currency conversion

Given the size of capital flows generated by currency break-ups, it is perhaps not surprising that capital controls have been introduced in nearly all cases.

During the split of the monetary union in Czechoslovakia, capital and even *border* controls were imposed between 4th and 7th February 1993 in order to prevent people moving funds from the Slovak to the Czech part of the country. After a limit was imposed on the amount of cash which individuals could convert, at just CSK 4,000, which was less than one month's average salary (though businesses were exempt). After the new currency was introduced, old banknotes were physically stamped but they continued to circulate for some time.

In the case of the euro-zone, it would not be possible to prevent Greek citizens from exporting their euro banknotes because (unlike in the Czechoslovak or Austro-Hungarian cases) the euro itself is likely to continue to be used.

Lesson 3: Establishing the credibility of the new currency

A new currency and central bank needs some foreign assets to back and establish confidence in a new currency and prevent it depreciating. But the circumstances of a monetary break-up can make it difficult to acquire sufficient reserves.

Various solutions have been adopted. A conventional approach in modern times is to arrange IMF loans when the new currency is launched. A more unusual solution was available for the Baltic Republics in the early 1990s as their pre-World War Two gold was returned from Western central banks where it had been since the Soviet invasion in 1940.

An even more unusual solution was adopted by Estonia in 1992, which was ready to launch its new currency before it had received its pre-war gold. Its solution was to use 150,000 cubic metres of timber from the state-owned forests to back the kroon. This timber remained on the central bank's balance sheet until 1997.

In some cases, the central bank's reserves have risen rapidly after the currency was introduced, particularly when there was a large amount of hard currency circulating in the country. This was the case in Botswana, where the population sold their South African rand in exchange for the new currency, the pula, after it was introduced in 1976. It was also true of Estonia, where the government had encouraged dollarization prior to the introduction of the new currency. This may well happen in Greece too, as there are now reported to be large volumes of euro banknotes in circulation which people will presumably be willing to change for new drachma if and when it is successfully introduced.

Lesson 4: The division of central bank assets is likely to be contentious

When a currency union is disbanded, the assets and liabilities of the central bank need to be split between the successor states. This has often been difficult to agree as it is a zero-sum game played between countries which are often not on the best of terms.

There was, for example, a long negotiation over how to divide up the assets of the Austro-Hungarian Bank when it was liquidated in the 1920s. In this case, gold reserves were eventually split according to a formula based on population size and the estimated proportion of banknotes in each of the five successor countries. The Austro-Hungarian Bank also held some commercial assets, notably mortgages, which were distributed to the successor states in which the property was located.

Even in the case of the relatively amicable separation of the Czech and Slovak Republics in 1993 there was a disagreement over the division of gold reserves, although the bulk of the assets were shared in the ratio of two to one, approximately in line with population sizes.

Not surprisingly, there were more serious disputes over the division of the assets of the Reserve Bank of India when the short-lived Pakistan and Indian monetary union was ended the summer of 1948. The main point of contention was how to split the country's foreign reserves, notably the sterling balances.

Lesson 5: Monetary unions have in the past broken up because of lack of sufficient monetary or fiscal discipline in some constituent countries

The rouble zone is an extreme example of what happens to a monetary union in the absence of coordination or discipline over macroeconomic policy. During the first few months of its existence, in 1991 and early 1992, each of the fifteen central banks created large amounts of credit for their respective governments and enterprise sectors. No central bank had an incentive to control this money creation, which inevitably led to uncontrolled inflation.

Later in 1992, in an effort to control inflation the Central Bank of Russia (CBR) cut back on the supply of banknotes to other members of the rouble zone. The growing shortage of banknotes forced other countries to introduce their own surrogate currencies, which were often simple "coupons" and which circulated alongside the rouble. In June 1992 the CBR ended the automatic clearing of rouble bank deposits from banks in other republics to Russian banks and in late 1992 the authorities hugely expanded credit in Russia itself. This prompted many other countries within the rouble zone to accelerate plans to introduce their own currencies.

Interestingly, Greece is one of many countries which has in the past struggled to meet the criteria to join a so-called "monetary union" and has then dropped out because it failed to maintain the required fiscal discipline. In 1867, two years after the Latin Monetary Union was formed, Greece made a commitment to join it in its *Law on Currency*, but until 1885 Greece could not achieve convertibility of the drachma because the government ran excessive fiscal deficits, funded by printing fiat money (i.e. currency which was not backed by gold or silver). Greece finally joined the LMU in

January 1885, but managed to stay in it for only nine months because there was a huge flight from the drachma into harder currencies.

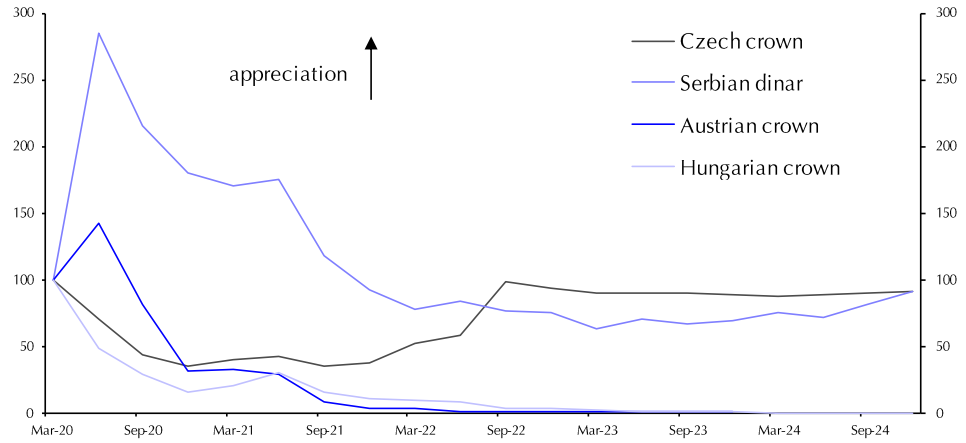
Lesson 6: The fate of successor currencies has varied greatly

The final lesson is that the successor currencies from within a single currency area have had very different fates, reflecting their different macroeconomic and political situations.

After leaving the rouble zone some currencies were strong, including the Estonian kroon and those currencies of the other Baltic Republics, all three of which were pegged to western currencies. Others currencies suffered severe inflations and devaluations, and in some cases were quickly replaced in further currency conversions. For example, the Ukrainian coupon-karbovanets was introduced January 1992 and depreciated drastically even against the Russian rouble, which itself was depreciating fast against western currencies. In 1996 the karbovanets was replaced by the hryvnia.

Similarly, after the break-up of the Austro-Hungarian currency, Austria and Hungary both experienced hyperinflation, whereas the Serbian and Czechoslovak currencies avoided high- or hyper-inflation and indeed their currencies maintained their purchasing power against gold between 1920 and 1924. (See Chart 12.)

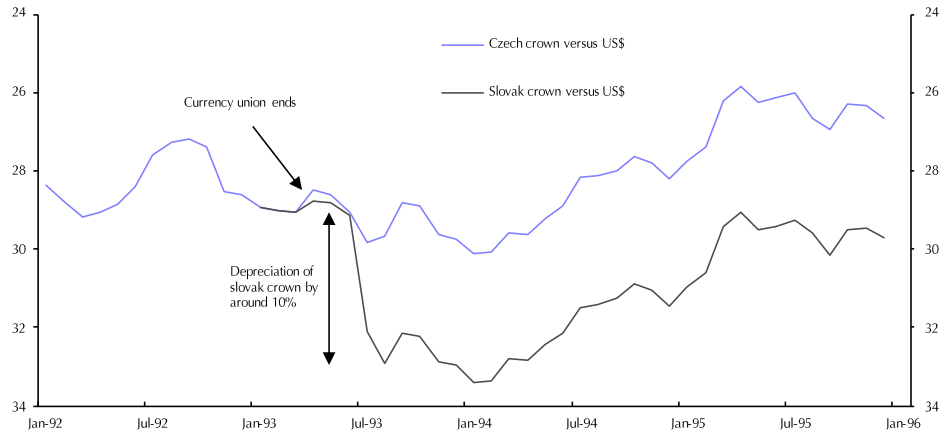
Chart 12: Austro-Hungarian Legacy Exchange Rates versus Gold (Jan 1920 = 100)



Source: Peter Garber and Michael Spencer: http://www.princeton.edu/~ies/IES_Essays/E191.pdf

Finally, the Slovak crown depreciated relatively modestly, by around 10%, soon after it was introduced in February 1993. It was worth less than the Czech crown for most of its sixteen-year life, prior to Slovakia joining the euro-zone in 2009. (See Chart 13.)

Chart 13: The Czech and Slovak koruna



Souce: Thomson Datastream

Table 10: Historical currency unions

Name	Dates	Participating countries	Comments
Austro-Hungarian Empire	1878-1919	Austria and Hungary plus minority nationalities within the Empire	The Austro-Hungarian Empire had a single currency until the end of the First World War and, from 1878 onwards, the Austro-Hungarian Bank acted as the Empire's central bank with exclusive rights to create banknotes. The crown circulated through Austria, Hungary and other parts of the Empire. During WW1 the area experienced very high inflation as the central bank was used to finance government spending and monetise the public debt. After the Empire was dissolved in 1919 five countries made plans for their own currencies: the Kingdom of Serbs, Croats and Slovenes; Czechoslovakia; Austria; Romania; and Hungary. New currencies were duly introduced in 1922-23. The main approach was to physically stamp the crown banknotes and then convert them into the new currencies after, in some cases, levying a forced loan for the new government.
The rouble zone	1991-92	Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Russia Tajikistan, Turkmenistan, Ukraine, Uzbekistan	In 1991 the central bank of the USSR, Gosbank, was replaced by fifteen central banks in each of the former soviet republics but the rouble was maintained as the common currency. This system was supported by the international community and the IMF in an effort to avoid a disorderly collapse of the USSR. Each of the central banks assumed the right to issue rouble credits, although only Russia had the means to print rouble banknotes. As soon as 1992 the Baltic states and Ukraine introduced their own currencies. Then, in July 1993, Russia announced that it was introducing a new rouble, effectively forcing the other republics do so. Between 1992 and 1995 all its original members left the rouble zone.
Czech and Slovak Currency Union	1993	Czech Republic and Slovakia	After a referendum in mid-1992 voted to split Czechoslovakia into two countries, the authorities planned to maintain a single currency for at least six months after the political dissolution on 1st January 1993. However, there was a flood of capital towards the Czech part of the country even before the end of 1992. In early 1993 the governments of the two countries concluded that it was not possible to continue with a single currency and agreement was reached, at secret talks, on a date to replace the Czechoslovak crown with separate Czech and Slovak currencies. This took place only six weeks after the political split, in February 1993.
Latin Monetary Union	1865-1927	France, Belgium, Italy, the Vatican, Greece	The LMU was an alternative to the Gold Standard. It was a bimetallic system in which the different currencies of its members were backed by both silver and gold and the ratio of the price of gold and silver was fixed (at 15.5 to 1). Although some coins were legal tender in any member of the LMU, there was no common banknote or central bank equivalent to the euro and ECB. The LMU broke down largely because of excessive money creation by the Vatican and large fiscal deficits in Italy. It had been defunct for many years before it was formally disbanded in 1927.
Scandinavian Currency Union	1875-1914	Norway, Denmark, Sweden	Under the SCU, each country pegged its currency to gold, which guaranteed fixed bilateral exchange rates. Common coins circulated throughout the area from the beginning and common banknotes from 1901. The monetary union was underpinned by a political union between Sweden and Norway, which lasted from 1814 to 1905.

Sources – Various; see bibliography

A7 The legal profession's gains

The UK legal profession would do well from a euro break-up because UK firms are dominant in the market and because so many of the legal issues will have to be settled in English courts (in practice, London). The UK has also already made a major effort to encourage foreigners to bring their legal business here (albeit not always for the wider good, e.g. the curse of "libel tourism").

Some facts to support this:

- The 11 largest law firms in Europe (by 2010 revenues) are all headquartered in the UK (the 12th is Spanish). (Source: survey by The American lawyer cited at http://en.wikipedia.org/wiki/List_of_100_largest_law_firms)

- 4 of the world's top 7 law firms by revenue are headquartered in the UK (same source);

- Of euro-denominated bonds (sovereign, financial and non-financial) where it is possible to determine the governing law, 18% are under foreign law. And of that 18%, 12% are under English law. Or equivalently, we could say that English law is applicable to 65% of euro-denominated bonds governed by foreign law;

- More generally, English law is widely used in swap, repo, securitised lending and futures (no data readily available for breakdown);

- There are few barriers to entering the UK market – virtually unrestricted access for foreign firms. Over 200 foreign law firms now have offices in London;

- London is the global leader in international and commercial arbitrations – more of these take place in London under English law than in any other city in the world. Ninety per cent of commercial

cases handled by London law firms now involve an international party;

- English judgments are easily enforceable – both within the EU (Judgments Regulation and European Enforcement Order) but also in most other parts of the world, even where there are no reciprocal enforcement arrangements;

- Dedicated, high-spec business courts – the Rolls Building brings together the Chancery Division, Technology and Construction Court and Commercial Court under one roof, offering a streamlined service to businesses and maintaining the UK's reputation as first choice for business law;

- An essential partner of the financial services sector – the biggest areas of practice of law firms in the UK include corporate work, banking and capital markets. British law firms are now central to the export of other professional services.

A8 A comparison against what would have happened

An account of gains and losses in relation to the status quo ante the euro exit and devaluation is all very well, but the status quo ante was far from being a stable situation. This Appendix makes a comparison with what would happen if all current members remained in the euro.

The first thing to note is that the current situation in the peripheral countries is dire. With the ratio of Greek public debt to GDP currently at about 160% of GDP and due to fall to just below 120% by 2020 only on the most optimistic of economic assumptions, it seems highly unlikely that existing creditors will receive payment of interest and principal in full. Given that, if Greece were to leave the euro and default on its debts, it would be highly misleading to regard the default as stemming from the euro exit and as one of the factors to be counted in the "costs" section in any totting up of the costs and benefits. Several other countries are in a similar position.

Moreover, the situation looks set to deteriorate. This is particularly true of Greece. There are four factors making for deterioration:

(i) Further fiscal tightening moves are in train;

(ii) Nevertheless, the state of the public finances is dire and this threatens a further loss of confidence and/or a major financial crisis;

(iii) Consumer balance sheets are over-stretched and consumers are still trying to deleverage; and

(iv) Banks are extremely weak, with assets on the books at inflated values. There is a continuing danger of a major banking crisis involving banks collapsing, which would send GDP falling still more.

Under the current set-up, the orthodox method of adjustment would be for domestic wages and prices to fall. In principle, this could lead to the same

result as an external devaluation. If domestic wages and prices were perfectly flexible then the two would come to the same thing – except for their implications for the real value of debt.

This is important because if it is necessary for economic recovery that the real exchange rate is reduced by a certain amount, then the problem of a higher debt to GDP ratio brought about by devaluation – and hence the need to default – would occur anyway. It would be misleading, therefore, to ascribe the default following from a devaluation as being due to the euro exit. The need to default arises because the true fiscal position is worse than it seems because the current numbers are calculated on a misleadingly high real exchange rate.

In practice, the two strategies are different because deflation would not happen instantly but rather occur gradually over time. This means that the debt to GDP ratio – and hence the need to default – would not rise to the same extent immediately, but would approach the same figure gradually over time.

But all of this assumes that the real economy would perform in the same way in both cases. Yet it would not. *Ex hypothesi*, under the devaluation course the economy would be stronger. This would reduce the public deficit, and therefore the rate at which the debt would grow, and it would also increase the size of the denominator in the debt to GDP ratio. Accordingly, the size of default entailed by this strategy would be smaller than that entailed by staying in the euro and deflating.

Things are more complicated if there is a viable strategy of staying in the euro but not deflating. It might be possible, for instance, to bring the debt to GDP ratio down gradually through a combination of austerity and rapid economic growth due to buoyant economic conditions abroad. Indeed, in those circumstances, it might even be possible for our candidate for euro exit to improve its competitiveness as other countries experience a higher rate of inflation than it does, thereby allowing competitiveness to improve without either an external or an internal devaluation. If this were indeed a viable option then leaving the euro would result in a larger default than would happen if the country stayed in. Suffice it to say, however, that at the

moment this does not seem to be a viable option for the peripheral members of the euro-zone.

Would euro exit merely crystallise existing losses?

There is an idea that euro exit would merely crystallise losses that are already present. The idea seems to be that the imbalances built up under the euro-zone - such as housing bubbles and credit booms in Ireland and Spain, or public sector largesse in Greece – have already led to the destruction of wealth and capital, regardless of whether or not the euro breaks up. The only issue is where, when and how this loss shows up. Exit from the euro-zone would crystallize these losses in a particular way but this does not mean that such losses should properly be marked down against euro exit.

This idea has some intuitive appeal and has arguably already been supported by events. Greece has defaulted on its government debts whilst still inside the euro and Spanish and Irish banks have made large losses associated with their property bubbles. And it is clear that further such losses are likely in those and other countries inside the euro. Meanwhile, deposit withdrawals across the euro-zone are already leading to a sharp monetary contraction. The implication of this view is that policymakers should not try to hold the euro together to avoid losses and economic damage – they are coming anyway.

There is a serious weakness to this view. If the euro-zone holds together and manages to return to economic growth, it is possible that the imbalances built up in the first decade of the currency union might be unwound in a fairly orderly manner, over a long period of time. As such, the crystallisation of the losses would be less destructive than might be the case in euro exit. (This mirrors the general belief that policymakers should try to prevent short, sharp recessions and instead smooth out imbalances more gradually.)

A9 Historical evidence on planning and secrecy

There are several historical examples of changes to economic policy regimes and currency systems which have involved varying degrees of planning and secrecy. One example with little planning is sterling's exit from the European Exchange Rate Mechanism in September 1992, which occurred literally overnight, followed, in subsequent weeks, by the evolution of a whole new policy regime. However, the issue of planning was less relevant since the pound's exit was the result of market pressures rather than pre-determined economic policy. Moreover, the UK's problems were less acute than those which would face a country leaving the euro-zone because the UK had maintained a separate currency.

More substantial forms of currency regime break-ups have naturally involved more planning; some of it conducted in secret. One example is the break-up of the Czech-Slovak monetary union which followed the political fragmentation of Czechoslovakia in 1992. The Czech government and central bank decided on the break-up on 19th January 1993 but the plans were kept secret until a public announcement was made on 2nd February, which was just six days before the separation date.

A more impressive confidential plan for a new currency was the example of South Sudan, which managed secretly to print a complete supply of new national currency in the six months before it declared independence on 8th July 2011.

The creation of 15 new currencies, in 1992, following the break-up of the Soviet Union was planned over a long period and conducted largely in public. However, it was not so successful and was marred by member states acting unilaterally, with adverse consequences.

Finally, the establishment of the euro itself involved extensive planning over a prolonged period. While much of the broad planning was done openly and in public, a number of decisions were made during the process that had the potential to cause major market disruption and therefore had to

be kept confidential until the public announcement — including which countries had passed the entry criteria and at what levels exchange rates would be converted. The fixing of exchange rates was finalised and announced just hours before the actual introduction of the euro on 1st January 1999, although they were determined by prevailing market rates against the ECU.

A10 Legal implications

This appendix provides more detail and supporting arguments for the points made in Section 3.2 of the main document. See the following Appendix 11 for a list of the publications consulted.

Does leaving the euro mean leaving the EU?

Until a few years ago it was thought that the legal obstacles facing a government wanting to exit the euro-zone were so great that in practice the break-up of the single currency would be "inconceivable". In particular, it was widely assumed (and still is, by many) that it would be legally impossible for a country that has abandoned the single currency to remain within the EU.

In support of this view, the euro is the common international currency of the whole EU and is established and governed by EU treaties, not by local laws. In principle, all member states of the EU are obliged to adopt the euro once they have met certain economic and technical criteria. The UK and Denmark have had to negotiate opt-outs, while Sweden is excluded only because it has failed (albeit by choice) to meet one of the convergence criteria, namely membership of ERM II for two years.

What's more, the relevant treaties make no provision for a country to leave the currency union (or, perhaps just as significantly, to be expelled from it). Admittedly, there were no challenges to the rights of the UK to hold a referendum on exiting the EU in 1975 or Greenland to withdraw in 1982, even though there was no explicit mechanism for leaving at the time. But the position with respect to the euro is different, because the original language setting it up implies a permanent arrangement - notably the references to the 'irrevocable' fixing of conversion rates and the 'irreversibility' of the steps towards monetary union.

These are substantial points and other member states may well feel they have solid legal grounds to make life difficult for any country that chose to drop the euro. While a country cannot be expelled from the EU either, EU

membership can be temporarily suspended, fines levied and cooperation withdrawn in other areas. Nonetheless, the assumption that there are no circumstances under which a government can leave the euro-zone without also abandoning the EU is almost certainly wrong.

For a start, words such as 'irrevocable' do not have the legal power that is often assumed. This term is sometimes used in the context of wills and trusts, but even this is usually only relevant when the person making the will or trust is unavailable to revoke it (typically due to incapacity or, of course, death). But in general, even if a legal document uses words like 'irrevocable' there will always be exceptional circumstances where this can be overridden, for example if the courts determine that the terms are unfair or it is impossible for one party to continue to perform their obligations.

What's more, the Treaty of Lisbon has added a clause (Article 50 of the consolidated Treaty) acknowledging the right of countries to withdraw from the EU with the approval of a qualified majority of other member states, or in any event within two years of making the request to leave. If this right exists in respect of the far wider issue of EU membership, it is harder to argue that it does not also exist in respect of the narrower question of participation in the euro.

A country could also use Article 50 to leave the EU temporarily and then immediately apply to rejoin (with an opt-out from the euro). Admittedly, in order for a country to leave straightaway under Article 50 it would need the support of a majority of other member states. If that majority exists, it could presumably be mobilised to amend the Treaty and agree an opt-out that allows the country to remain within the EU without interruption. But that is surely a viable option too. Alternatively, the other governments (meeting as the European Council) could simply issue a public endorsement of a country's departure from the euro and worry about any legal details later.

Even in the absence of a formal mechanism for exiting the monetary union within the EU Treaty, a government wanting to leave the euro could draw on other legal arguments. In particular, there is a general principle of international law that governments are able to withdraw from treaty obligations if a fundamental change of circumstances challenges the

essential basis on which the treaty was signed or which otherwise makes continued membership unsustainable. This was enshrined in the Vienna Convention on the Law of Treaties, especially Articles 61 and 62. A weak country such as Greece could argue that the social costs imposed by the euro have become intolerable. (Equally, a strong country such as Germany could argue that others have not been playing by the fiscal rules agreed when the treaties were signed.)

Article 44 of the Vienna Convention also allows a state to withdraw from some clauses of a treaty while keeping the remainder, provided acceptance of those clauses was not an essential basis of the consent of the other parties to be bound by the treaty as a whole. It would be heroic to argue that the success of the EU depends on Greek membership of the euro, especially when other, much larger countries have already been allowed to opt out. This Article might therefore be used to allow Greece to exit the euro while remaining a member of the EU in other respects.

There is some dispute over whether the Vienna Convention is applicable to the EU Treaty, but it has been cited in several rulings of European courts. Moreover, the EU Treaty includes a similar provision (Article 297) permitting a member state to take emergency measures affecting the operation of the single market in the event of "serious internal disturbances affecting the maintenance of law and order". This could include unrest in a country facing economic catastrophe if it remains with the euro.

Finally, whatever the legal technicalities, the recent developments in Greece have surely fatally undermined the assumption that membership of the euro-zone has to be permanent. European politicians, including the leaders of Germany, France and the UK, have openly discussed the possibility that Greece will have to leave the euro-zone. However, these comments have not been accompanied by calls for Greece to leave the EU as well. Indeed, there have been many reports suggesting that Greece would still receive substantial financial and economic support from Germany and other core countries even in the event of euro exit, which implies that Greece could remain a member of the EU too.

The legality of emergency measures

Even if euro exit is permissible, some of the emergency measures that a country might need to take alongside leaving the euro could still be in clear breach of EU laws. In principle, the EU can impose unlimited fines (under Article 260) on any member state that breaches EU law and, although there is no formal mechanism for expelling a country from the EU (unlike the procedure for voluntary withdrawal under Article 50), membership could be temporarily suspended.

One immediate stumbling block is that any country that seeks to impose capital controls could be in clear breach of its existing treaty obligations. After all, the free flow of people, goods and capital is fundamental to the EU. These capital controls could therefore be overturned in the European courts and even in the national courts of the exiting country. (EU law normally takes precedence over national law.)

However, a country might argue that capital controls might come under the scope of Article 297, which provides for emergency measures in the event of "serious internal disturbances". What's more, Article 59 specifically allows for the temporary imposition of capital controls for a period not exceeding six months, if approved by the Commission and the ECB and agreed by a qualified majority of states. The ECB and the remaining member states would probably have substantial exposures to exiting countries both in the form of holdings of government debt and loans made to the banks. As a result, even if the exiting country did default on some or all of its government debt, other member states would probably be willing to tolerate some limited and temporary capital controls to prevent a complete collapse of its banking system.

There will also be domestic legal issues to consider. It has been suggested that a special session of Parliament would be needed over the conversion weekend to pass laws governing the exit. However, this would depend on the specific constitutional position in each country exiting the euro. In practice, many, if not all, of the necessary legal steps can probably be taken by the government and/or Head of State, via executive orders or decrees, or using powers under existing legislation.

In the case of Greece, for example, the President may be able to enact the necessary legislation using Article 44 of the Constitution of Greece. This allows the President "under extraordinary circumstances of an urgent and unforeseeable need" to take emergency measures on the recommendation of the Cabinet. Parliamentary approval would then only be needed retrospectively, with a grace period of up to 40 days.

Holding a special session of parliament might still be desirable at some later point, not least to secure a democratic mandate. However, debates over the conversion weekend would tie up ministers' valuable time when it is most needed to manage the change. Some of the least popular aspects (such as redenomination of bank accounts) might also initially fail to receive parliamentary support, thus increasing uncertainty.

Overall, it would be unrealistic to attempt to specify the appropriate constitutional procedure for each country in every circumstance. But our view is that the exiting country should only hold a parliamentary session over the conversion weekend if absolutely necessary, and that this is unlikely to be the case.

Legal status of the new currency

An even bigger issue is the legal status of any new currency and the impact this would have on contracts which are originally specified in euros.

The most useful starting point is the principle of '*Lex Monetae*', which states that everything which governs the currency of a country can legally be determined by the national government concerned. This is a universal principle of international law which applies to all references to a national currency (including for private as well as public debt) and to all jurisdictions (local and foreign). Thus, if a government changes its national currency from the *pongo* to the *pengo*, any *pongo* amounts specified in any contract will automatically be redenominated into *pengo* using the conversion rate specified by the government. What's more, this would be legally valid even if it imposes substantial losses on one party or the other.

The problem arises, of course, because the euro is both the national currency of Greece, for now at least, and the common international currency of the EU as a whole. Hence, it may be uncertain whether any reference to the "euro" should be interpreted as meaning the national currency of Greece at the time that payment is due, and hence as the new drachma, or as the common international currency of the EU as a whole, in which case it will remain the euro.

In some cases this uncertainty may have to be resolved by the courts. However, there are a number of steps that the authorities can take to provide some clarity on the legal issues. Other important considerations include:

(i) whether the euro continues to exist in some form;

(ii) whether the contract is governed by the law and/or falls under the jurisdiction of the exiting country or that of another; and

(iii) any other factors that might indicate the intentions of the parties, such as whether payment is due in the exiting country or elsewhere.

The first of these considerations is absolutely crucial. The EU is the sovereign body for the euro, including for the purposes of *Lex Monetae*. EU decisions governing the euro are therefore universally recognised and binding in all parts of the world, including any provisions that govern conversion rates and the continuity of contracts. In principle, then, the institutions of the EU could nominate a successor which legally could replace the euro. Indeed, some commentators have argued that the exit of one or more countries would create so many uncertainties that it would be better to do away with the euro completely, perhaps replacing it with a basket currency modelled on the old ECU.

However, in legal terms at least, this would not be necessary. As the common international currency of the EU the euro is not dependent on any particular country using it as its national currency. After all, some EU member states have already opted out and the number of countries using the euro has changed over time (albeit, so far, only by increasing). The upshot

is that, unless the EU itself decides to wind up the euro, any contract involving the euro should still be valid even if the group of countries using the euro shrinks. This applies just as much to financial contracts, such as FX and interest rate derivatives, as it does to debt obligations and contracts for goods and services. Indeed, winding up the euro might create additional disruption. Suppose a Japanese car company has a euro interest rate swap with a German bank. Why should this contract be voided or tinkered with just because Greece has left the euro?

Replacing the existing euro might therefore only be appropriate in a scenario where the currency union breaks apart completely. The EU could then minimise uncertainty by redefining the euro as a basket of currencies along the lines of the old ECU (in other words, "ECU-2"). This would have the advantages of ensuring that the new conversion rates between the components would be legally enforceable internationally. However, this solution would require the agreement of all member states. Crucially, it would not help a country (or small group of countries) that wanted to break away from the euro completely and devalue their currency. Nor would replacing the euro with ECU-2 end the uncertainty, as countries may still want to exit the new ECU further down the line in order to achieve a larger currency devaluation.

Our working assumption is therefore that the euro will continue to exist, albeit as the currency of a hard core of stronger countries. This makes economic and political sense too. (See Appendix 5: What would be the optimum re-configuration of the euro-zone?)

The next consideration is whether a contract is governed by the law, and/or falls under the jurisdiction, of the exiting country or that of another. In the case of contracts, including debt obligations, governed by Greek law, the government could simply legislate to redenominate euro amounts into new drachma at whatever conversion rate it chooses. This would almost certainly be upheld by the courts in Greece. Contracts governed by Greek law could still be challenged in a foreign court. (An EU citizen for example could apply to an EU court.) But there would be a strong presumption that even foreign parties entering such contracts intended to abide by the decisions of the Greek government.

However, the position is different in the case of contracts governed by the law of a foreign jurisdiction. In this case, there would be a strong presumption that any references to the "euro" refer to the common international currency of the EU. The general principle in English law and elsewhere is that the courts will seek to uphold the original terms of a contract regarding both the currency of payment and the amount. There would be a strong presumption that any references to the 'euro' refer to the common international currency of the EU, especially if payment is due to be made in another country to a foreign counterparty.

Indeed, this presumption will often be made explicit. Taking the International Swaps and Derivative Association's *Master Agreement* as an example, the euro is defined as 'the lawful currency of the member states of the European Union that adopt the single currency in accordance with the EC Treaty'. Correspondingly, even if Greece abandoned the single currency and adopted the new drachma, obligations governed by this or the many similar agreements would still be enforceable in euros.

Moreover, even if foreign courts determined that payments could be made in the new currency, this is still likely to be for the equivalent value in euros at the prevailing market exchange rates. In the scenario where a weak country or countries decides to adopt an entirely new currency which then falls in value against the euro, some counterparties may then either have to default on their euro obligations or attempt to renegotiate them on less unfavourable terms.

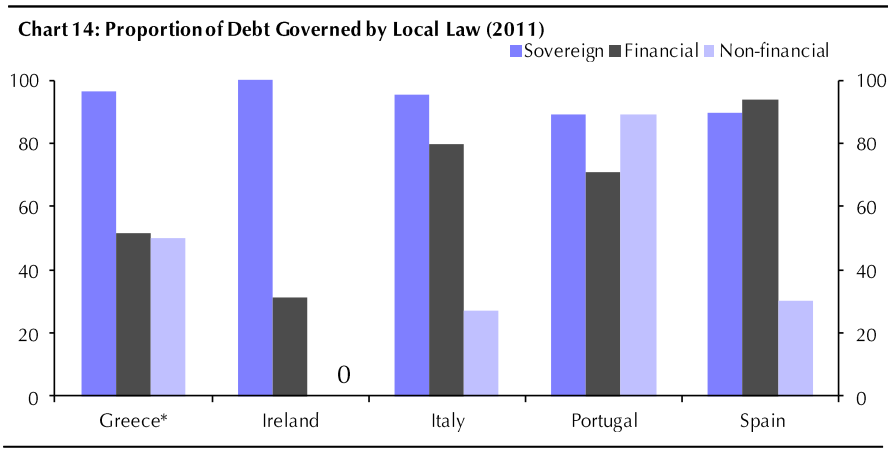
But if there is any ambiguity, *Lex Monetae* could still be decisive. For example, if both parties are based in Greece, there would be a strong presumption that they intended to contract in the national currency of Greece at the time that payment is due. This might also apply if one party was based overseas, provided payment was due in Greece. In these cases, a foreign court could still uphold the redenomination of contracts into new drachma at the official conversion rates, based on *Lex Monetae*.

In the case though where the contract is governed by foreign law and where payment is due outside Greece (for example, on a bond issued by a Greek counterparty under English law and settled through a UK bank), the

presumption would surely be that any references to the "euro" refer to the common international currency of the EU. *Lex Monetae* is not relevant because the contract is not interpreted as referring to the national currency of Greece. A foreign court (or even a Greek court) would then almost certainly seek to uphold the original terms of the contract regarding both the currency of payment and the amount. Even if the court determined that payments could be made in new drachma, this is still likely to be for the equivalent values in euros at the prevailing market exchange rates. Note this all applies equally to public and to private sector debt.

In summary, the principle of *Lex Monetae* will usually only be decisive in the case of contracts governed by Greek law. But *Lex Monetae* may still have a useful part to play in determining what happens to other contracts, including private as well as public sector debt governed by the laws of other jurisdictions, where there are other grounds for presuming that references to the euro were intended to refer to the national currency of Greece at the time and in the place that payment is due.

Applying these points on a case by case basis, almost all sovereign debt is issued under local laws. (See Chart 14.) In this case, an exiting government should simply redenominate its debt into the new currency at the official conversion rate, applying *Lex Monetae*.



Sources: Nomura, Bloomberg. Note: As a result of the debt exchange concluded in March 2012, we estimate the share of Greek private sector debt which is governed by foreign law has risen to over 80%.

This will leave a small amount of sovereign debt determined under foreign law. The best solution might be to continue to denominate and service these debts in euros – indeed this might be an important and relatively low cost

gesture to maintain goodwill. Alternatively the exiting government could attempt to renegotiate the terms of foreign law bonds. There is recent precedent here, as Greek sovereign debt issued under non-Greek law already trades at a small premium to that issued under Greek Law. The Greek/non-Greek law distinction has become important because it affects the position of holders in Greece's debt restructuring - the Private Sector Involvement, or PSI. In short, the Greek government has been able to force all holders of bonds issued under Greek law to accept the terms of the debt restructuring by imposing collective action clauses provided a sufficient number had agreed. It was not able to do so for other bonds, although in practice the large majority of holders of foreign law bonds have now accepted the new terms.

The government could also legislate to redenominate all private sector debt governed by Greek law from euros to new drachma. We recommend that it should do this for financial sector debt, to reduce the risk of a banking sector collapse. However for non-financial corporations it may be better to let the parties find their own solution. In practice, any party will probably have the right to insist that a contract governed by Greek law should be redenominated into new drachma. But while this would establish the starting points for negotiations, it may not necessarily be the best solution if it means that one or more parties are unable to meet their obligations.

The presumption for contracts governed by foreign law is that they should remain denominated in euros. But again this may only be starting point for negotiations, and cooperation among all EU member states could have a role to play. The Bank for International Settlements (BIS) may also be able to assist in coordinating an international agreement on the legal implications of redenomination. Indeed, the BIS has previously coordinated G10 working groups on the legal aspects of sovereign default and debt restructuring.

The importance of minimising uncertainty

There are a number of steps that the authorities can take to provide some clarity on the legal issues. This will be particularly important in the case where contracts are governed by foreign law. The associated uncertainty

would increase legal bills, take up management time, and disrupt international trade and finance.

These costs are impossible to quantity with any precision. Foreign companies and investors may be unwilling to do any business with an exiting country until the uncertainties over existing contracts are resolved. The more open the economy and financial system, the greater the damage is likely to be. If we assume the costs caused by the additional legal uncertainties are equivalent to just 10% of annual external trade in goods and services, a typical euro-zone country might face an additional hit of 4% of GDP. But the disruption in the immediate aftermath of an unanticipated exit from the euro could be much greater.

It will not be possible though, to lay down firm rules for every eventuality or set of circumstances. It has been proposed that the authorities provide clarity by mechanically redenominating a single asset with reference to geographical characteristics which cannot be disputed, rather than things that can easily be changed, such as the domicile of individuals or firms.

But the principles often suggested here are typically those that the courts would apply in any event (e.g. the location of a property or the place where payment on the debt obligation is due), while others are debatable (in particular, the domicile of an individual may be important in establishing how the parties may have intended any reference to the "euro" to be interpreted). Some suggestions are, in our view, wholly impractical (such as using the prefix on banknotes). There would also still be some uncertainty on whether these principles would be accepted in other jurisdictions.

However, it would be helpful for the EU to issue some *guidelines* on how contracts originally specified in euros should be treated, allowing the courts and the individual parties concerned to do the rest. In the case of courts within the EU, including English courts, some of these guidelines could be given the force of law, although a little flexibility may still be desirable. These guidelines may not be legally binding elsewhere but they would probably be taken into account by foreign courts.

The authorities should also allow the development of hedging instruments to reduce intra-EMU currency risk. However, they need not be actively be involved. The private sector is perfectly capable of coming up with the relevant instruments itself, the creation and development of the CDS market (to insure against sovereign default) being a relevant example.

A11 Selected publications on the legal implications of leaving the euro

Allen and Overy (October 2011) "The euro and currency unions"

Ashurst (January 2012) "Exiting the Euro – the legal consequences"

Bird & Bird (May 2010) "The Greek crisis and European Financial Stabilisation: the legal implications"

Bird & Bird (March 2010) "Greece and the euro: New dimensions in currency risk?"

Clifford Chance (January 2012) "The Eurozone Crisis and Derivatives"

Clifford Chance (November 2011) "The Eurozone Crisis and Eurobond Documentation"

Clifford Chance (November 2011) "The Eurozone Crisis and Loan Agreements"

DLA Piper (December 2011) "The Eurozone in Crisis: What are the risks for the parties in cross-border transactions?"

European Central Bank Legal Working Paper Series No. 10 by Phoebus Athanassiou (December 2009) "Withdrawal and expulsion from the EU and EMU: Some Reflections"

European Central Bank Legal Working Paper Series No. 5 by Kristine Drevina, Kestutis Laurinavicius, and Andres Tuptis (July 2007) "Legal and institutional aspects of the currency changeover following the restoration of the independence of the Baltic States"

Herbert Smith (November 2011) "Potential Eurozone break-up: Questions and answers"

Linklaters (December 2011) "Eurozone Bulletin: Do I need a contingency plan?"

Norton Rose (March 1998) "Economic and Monetary Union Thinking The Unthinkable – The Break Up of Economic and Monetary union"

Slaughter and May (October 2011) "Eurozone Crisis: What do clients need to know?"

A12 Currency conversion and rounding-up

Currency redenomination has on occasions given rise to concerns that widespread rounding-up would cause inflation to rise. In an attempt to overcome the rounding-up problem when the euro was launched, a law was introduced stating that when rounding took place, amounts in euros had to be rounded to the nearest cent[23] — up or down. National agencies were in charge of monitoring the correct application of the conversion rate and rounding rules. In theory, they were entitled to enforce the rules using fines, although we can find no examples of them having been administered. The problem is that, even once laws and controls are introduced, it is difficult for the authorities to distinguish a normal administered price increase from unlawful rounding-up related purely to the currency conversion.

There is little hard evidence that rounding-up actually did cause inflation. But in both the case of decimalisation in the UK and the introduction of the euro, there was certainly a public perception that it had. This might be because the prices of many cheap, frequently purchased products that have little weight in overall price indices but which consumers really notice were rounded-up[24]. Whatever the reason for it, this perception is important. Merely the belief that prices are rising faster can cause a rise in inflation. Moreover, public discontent caused by any perception of 'rounding-up' would clearly be best avoided in the fragile and dangerous situation that would follow an exit from the euro.

A13 Time needed to produce a new currency

How long to print notes?

Euro-zone countries started printing banknotes in early 1999 – three years ahead of the currency being circulated. According to the ECB, during peak production ahead of the euro's introduction, 15 printing works were producing a total of 1 billion notes per month. Accordingly, one printing works might be able to produce roughly 67 million notes per month. Total circulation in the euro-zone is currently just under 15 billion notes. So on this basis, a country like Greece, which accounts for 2.5% of euro-zone GDP, might need 375 million notes, which could take almost 6 months for its only printing works to produce.

Although this is a theoretical estimate on artificial assumptions, the conclusion broadly concurs with some live experience. De La Rue produced new notes ahead of the creation of South Sudan in July 2011. Production was deemed urgent and still it took six months to design and print the notes. De La Rue says that it usually it takes around one and a half years to complete similar projects and in this case the company is proud to have managed it in six months. A spokesperson there said that this was the quickest introduction of a new currency that she knew of. Printing took place in complete secrecy and was done using three sites in Sri Lanka, Malta and Kenya.

How long does it take to mint coins?

Greece would need roughly 1.5 billion coins; Italy 8 billion. We have been unable to find figures on the production capacity of European mints, but the Australian mint's capacity is 2 million coins per day and Canada's is 5.5 million. It would therefore take the Australian mint two years just to mint enough coins for Greece and the Canadian mint 9 months. Information from De La Rue suggests that it is much quicker to print notes than to mint coins. When introducing the South Sudanese currency, it produced notes to replace coins temporarily while coins were being minted.

Faster production?

However, the currency could probably be produced much more quickly than this if absolutely necessary. Several printing presses and mints overseas could be hired to produce drachma. If half of the euro-zone's total printing capacity was used to print drachma notes, for example, on the above timetable, it would take just a few weeks for Greece to produce enough to replace its current circulation of euros entirely. In an emergency, surely even this timetable could be shortened. Indeed, it might be possible, if necessary, to have an interim solution, where quickly and cheaply produced notes were produced initially, to be replaced (1-for-1) by better ones later. It might help to use existing designs e.g. for the old drachma, or indeed euro notes, altered in some characteristics, perhaps colour, and existing stocks of paper.

Nevertheless, even if we make the most optimistic assumption even for a small country like Greece, there would still be an uncomfortable delay of a few weeks before the new currency was available, and it will be much longer for a larger country such as Italy, which would require much more currency.

The distribution process

In order to get the new notes into circulation, banks and shops would need to be given them in advance. In the case of the euro's introduction, notes and coins were given to banks and shops from four months before the currency became legal tender. There was then an eight week period when both the euro and the old national currency were legal tender. Banks' headquarters were encouraged to order euro notes in advance by the governments agreeing to debit their accounts only gradually after the euros had been bought. This offset the cost to banks of holding the extra cash (which bears no interest).

Once bank headquarters had the notes, they distributed them to their branches using the euro-zone's 7,600 armoured cash transportation vehicles. Banks also distributed the notes to shops, who stocked their cash registers. Banks and retailers that received the cash were legally or

contractually obliged not to pass it on to customers before the official circulation date of 1st January 2002.

A similar process would have to take place for the countries exiting the euro, although in an urgent situation it would surely not need to take four months. When Czechoslovakia broke up, old notes were taken in, stamped and redistributed in a period of just four days. The public was encouraged to put cash into the bank prior to the introduction of the new currencies because, after introduction, they were told that they would only be able to exchange 4,000 CSK, which was less than one month's salary. Any (unstamped) cash that they held above that amount would no longer be legal tender.

Distribution time and possible disruptions could be minimised by making the new notes and coins the same shape and size as euros. This would make it much easier to use existing vending machines, ATMs and other machines to get the new money into circulation.

A14 Relying on "Y" prefixed notes

Euro notes currently circulate throughout the euro-zone regardless of where they are issued. To make a system which relied on Y-prefixed euro notes standing in for new drachma work, you would ideally need to get all Y-prefixed notes back to Greece and all other euro notes used in Greece out. This would be extremely difficult as Greek people would want to hold on to their "foreign" euro notes (knowing that they were worth more).

You would think that people in other euro member states would be all too keen to surrender their "Greek" euros for other euros. But it is not at all clear what the basis of exchange would be. Who would want to be on the other side of this transaction? Whoever it would be, assuming that the exchange was 1-for-1, would lose out. Perhaps the Greek government would be prepared to shoulder this loss in order to get new Greek notes in circulation quickly. But unless it acquired non-Greek notes from Greeks it would have to pay for its purchase of "Greek" notes by borrowing the money (and the notes to exchange).

Even if people could be persuaded to lend to the Greek government in this way and at this time, the whole thing would be a logistical nightmare. Across the whole euro-zone, including Greece, people would have to carefully check all notes that they were given to make sure that they did not have the Y prefix (because it would mean that the note was worth less than a euro). The letter on the note is about the size of the font that you are reading now. This is legible for a normally sighted person in broad daylight, but rather more difficult in a nightclub, for example.

In many ways, moreover, what happened with coins would be more important than what happened with notes as the latter are more easily substituted by various forms of card or electronic payment. Coins can also be overstamped. The Peru sol was counterstamped in 1894 for use in Guatamala as half a real. Reals from the Central American Republic were stamped from 1847 to make them legal tender in Costa Rica after the Central American Republic break-up. And in the late 18th and early 19th centuries, the Bank of England bought up a large number of Spanish

colonial 8 reale coins and countermarked them with King George III's portrait.

But there do not seem to be any recent examples of counterstamping of coins. That is almost certainly because it would be too difficult, cumbersome and costly to be viable for coins of small face value and no intrinsic worth (unlike the high value coins featuring in historical examples).

A15 Currency overprinting and stamping

In Section 4.2, we briefly discuss the option of overprinting existing notes before new currency becomes available. There are a few historical examples of the overprinting or stamping of notes. But they largely fall into one of three types. They may be an expression of reinvigorated sovereignty or national identity. For example, the Haitian Gourde was overprinted in 1986 after the fall of the Duvalier regime and, in 1979, images of the deposed Shah were obscured on Iranian banknotes.

Second, sometimes overprinting or stamping currency has been conducted in response to wartime uncertainties. After the attack on Pearl Harbour, the United States authorities replaced the currency in circulation in Hawaii with overprinted notes so that exchangeable dollars would not fall into the hands of Japanese forces if they invaded. Conversely, stamping of pre-existing currency has also been used by an invading force as an interim measure before the issuing of its own currency.

Third, these techniques have often been used in response to the breakup of currency unions — most notably with the collapse of the Austro-Hungarian Empire's currency, the crown, after World War I and the Czechoslovak koruna in 1993. In the Czech-Slovak split, monetary separation was announced on 3rd February 1993. New currencies (the Czech koruna and Slovak koruna) officially replaced the old Czechoslovakian koruna on 8th February. Initially, the old banknotes were stamped, but this was problematic as the stamp could easily be forged. The stamped banknotes were gradually replaced by new Czech and Slovak notes. New banknotes were in circulation by the end of August 1993 – almost seven months after the break-up was announced. Only the 100, 500 and 1000 korun denominations were overstamped – the lower denominations circulated unchanged during the transitional period.

Even in these circumstances, the politics may be as important as the economics; the Serb, Croat and Slovenian Kingdom was quick to call in and stamp the Austro-Hungarian crowns with their national emblem in 1919.

However, there are important economic rationales as well. In particular, stamping has been deployed to limit the impact of currency flight during a currency break-up. In conjunction with other measures such as border controls, travel restrictions and temporary seizure of deposits, stamping has been used to reduce the flight of currency from weaker to stronger members of a failing currency union. Currency flight is a problem not only for weaker members, whose capital and liquidity is drained, but also for stronger partners, who may suffer inflationary consequences. Hyperinflation was rife in both Hungary and Austria after the Great War. All members, therefore, have an incentive to stamp their currency as their own — provided then that the other member jurisdictions stop recognising the stamped notes as legal tender in their areas. Indeed, where stamping has occurred in a currency union, it has tended to spread to jurisdictions throughout the union.

A related problem is hoarding — whereby individuals in the weaker member economies may hold back reserves of the monetary union's currency in order to trade it later after the new currency has devalued against the original. This is only an issue if the 'original' currency remains as permitted tender. If stamping is conducted throughout the monetary union, ensuring that notes are demonstrably from one jurisdiction or another, there is no need for unmarked notes to remain as permitted tender and hoarding can be discouraged.

There are some significant differences between today's euro-zone and the fallen currency unions of 1919 and 1993. First, the fragmentation of both the Austro-Hungarian Empire and Czechoslovakia saw their monetary unions dissolve into successor jurisdictions of broadly similar size; at least initially, any break-up of the euro-zone looks likely to see small jurisdictions set apart from a much larger residual single currency bloc.

Second, there has been little momentum in previous currency union failures to retain the original currency and, indeed, there has never been the expectation that a residual currency could retain (or even increase) its value.

A16 Dual currency systems

This appendix gives brief details of a few historical examples of countries that have operated with two currencies.

United States

Before the Civil War, foreign coins were legal tender in the United States and Spanish coins (the "Spanish dollar") in particular were very widely used. In the early 19th century their values were normally expressed in pounds, shillings and pence, although the dollar gradually took on the role of unit of account.

Latvia

The Monetary Reform Committee passed a resolution on 4th May 1992 introducing the Latvian rublis as an interim currency and explicitly stating that the rublis and rouble were both legal tender and should be accepted by banks and in payment of public sector wages etc. The period of dual circulation lasted only about three months. A later resolution declared that from 20th July all prices had to be displayed in rublis and that the rouble would be considered a foreign currency.

A year later, in summer 1993, the rublis itself was gradually replaced by the lats, which is still the Latvian currency. This was a more straightforward process as the exchange rate between rublis and lats was fixed at 200 to 1: it was a simply redenomination (pengos for pongos) and an improvement in quality of the banknotes, rather than a genuinely dual pricing system. The authorities withdrew all rublis from circulation in Autumn 1993.

Argentina's quasi-currencies

In Argentina during the years leading up to the January 2002 peso devaluation, provincial governments resorted to issuing complementary or quasi-currencies to make payments to public sector employees and for other expenditure. The most well-known was the patacón and was issued by the province of Buenos Aires; others included the crédito, the LECOP and the

Argentino. These currencies looked similar to pesos and could be used to pay provincial taxes.

Dollarisation

There are numerous examples of countries in which the local currency has become so devalued and unreliable that people use dollars or other hard currencies. Typically the dollar is used for larger transactions but local currency for smaller transactions. (Iraq during the recent war is an example, along with most former Soviet Republics in the early 1990s, and many African countries today.)

Cuba's dual currency system

Cuba runs a two currency system. One currency is only for use by tourists, the Cuban convertible peso, which trades at parity to the dollar. The other is the Cuban peso, which is used for most domestic transactions.

Proposals for Greece

A number of proposals have been made for a dual currency system for Greece. Some have suggested that Greece should leave bank deposits in euro but that wages should be paid in a new, parallel currency in order to make Greece more competitive. An alternative version proposes that Greece creates not one but two drachmas – one to be used for trade and other current account transactions and another (at a stronger exchange rate) for debt repayment and other capital account transactions. The former would ensure that there was an improvement in competitiveness and would lead to a trade surplus. The latter would in theory put a floor on the losses for Greece's external creditors including bondholders.

However, these proposals would not wave a magic wand over the Greek conundrum. Indeed, they suffer from some serious problems. It is not clear how they would allow Greece to continue servicing its external debt or avert bank failures (as all bank liabilities would still be in euro). And secondly, there would need to be strict controls to prevent the kind of

corruption which has been endemic in cases of dual exchange rates, for example in Venezuela and many African countries.

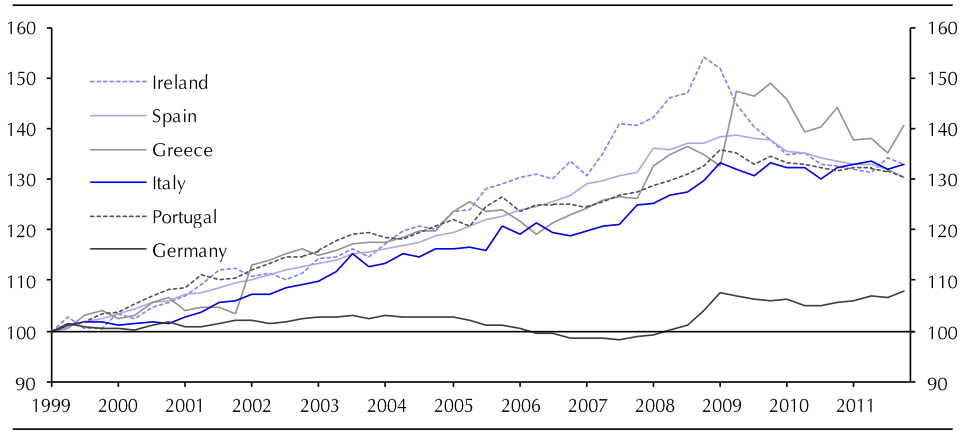
A17 How far might the currency need to fall?

How much competitiveness have the peripheral economies lost since the euro's inception?

When trying to assess the likely size of the falls in the peripheral economies' new exchange rates, a useful starting point is to look at the size of the falls that might be needed to restore competitiveness in these economies. As Chart 15 shows, since 1999, whole economy unit labour costs have risen by 41% in Greece, 33% in Ireland and Italy and 30% in Portugal and Spain. By contrast, they have increased by just 8% in Germany.[25] Since the bulk of exports are produced by the manufacturing sector, it may be helpful also to look at cost developments in this sector. According to the OECD, over the same period, manufacturing unit labour costs have fallen by 6% in Germany and 35% in Ireland. (See Chart 16.) Meanwhile, Italy, Spain and Portugal recorded rises of 40%, 25% and 14% respectively. Data for Greece are not available.

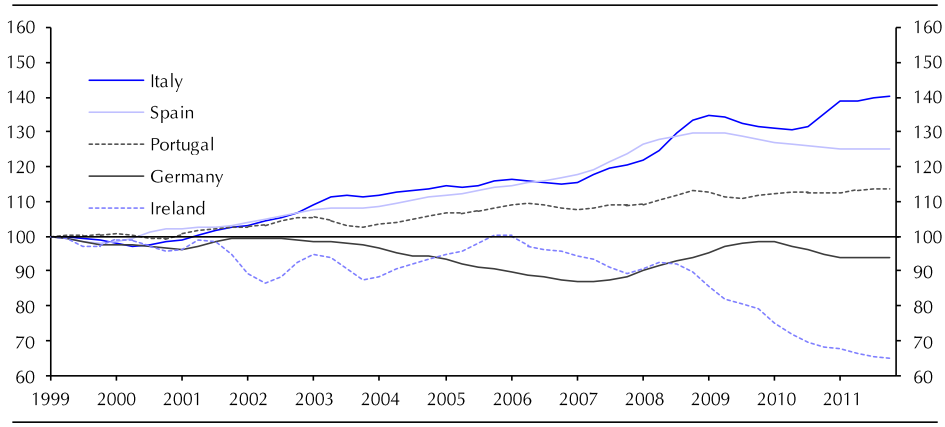
Other price indices, such as the GDP deflator and EU harmonised consumer price index, also show that prices in the peripheral economies have risen by substantially more than in Germany over this period. (See Chart 17 and Chart 18.) For the GDP deflator, the size of the discrepancy between Germany and the peripheral countries is broadly similar to the one revealed by the unit labour cost measures. The discrepancy on the CPI measure is much smaller. The changes in all four of these costs measures between Q4 1998 and Q4 2011 for all six economies are summarised in Table 11 below.

Chart 15: Whole economy unit labour costs (Q1 1999 = 100)



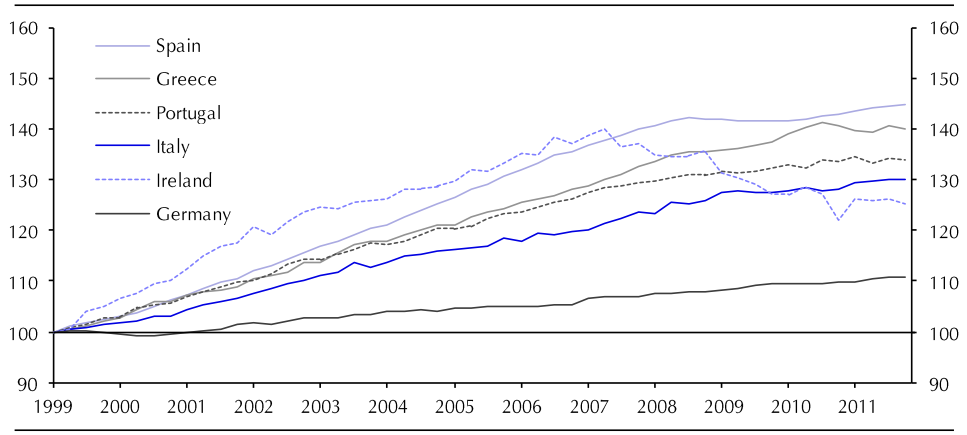
Source: ECB, Thomson Datastream, Capital Economics

Chart 16: Manufacturing unit labour costs (Q1 1999 = 100)



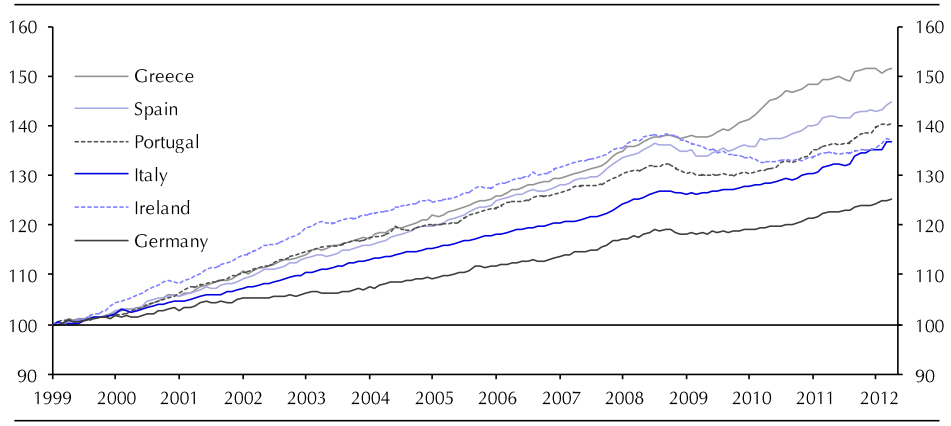
Source: OECD, Capital Economics

Chart 17: GDP deflator (Q1 1999 = 100)



Source: Thomson Datastream, Capital Economics

Chart 18: Harmonised consumer price index (seasonally adjusted, January 1999 = 100)



Source: Thomson Datastream, Capital Economics

An alternative way to assess changes in an economy's competitive position is to look at movements in its real exchange rate.

Table 11 also provides estimates of changes in four measures of the real effective exchange rate (REER) for Germany and the five peripheral euro-zone economies since Q4 1998. A positive number indicates that the REER has risen, implying that the economy has become less competitive. A negative number is consistent with a depreciation of the REER. On the whole, these measures also suggest that the peripheral economies' competitive positions have deteriorated since the formation of the single currency. The range for the change in the REER on different measures is

from -1% to 33% in Italy, 1% to 17% in Spain, 8% to 11% in Greece, and under 3% to 4% in Portugal. The Irish REER measures paint a rather more mixed picture. Three measures range between 0% and 6%, but the measure based on manufacturing unit labour costs suggests a fall in costs of 35%. In all cases, however, the REER measures on their own are too flattering, since the comparable measures for Germany have also fallen.

Table 11: Changes in competitiveness measures (%, Q4 1998 to Q4 2011)

	Germany	Italy	Spain	Greece	Portugal	Ireland
1. Whole economy unit labour costs	6.6	30.4	30.5	40.8	32.0	30.0
2. Manufacturing unit labour costs	-6.1	40.8	24.6	NA	14.2	-35.6
3. GDP deflator	10.6	30.4	43.8	41.1	37.0	26.7
4. Harmonised CPI	24.1	35.2	43.3	51.6	38.7	35.4
5. Nominal effective exchange rate	-1.4	0.0	-1.0	-1.5	-0.6	2.4
6. REER (whole economy unit labour cost measure)	-19.4	2.5	1.3	9.6	NA	5.3
7. REER (manufacturing unit labour cost measure Q4 1998 – Q3 2011)	-13.7	33.4	16.5	NA	2.5	-35.2
8. REER (GDP deflator measure)	-18.2	-1.1	11.9	8.0	NA	0.4
9. REER (CPI measure)	-9.5	1.0	9.2	10.5	3.8	6.2
10. Average change in the REER (Ave of 6, 7,8 & 9.)	-15.2	9.0	9.7	9.3	3.1	-5.8

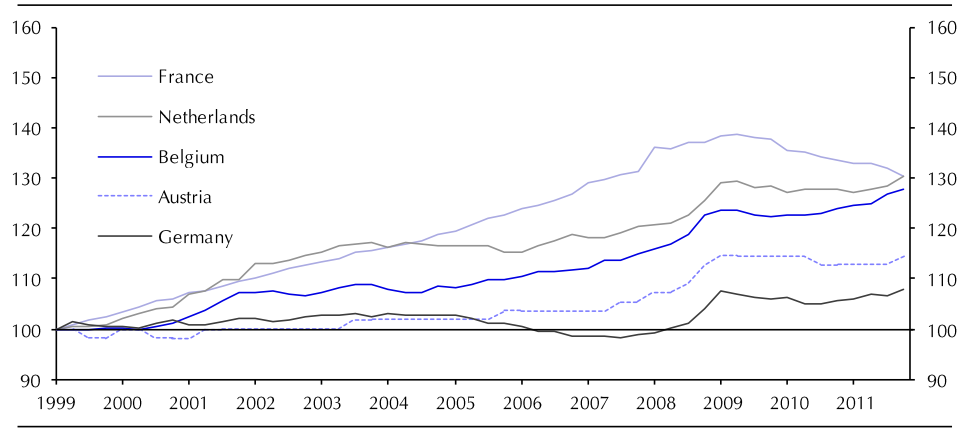
Sources: ECB, OECD, Capital Economics

To summarise, most of the costs and prices data suggest that the peripheral euro-zone economies might need to reduce their real exchange rates by between 10% and 30% to regain the competitiveness lost to Germany since the start of 1999. But on the whole, the REER data suggest that economies may require much smaller falls of perhaps 10% or less. (Note that this discrepancy cannot be explained by changes in the nominal exchange rate. Between Q4 1998 and Q4 2011, the trade-weighted euro depreciated by about 3%.)

Why might such measures be misleading?

Admittedly, comparing the peripheral economies' wage and cost developments to those of Germany may be a bit misleading. After all, as Chart 19 shows, costs and prices in France and the other so-called 'core' euro-zone economies have risen more sharply than in Germany. As a result, Germany is now ultra-competitive. This is borne out by its real exchange rate falling sharply since 1999 and by it running a current account surplus of almost 6% of GDP in 2011.

Chart 19: Whole economy unit labour costs (Q1 1999=100)



Source: Thomson Datastream, Capital Economics

But on the other hand, we think that the REER measures probably underestimate the degree to which the peripheral economies will need to reduce their relative costs and prices over the coming years. After all, a fairly large share of these economies' trade is conducted with other economies where wage and cost growth has also been high. For instance, just over 25% of Portuguese exports go to Spain. But if these trade partners are also going to try actively to reduce their relative prices and costs over the coming years, for each of the others the changes in the REERs shown in the table will understate the real exchange adjustment needed to return these economies' competitiveness to its level prior to the formation of the single currency. If the non-German core economies try to regain competitiveness against Germany too, it is conceivable that the peripheral euro-zone economies may ultimately need their real exchange rates to fall by up to 30%.

One riposte to all this is that the peripheral economies may have been in an unusually competitive position when they entered the euro-zone. If that were the case, then, depending on the extent of this advantage on the eve of the euro's inception, the subsequent loss in competitiveness might simply represent a return to normal. There is no hard and fast measure of when a country's costs are at 'the right' level compared to its competitors and trading partners. But there are some facts which we can draw on to piece together a conclusion.

First, in the years immediately before monetary union, most of the peripheral euro-zone economies did not appear to gain a significant amount of competitiveness against Germany. As Table 12 shows, between 1991 and 1998, unit labour costs in Greece and Portugal rose by 98% and 42% respectively, far higher than the 10% gain in Germany. A similar picture is painted when comparing changes in their GDP deflators and consumer prices over the same period. Admittedly, these developments coincided with the Greek drachma and Portuguese escudo depreciating against the German mark, by 36% and 11% respectively. Nonetheless, the drachma and escudo still appreciated in real terms against the mark. Ireland's currency also rose against the mark in real terms prior to the inception of the single currency. But this was largely down to an increase in Ireland's nominal exchange rate, rather than larger rises in costs and prices there.

Table 12: Cost and price developments (% change, 1991 to 1998)

	Germany	Italy	Spain	Greece	Portugal	Ireland
Whole economy unit labour costs	10	15	30	98	42	14
GDP deflator	20	35	38	110	54	33
CPI (national measure)	24	36	36	111	48	19
German marks per unit of domestic currency	-	-25	-24	-36	-11	34

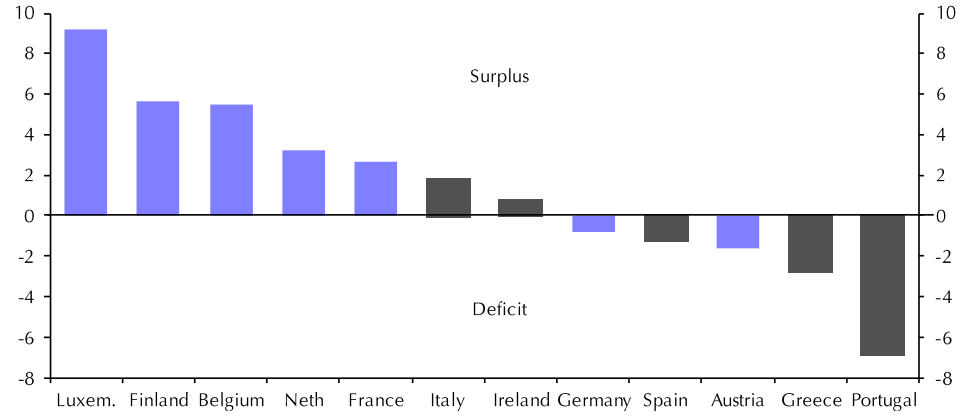
Source: Thomson Datastream, Capital Economics

Meanwhile, the Italian lira might have depreciated by between 10% and 20% in real terms against the German mark between 1991 and 1998. Over the same period, the real value of the Spanish peseta may have fallen by as much as 10% against the mark. But note that these falls are probably smaller than the increases recorded since 1999.

Second, if these economies had entered the euro with ultracompetitive exchange rates, they would probably have had large current account surpluses prior to joining the single currency. As Chart 20 shows, the only two peripheral euro-zone economies that had surpluses in 1998 were Italy (1.9% of GDP) and Ireland (0.8% of GDP). At face value, Italy in particular might have joined the euro at a pretty favourable exchange rate. Note, though, that the OECD estimates that Italian GDP was just over 1% below its potential level in 1998, implying that at least some of Italy's surplus

reflected subdued import demand. Based on all this, we doubt that Italy joined the euro-zone with a significantly undervalued currency. In 1998, Spain, Greece and Portugal ran current account deficits of 1.2%, 2.8% and 6.9% of GDP respectively. Over the same period, the OECD estimates that Spanish and Greek GDP were below their sustainable levels while Portuguese output was probably only slightly above its potential level. As a result, these economies' current accounts deficits are likely to have been primarily down to structural rather than cyclical factors, implying that they probably did not enter the euro-zone with competitive exchange rates.

Chart 20: Current account balance in 1998 (% of GDP)



Source: Thomson Datastream, Capital Economics

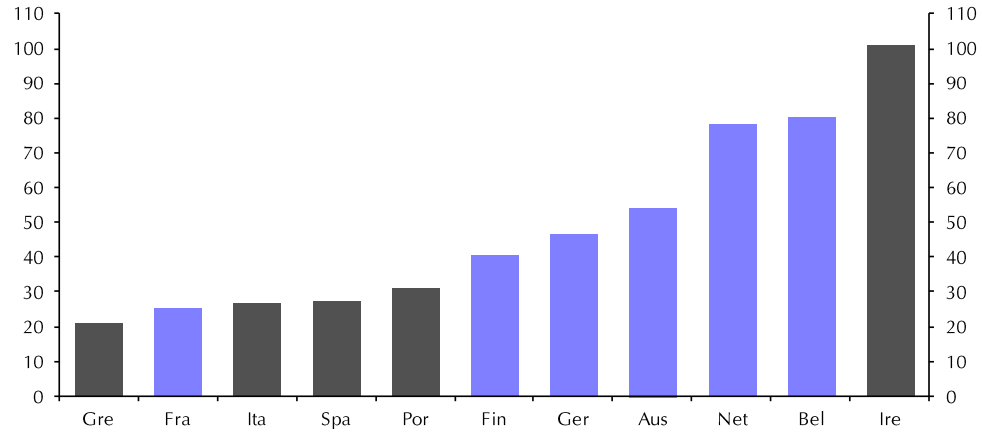
All this suggests that the peripheral economies did not join the euro with a strong competitive advantage. This implies that all five of these economies may now need substantial falls in their exchange rates to restore external balance. In fact, there are reasons why the scale of the adjustment of the exchange rate may go beyond the size of the loss of competitiveness since 1999.

First, although all these economies are probably operating with plenty of spare capacity, most are still running large current account deficits. Last year, the Greek and Portuguese deficits were 10% and 7% of GDP respectively, while the Italian and Spanish deficits were just over 3% of GDP. This suggests that substantial adjustments will be needed to ensure that these economies' current accounts are in balance when they eventually operate at full capacity again. Ireland ran a small current account surplus in

2011. But its current account would probably be in deficit if the economy was running without any slack. After all in Q4 2011, GDP was still almost 12% below its peak.

Second, with the notable exception of Ireland, the peripheral economies' task of narrowing their current account deficits will be made harder by the fact that they are fairly closed economies by euro-zone standards. (See Chart 21.) The smaller international trade is relative to overall GDP, the larger the percentage increase in exports (or percentage decrease in imports) that will be needed to close the current account deficit by a specific share of GDP. By contrast, Ireland's openness to trade should make the adjustment process rather easier there.

Chart 21: Exports (% of GDP, 2010)



Source: Thomson Datastream, Capital Economics

Third, over the next few years, all these economies look set to suffer from further falls in domestic demand, implying that they will need a bout of strong export growth to prevent the overall economy from contracting. After all, not only do these economies need to tighten fiscal policy substantially to eliminate huge budget deficits and reduce their public debt to GDP ratios to more sustainable levels, but high levels of private sector debt in Spain, Portugal and Ireland point to a long period of private sector deleveraging too. (See Table 13 and Chart 22). In addition, the banks in all five economies also look set to try to reduce the size of their balance sheets and boost their capital ratios over the coming years. Accordingly, even those firms and households that want to borrow more may struggle to gain

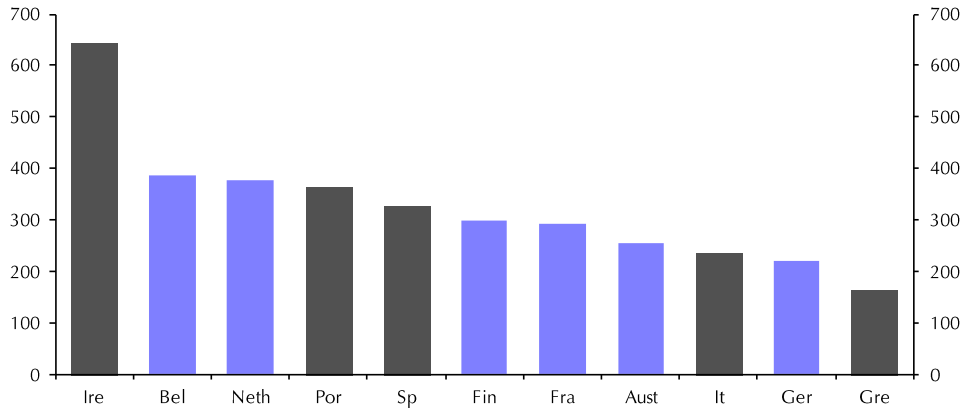
access to credit. In other words, in order to get anywhere near full employment (which, quite apart from anything else, is desirable in order to reduce the size of government and private sector debt) over the coming years these economies will probably need to run significant current account surpluses.

Table 13: Government debt and deficits (% of GDP, 2011, forecasts)

	Italy	Spain	Greece	Portugal	Ireland
General government budget deficit	3.9	8.9	9.1	4.2	13.1
Public debt	120	69	165	108	108

Source: Capital Economics

Chart 22: Households' and non-financial firms' liabilities (% of GDP, 2010)



Source: Eurostat, Capital Economics

Finally, once a peripheral country has left the euro, a fall in the value of its new currency will raise domestic prices. Accordingly, the nominal exchange rate will have to depreciate more sharply than the required fall in the real exchange rate to restore external balance.

How far might these economies' exchange rates need to fall?

On balance, we think that Greece and Portugal might need their real exchange rates to fall by up to 40%. Italy and Spain will also need substantial depreciations of perhaps as much as 30%. Given that the Irish economy is more open and appears more competitive than its southern

euro-zone counterparts, it may require a smaller fall in its exchange rate, of perhaps 15%.

It is somewhat harder to predict the required falls in the nominal exchange rate. But based on our assumption about the responsiveness of prices to a change the exchange rate, we estimate that the Greek and Portuguese nominal exchange rates may need to fall by up to 55%. The Italian and Spanish nominal exchange rates might need to fall by about 40% and the Irish exchange rate by as much as 25%.

How far would the currencies fall?

There is a strong chance that if any of these economies left the euro-zone, their currencies would depreciate by more than these estimates. After all, exiting the euro-zone would have huge implications and there is a huge amount of uncertainty over their repercussions on the domestic economy and financial markets. If investors feared some form of economic meltdown, they might try to withdraw their money from the economy, almost regardless of the losses that this would involve.

This presumption is supported by the fact that past experience has shown that the exchange rates of economies suffering from economic and financial crises tend to fall sharply, before eventually reversing some of their initial falls. In 2008, the Icelandic krona plunged by around 50% against the euro in response to Iceland's economic and financial market meltdown. Since then, the krona has appreciated by about around 20% against the euro. Meanwhile, when Argentina abandoned its dollar peg in 2002, the peso depreciated rapidly and by the middle of the year had fallen by about 75% against the dollar. Thereafter, the peso appreciated modestly and further rises would probably have taken place had Argentine policymakers not intervened in the currency markets. Sterling fell by around 15% against the German mark after the UK exited the Exchange Rate Mechanism (ERM) in September 1992. But over the following three months the pound appreciated by around 5% against the mark. And by late 1997, the exchange rate was back at its central ERM target rate of DM2.95.

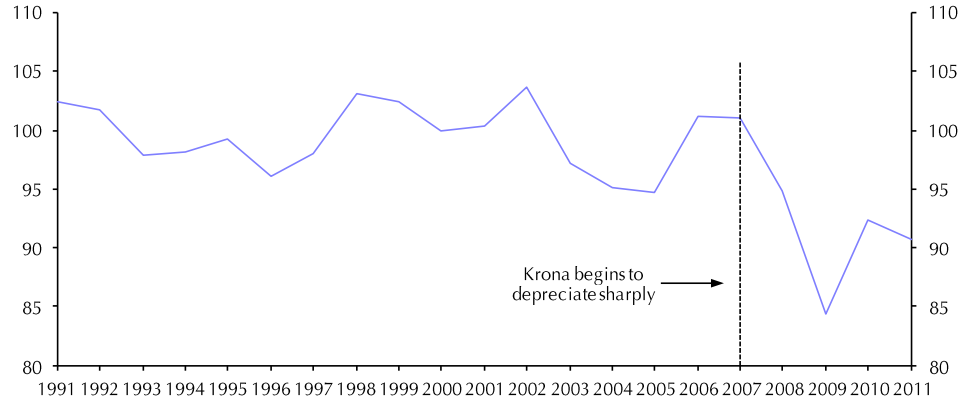
Of course, it is impossible to predict how far the southern and peripheral euro-zone economies' exchange rates would actually fall, not least because it will depend on the exact circumstances under which these economies were to leave and the policies that were adopted before, during and after the exit. Nonetheless, we would not be surprised if the Greek and Portuguese exchange rates initially fell by more than 70%. Meanwhile, the Italian and Spanish exchange rates could depreciate by perhaps as much as 50% while a 35% drop in the Irish currency is feasible. Thereafter, these exchange rates might well appreciate.

A18 The risks and dangers of overshoot

Although the peripheral euro-zone economies would need their nominal exchange rates to fall substantially, there is certainly a risk that they experience too much of a good thing. For a start, if the economy has already undergone a large drop in the exchange rate, the marginal benefits of a further fall may be small. After all, in the short term at least, once supply bottlenecks and skills shortages form in the tradable sector, further falls in the exchange rate are unlikely to prompt an increase in tradable goods production, one of the main reasons for allowing the exchange rate to depreciate in the first place.

By contrast, the more the exchange rate overshoots, the greater the marginal cost to the economy of a further depreciation. If the fall in the exchange rate prompts the price of imports to rise by more than the price of exports (when both are measured in the same currency) then any given level of exports will be able to purchase fewer imports. Iceland's terms of trade plunged after its currency depreciation in 2008, implying a substantial reduction in the purchasing power of its exports. (See Chart 23.) Assuming that wages do not rise to fully compensate for the rise in inflation (which is what is required to improve competitiveness), real household incomes will fall. In 2008 and 2009, the fall in the krona and the economic downturn prompted Icelandic real wages to fall by over 12%.

Chart 23: Iceland's terms of trade (Ratio of export prices to import prices)



Source: Thomson Datastream, Capital Economics

In addition, the larger the fall in the exchange rate, the greater the chance of a more sustained bout of high inflation and nominal wage growth. A period of galloping inflation would result in the real exchange rate remaining at an uncompetitive level. The accompanying loss of confidence and increase in uncertainty could stunt economic growth and prompt protests and civil unrest.

A19 What would be the response of inflation to a fall in the exchange rate?

The evidence from past devaluations

Past historical episodes show that inflation tends to rise sharply in economies experiencing steep falls in their exchange rate. For instance, after the Argentine peso fell by around 70% against the dollar in 2002, inflation soared from -1% in 2001 to about 40% by late 2002. Similarly, a 50% or so decline in the Icelandic krona relative to the euro in 2008 prompted CPI inflation to rise from 3.4% in August 2007 to 18.6% in January 2009. But in both cases inflation subsided and a fall in the real exchange rate was secured.

What might happen to inflation in the periphery?

Other things equal, the larger the depreciation of the currency, the higher the initial jump in inflation. As already outlined in section 5.1, Greece and Portugal would probably require the biggest currency depreciations if they leave the euro-zone. The declines in the values of new Italian and Spanish currencies would probably need to be somewhat smaller and the fall in the Irish exchange rate would probably be smaller still.

But the size of the initial inflationary impact would also depend upon the degree to which the country is exposed to international trade. In 2010, the ratios of imports to GDP in the peripheral countries were as follows: Italy 28%, Spain 29%, Greece 29%, Portugal 38% and Ireland 82%. This implies that for a 10% fall in the exchange rate, the direct effect from higher import prices would be to raise the price level by almost 3% in Italy, Spain and Greece, nearly 4% in Portugal and around 8% in Ireland.

But, as implied by the theoretical discussion above, there are reasons why the effect might be larger, or conceivably smaller, than this. As argued above, the price of tradeables which are produced and consumed domestically, and even to some extent the price of non-tradeables, may also rise.

On the other hand, though, there are some factors which point in the other direction. First, prices will not react immediately as many importers and retailers will have agreed long-term pricing contracts with their suppliers. Second, given the weakness of demand in these economies, suppliers and retailers are unlikely to be able to pass on the entire increase in their costs to their customers and will therefore absorb some of the rise in their margins. Third, the rise in the final price will be smaller if a large proportion of the price is accounted for by taxes which are not proportionate to the ex-tax price.

Moreover, the total impact on the price level, whatever it is, does not necessarily translate into the impact on the annual inflation rate. This depends on how rapidly prices are increased. A total impact on the price level of 10% could lead to an increase in the inflation rate of 10% if the effect came through in one year. But if the impact were split equally over two years, there would be an increase of 5% maintained for two years. There are, of course, umpteen possible combinations in between.

Given all this, and based on the assumption that the peripheral euro-zone economies' exchange rates fall immediately in line with the estimates that we set out in Appendix 17, we think that the exchange rate depreciation might raise the price level by about 15% in Portugal, 13% in Greece and 10% in Italy, Spain and Ireland. Assuming that this adjustment takes place over a two year period, the effect would be to raise the annual inflation rate by about 7% per year in Greece, about 6% in Portugal, and 5% in Italy, Spain and Ireland. Such increases in the price level would be sufficiently low to enable these countries to enjoy substantial falls in their real exchange rate as a result of euro-zone exit.

A20 Default under external and internal devaluation

Let us suppose that Greece needs to achieve a 30% reduction in relative costs through either leaving the euro and experiencing an external devaluation or deflation i.e. 'internal devaluation'. Both of these imply a fall in the euro value of Greek GDP, tax revenues and indeed all other Greek drachma values. Indeed, if they occurred at the same speed, they would to all intents and purposes be the same. Their implications for the ability of the country to service its debt would be identical.

However, whereas an external devaluation can occur immediately, an internal devaluation would be spread out over many years. Accordingly, the time path of the pressure to default would be different. In the case of an external devaluation, the pressure would be there immediately, as the domestic currency value of interest obligations rises immediately.

With an internal devaluation, by contrast, the initial impact is zero, but builds up gradually over time. Although the burden of debt by the end of the adjustment period will be the same, in the earlier years it will be less. However, in practice, in the case of internal devaluation the financial markets would probably see the nature of the growing problems ahead and accordingly bring pressure to bear immediately. (This is exactly what has happened already in the case of the euro-zone.)

Moreover, there are two other factors to consider. First, the point of the devaluation, internal or external, is to achieve an increase in competitiveness which will boost GDP. If successful, this will increase debt servicing capacity. This factor works in exactly the opposite way to the point above about the domestic currency value of euro debt. The immediacy of an external devaluation means that the improvement in real GDP and debt servicing capacity can come earlier, compared to the hard slog of domestic deflation. Furthermore, in order to achieve domestic deflation it may be necessary to pursue tighter policies with regard to domestic demand, thereby exacerbating the relative weakness of real GDP compared to the scenario with an external devaluation.

The second point is that whereas a domestic deflation increases the real value of all debts, including private sectors ones, and may thereby precipitate private sector defaults, an external devaluation only does this in so far as private sector debts are in foreign currency. Admittedly, in the case of a country withdrawing from the euro, effectively all debt will be in foreign currency, but that can be dealt with by redenominating them, along with other domestic money values, into the new currency.

To take the Greek example, it is clear that the Greek government needs to cut the Greek public debt stock sufficiently in present value terms to remove any reasonable doubt about the government's ability to service its debt in future. In this respect, the current plan to cut Greece's debt stock to just under 120% of GDP by 2020 does not seem to us sufficient. A figure of closer to 60% may be more appropriate.

The required scale of debt reduction would vary between countries, depending on the factors listed above. In line with historical precedent, the details of debt reduction and restructuring should be determined via negotiations between creditors and indebted governments. Creditors and debtors should be given the chance to take account of individual country circumstances. With this caveat in mind, some estimates of the size of debt write-off which might be required are set out in Appendix 21. These suggest debt reductions of up to 40% for Spain through to 80% for Greece.

International institutions and coordinated action

To achieve a large enough debt reduction, it would be necessary for official creditors, including the ECB and European Financial Stability Facility, to accept some losses on their share of the debt. The euro-zone should follow a long established precedent, from the rescheduling of sovereign debt of emerging economies organised through the Paris Club, for official creditors to accept an equivalent level of debt reduction to the private sector. The IMF should, however, retain its preferred creditor status as otherwise its future role as an international lender of last resort would be compromised.

A21 Sovereign, private and bank debt: default and restructuring

How big a debt reduction is needed?

There is no simple way to determine how large a write-off is needed after a government defaults because there is no arithmetic way to assess how much debt a country can bear. There are many historical examples of sovereign default on comparatively low levels of public debt. Equally there are examples of governments continuing to service debt despite having a high debt ratio. Indeed, the euro-zone crisis itself demonstrates that debt which appears sustainable in one year may prove to be unsustainable in another.

Also, it is difficult to predict the path of GDP, government revenues or exports at the best of times, and even more so following a sovereign default. This adds to uncertainty about a government's debt service capacity.

That being said, it is clear that, after defaulting, a country's total sovereign debt would need to be reduced to a level which the markets consider sustainable. Otherwise the government would still not be able to finance its budget after the debt is restructured. Moreover, even if it does not need to borrow from the markets immediately (either because it is running a primary budget surplus or because the central bank is providing finance by buying government debt), the state of overall confidence in the economy will be boosted by the widespread knowledge that government finances were now on a firm footing. Moreover, there would be a strong case for the government not only to reduce the debt ratio to its level shortly before the crisis, but to cut the debt burden to a much lower level in order to put the government in a much stronger position than previously.

With this in mind, Table 15 (at the end of this Appendix) shows the percentage reduction in debt which would be needed to bring the ratio of debt to GDP down to 60% for the five peripheral euro-zone countries as well as for Germany and France. We have chosen a ratio of 60% for illustrative purposes because this is the ceiling under the Maastricht Treaty,

as well as being identified as critical by respected academics. Clearly higher ratios could be chosen, as discussed below.

For each country, column (a) in the table shows the debt/GDP ratio in 2011. Columns (b) and (c) show the amount of debt which would need to be written off in order to bring this ratio down to 60% immediately, as a percentage of GDP and as a percentage of the original debt stock. Columns (d) and (e) show the percentage debt reduction which would be required if there were a further 10% fall in (real) GDP before the debt write-off.

Finally, columns (f) and (g) show the debt reduction required to achieve a 60% debt/GDP ratio if GDP fell by 10% in real terms and the country suffered a 30% currency depreciation. The assumption of a 30% depreciation is also illustrative, but is consistent with the discussion of exchange rates earlier in this paper. For the last two columns, we have excluded Germany and France because we anticipate that their currencies would *appreciate*, rather than depreciate, if they left the euro-zone.

Clearly, a large debt write-off would be required today for all countries except Spain in order to bring the debt ratio down to 60%, even if they remain in the euro-zone. But a much larger debt reduction would be needed if countries leave the euro. As shown in column (g), which is the most relevant one for this paper, the write-off would vary from 44% of total debt for Spain to 77% for Greece.[26]

It is worth pointing out some caveats to these calculations. Firstly, the figures take no account of dynamic effects, i.e. the change in the debt ratio over time which results from fiscal deficits, GDP growth and interest payments.

Secondly, the 60% figure is quite arbitrary. A higher figure could be justified, and indeed different countries could bear different amounts of debt. However, we are very sceptical that the current plans to reduce Greece's public debt to 120% of GDP by 2020 will provide a large enough reduction to convince markets that Greece's debt stock is sustainable. Also, historical experience suggests that once a country has defaulted outright a fairly large debt reduction is usually agreed.

Thirdly, the extent of depreciation would vary between countries.

Finally, the currency depreciation would have no impact on the debt ratio if the debt is redenominated into local currency at the time the country leaves the euro-zone. As discussed above, this would be an alternative form of default rather than a ruse to avoid default. Nevertheless, it would clearly be preferable if countries leaving the euro were able to service their debt in full in the new currency. This might be possible for a country such as Spain, whose debt ratio is not too high. It would also be more likely to be feasible if the country concerned experienced a period of high inflation immediately after exiting the euro.

Burden sharing between creditors

The level of debt reduction (or haircut) for private creditors may need to be substantially higher than the figures shown in Table 15, because some official creditors, including the IMF, European Financial Stability Facility and ECB, may not accept a reduction of their share of the debt.

The issue of burden sharing between creditors may be of growing importance over time, as official creditors' exposure to Greece increases. Also, the situation may change when the European Stability Mechanism is introduced.[27]

Dynamic effects

The arithmetic presented in Table 15 is based on an assumption that the devaluation, fall in GDP and debt write-off all occurred immediately. In reality, of course, debt ratios change over time as a result of new net government borrowing or debt repayments, and the growth of GDP. The scale of government borrowing in turn depends on the interest paid on government debt and the non-interest (or primary) budget deficit. [28]

Devaluation causes an immediate jump in the ratio of debt to GDP. In some cases, including most peripheral euro-zone countries, we expect this would force the governments concerned to default on their debt, in the first instance by redenominating the debt into local currency.

However, devaluation is likely to have a very positive effect on interest rates, GDP growth and the primary fiscal balance, particularly if it is accompanied by a default and reduction in the debt burden. This means that after a one-off jump, the ratio of debt to GDP would be likely to stabilise or begin to fall.

This is illustrated in Chart 24 for a hypothetical peripheral euro-zone country which has a public debt burden of 80% of GDP in 2012, denominated in euros.

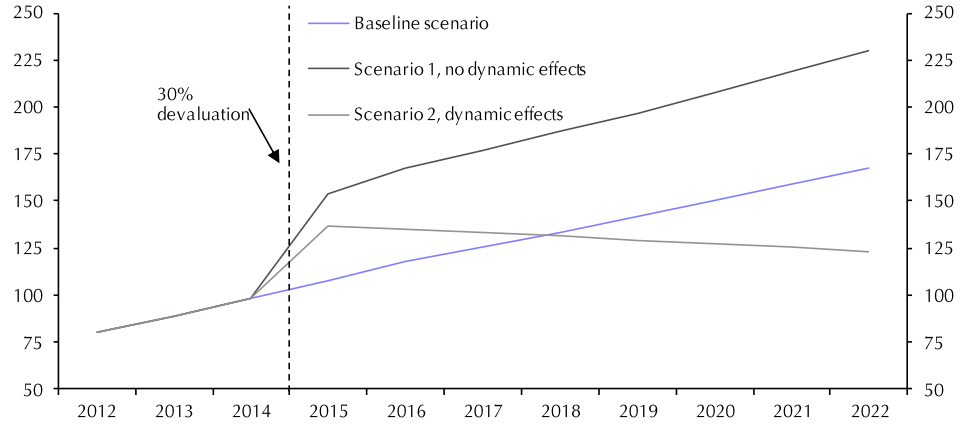
In the baseline scenario, GDP growth is zero, the interest rate (or yield) on government debt is 7% and the primary fiscal deficit is 3% — numbers which are close to those of some peripheral countries today. As the yield is higher than the growth rate, and the country is running a primary deficit, the debt ratio will rise continuously, meaning a default at some point would be inevitable.

In the chart, Scenario 1 shows the path of debt to GDP on the assumption that the fiscal deficits, growth rate and interest rates remain unchanged but assuming there is a 30% devaluation in 2014. There is a step change in the debt ratio when the devaluation occurs, after which the debt ratio continues to rise. Default would occur sooner than in the baseline scenario.

Scenario 2 shows how the debt ratio would develop on the assumption that there is an identical devaluation but that growth then picks up from zero to 3%, the yield on government debt falls from 7% to 3%, and the primary fiscal balance improves from a deficit of 3% of GDP to a surplus of 2% of GDP. This turn-around means that the debt ratio begins to fall. In practice, the devaluation would also be likely to lead to default, meaning the debt ratio would not jump as far as shown in the chart.

Experience in countries which have undergone major devaluations and default suggests these dynamic effects could be even greater. Russia in 1998 and Argentina in 2001/02 are good examples: in both cases there was a one-off jump in the debt ratio because of devaluation. This led to default but it also generated an increase in the growth rate and reduction in interest rates. Subsequently the debt ratios began to fall.

Chart 24: Public debt as a share of GDP (%): Illustrative scenarios



Source: Bank for International Settlements, Capital Economics

Profile of debt repayments

It is not just the total debt stock but the profile of annual debt repayments which needs to be sustainable. During the course of negotiations between creditors and governments, investors would expect to be presented with a menu of options, all of which would achieve the same present value debt reduction, but with different maturity and coupon structures. The choices would need to be consistent with a credible profile of public debt payments. This is in line with historical experience of private sector debt restructuring.

Should the euro-zone coordinate over debt restructuring?

If the euro-zone is completely dismantled, there may be a case for a collective approach to debt default and restructuring. One advantage of such an approach would be to enable banks to assess their losses from exposure to all countries leaving the euro-zone before any measures are taken to recapitalise them. Another potential advantage would be that creditor governments may provide collateral to incentivise debt restructuring and perhaps make it less costly. This was the main innovation of the Brady plan, which is the only relevant precedent for a coordinated restructuring of sovereign debt of several countries. Under this plan, collateral was used to enhance the value of the bonds which were exchanged for defaulted loans for seventeen countries.

There would, however, also be some risks associated with the use of collateral. In particular, there may be better targeted ways to provide support to creditor banks in the event of sovereign defaults. Any collateral embedded in new bonds issued by the debtor governments would go to all creditors indiscriminately, including some which do not merit any official support, including relatively "sophisticated" investors like investment banks and hedge funds, which do not pose a systemic threat to the economy.

It would, in our view, be a mistake to attempt a 'one-size-fits-all' approach to sovereign debt write-offs, through which all countries would end up with the same ratio of debt to GDP or some other key variable. Negotiations between creditors and debtor governments should be undertaken on a country-by-country basis because each country is in a unique situation and because ultimately the agreement on debt restructuring needs to be acceptable to both creditors and the debtor government.

The impact of debt restructuring on fiscal deficits

Sovereign default would have an immediate impact on government expenditure as the governments concerned would, by definition, no longer be servicing either the interest or the principal due on public debt. Savings from defaulting on interest payments would vary between countries. For 2012, the IMF estimates that interest payments will be around 2.1% of GDP in Spain, 4.1% and 4.2% for Portugal and Ireland respectively, and 7.7% of GDP for Greece.

Table 14: General government primary fiscal balance (% of GDP)

	2009	2010	2011f	2012f**	2013f**
Greece	-10.3	-4.9	-1.3	0.8	3.3
Ireland	-12.4	-28.9*	-6.8	-4.4	-1.5
Italy	-1.0	-0.3	0.5	2.6	4.1
Portugal	-7.4	-6.3	-1.9	0.1	1.9
Spain	-9.9	-7.8	-4.4	-3.1	-2.1

Source: IMF data including 2011 estimates and 2012 forecasts; * largely due to recapitalisation of the banks. * *On assumption of the current situation, including euro membership.

Countries which default while still in the euro-zone and while running a primary budget deficit would be unable to meet even their running costs because their non-interest expenditure is, by definition, greater than their revenue. They may consequently be forced to cut public sector salaries or other major areas of government expenditure. However, there are two reasons why this is less of a concern than is often assumed.

First, the primary deficits of peripheral euro-zone economies have fallen sharply since 2009. (See Table 14). Most of these countries may find that their financial positions are manageable if they default in 2012 or 2013 as their revenues may be sufficient to cover their non-interest expenditure by then.

Second, for any country which leaves the euro, its own central bank would be able to cover the primary deficit by buying government bonds, in other words 'printing money'. There are of course limits to the scale on which this can be done without creating inflation. But, in the context of an economy requiring a boost to domestic demand, some extra stimulus from money creation could actually prove to be useful.

Table 15: Debt write-off required to reduce debt to 60% of GDP (as % of 2011 debt stock)

	Debt ratio in 2011 (% of GDP)	Debt reduction required based on 2011 data		GDP falls by 10% but no devaluation		30% depreciation plus 10% fall in GDP	
	(a)	(b) as % GDP	(c) as % debt	(d) as % GDP	(e) as % debt	(f) as % GDP	(g) as % debt
France	87	27	31	37	38	N/A	N/A
Germany	83	23	28	32	35	N/A	N/A
Greece	166	108	64	124	67	203	**77**
Ireland	109	49	45	61	50	113	**65**
Italy	121	61	50	74	55	132	**69**
Portugal	106	56	43	58	49	108	**64**
Spain	67	7	10	14	19	46	**44**

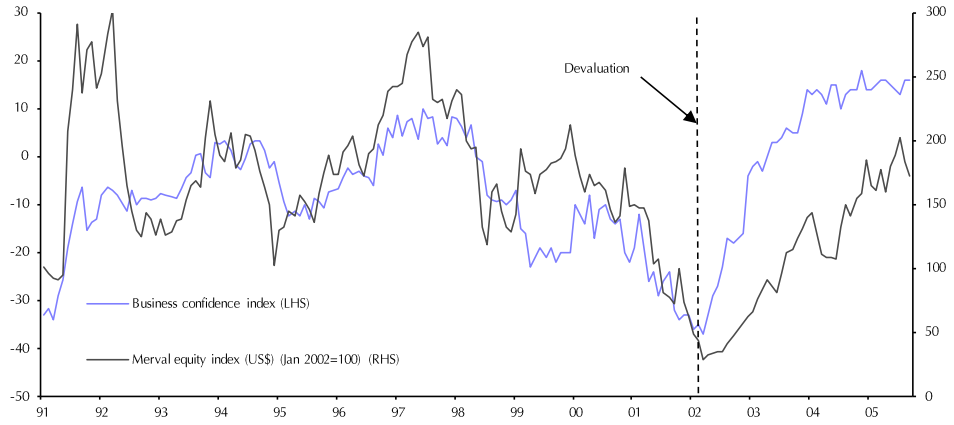
Source: IMF, Capital Economics

A22 Effect of default and devaluation on equities and property: historical examples

Argentina

Argentina's equity market began to rise two months *before* devaluation. (The low point was in November 2001, and the devaluation was in January 2002.) Measured in dollars, the index continued to fall but only for a few months after devaluation: even on this measure it was rising within six months.

Chart 25: Argentina equity index and business confidence

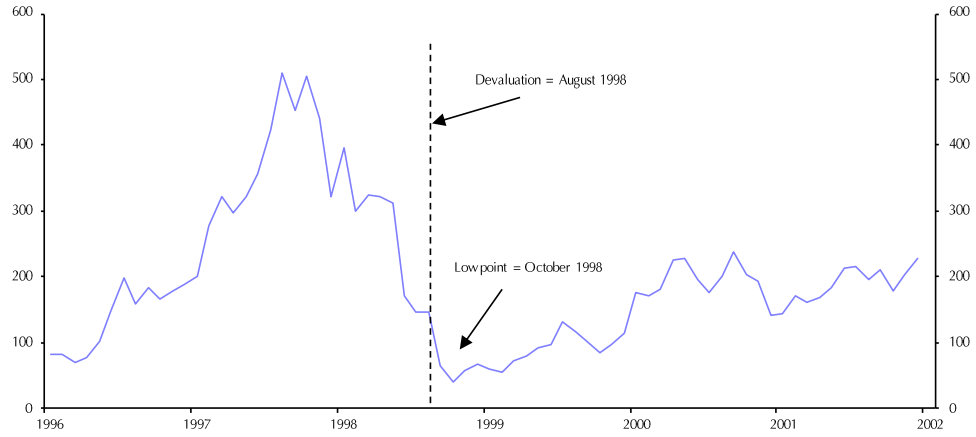


Sources: Thomson Datastream

Russia

Russia is another example in which the equity market recovered very soon after devaluation. The rouble crisis occurred in August 1998. The RTS equity index, which is denominated in dollars, had been falling sharply since mid-1997. After devaluation, however, it began to recover within three months.

Chart 26: Russia RTS Equity Index ($-denominated)



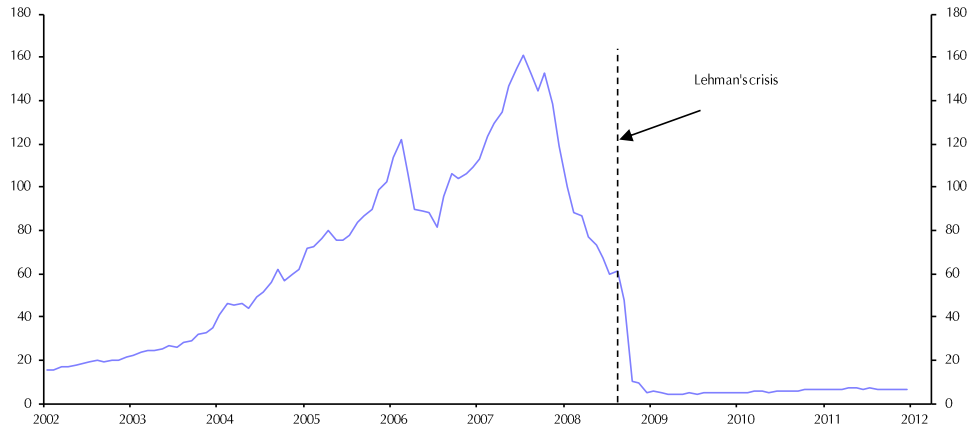
Sources: Thomson Datastream

Iceland

Iceland's experience was very different. The equity market peaked in July 2007 and fell by well over 50% in dollar terms even before the crisis triggered by the collapse of Lehman Brothers in September 2008. It then fell even more steeply and by the end of 2008 had lost more than 95% of its peak value, from which it has not recovered. Icelandic property prices fell for around eighteen months after the devaluation, though only by around 15%. They subsequently recovered some of this ground although are still 10% below the peak reached in January 2008.

However, we should perhaps not read much into the Icelandic experience for two reasons: i) the krona devaluation coincided with the global financial crisis, and ii) the Icelandic equity market was dominated by a small number of stocks, particularly banks, which were wiped out by the crisis.

Chart 25 Icelandic equity prices before and after the crisis

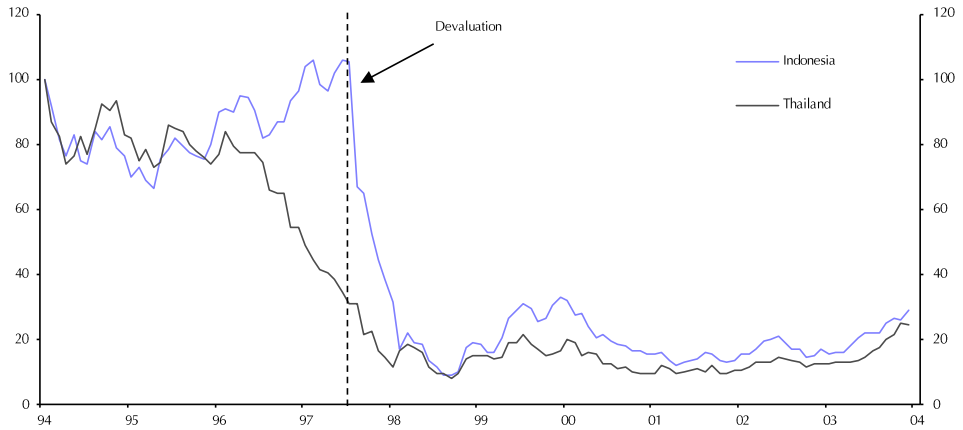


Sources: Thomson Datastream

Indonesia and Thailand

After their devaluations of July and August 1997, equity markets in Indonesia and Thailand did not perform as well as Argentina's or Russia's. As shown in the left hand Chart 26, the local currency equity indices for both countries carried on falling during the second half of 1997 and in 1998, though the Indonesian market recovered in 1999. The fall in the indices measured in dollars was even larger because of size of the currency depreciations: both lost more than 80% of their dollar value between January 1997 and January 2001 and remained around 70% below their pre-crisis level for many years.

Chart 26: Equity prices in local currency, Indonesia & Thailand.



Sources: Thomson Datastream

South East Asia may not be a good reference point for Greece for several reasons. Firstly, South East Asia continued growing rapidly right up until the devaluation. The crisis came as a surprise, caused by a dramatic change in external sentiment and capital flows. By contrast, Argentina experienced a large fall in output and very tight credit conditions for some years *before* devaluation in a way which is similar to the recent experience of Greece. Another factor is that South East Asian equity markets may have been in a bubble prior to devaluation. Thailand's price-to-earnings ratios in particular were high prior to 1997.

Statistical averages

Reinhart and Rogoff's statistical analysis shows that asset prices usually fall for a significant period after banking crises and that in emerging markets banking crises often coincide with devaluations. They estimate that on average:

- house prices decline by 35% stretched out over six years
- equity prices decline by 56% over three and a half years

The housing market has more inertia than equity markets and therefore tends to fall less steeply but to recover more slowly after a crisis.

Conclusion

But Greece is not an emerging market. Although the evidence is mixed, the Argentinean case probably has the strongest parallels with Greece. Having said that, note that Argentina benefited from rising commodity prices and strongly growing export markets, both of which helped it perform very well in the years following devaluation, and neither of these would apply to Greece.

A23 A departing country's entitlement to a refund of ECB capital

Just as there is no mechanism that allows a country to leave the euro, so there is no mechanism to allow a country to withdraw capital from the ECB.

This is yet another source of uncertainty. Would an exiting country get back anything at all? Just its original contribution? Or its share of any accumulated profits minus losses? And would the ECB's balance sheet be strong enough after any such withdrawals?

There is no definitive answer. As there is no provision for this eventuality, any division of pooled capital is something that would have to be worked out by the ECB, European Commission, the exiting country and the central banks of other EU states (all of whom are also shareholders).

A country's contributions to the ECB take two forms. First, payments into the ECB's subscribed capital, which amounts to €10.8bn (following an increase from €5.8bn announced in December 2010). The national central bank (NCB) of every EU state is allocated a share of this capital, weighted according to GDP and population sizes.

The NCBs of euro members are expected to take up their allocations in full, although the actual amounts paid-up are currently less than the total because countries were allowed to pay for the December 2010 increase in three annual instalments, at end-2010, end-2011 and end-2012. The NCBs of non-euro members, including the Bank of England, are only required to pay 3.75% of their allocation (as a contribution to the running costs of the ECB).

Greece's share of the subscribed capital is just 2%, or around €211m. On the basis that it has so far made two of the three instalments on the December 2010 increase, we estimate that Greece's *paid-up* capital is only €178m.

Note also that the net profits of the ECB are paid out to shareholders in proportion to their paid-up shares, after any deductions for a general reserve fund. Similarly, any loss can be offset against this fund and any remaining shortfall allocated to the NCBs.

The other contribution a country makes is to the ECB's foreign exchange reserves. The NCBs of euro members have contributed the equivalent of around €40bn, broken down according to their share in the subscribed capital. (The non-euro NCBs do not contribute.) This means that the Greek central bank has a claim of around €800m on the foreign exchange reserves of the ECB.

The first point to emphasise then is that these sums are small in the wider euro-zone context (bigger for Greece itself, but even €1 billion represents just 0.5% of Greek GDP). If necessary, the gap in the ECB's balance sheet could easily be filled by the larger shareholders.

Second, though, even non-euro NCBs are shareholders in the ECB. If a country like Greece exits the euro but remains within the EU, an equitable solution would simply be to return that proportion of the paid-up share capital over and above the contribution required of a non-euro member state, plus all of the original contribution to the foreign exchange reserves. This would put Greece in the same position as, say, the UK. If Greece exits the EU, it gets all of its original contributions back.

Greece might argue that it is entitled to a share of the *assets* of the ECB, but this does not seem equitable, both because it has already benefited throughout the period of membership from the profit-sharing agreement, and because it is now abandoning the euro. In effect, it would be a "bad leaver". The assets would only be distributed among all shareholders in the event of the complete break-up of the euro and the dissolution of the ECB.

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10 ENDNOTES

[1] In general, even if a contract (or Treaty) uses words like "irrevocable" there will always be exceptional circumstances where this can be overridden, for example if the courts determine that the contract terms are unfair or it is impossible / unreasonable for one party or the other to continue to perform their obligations under the contract. This happens all the time. The term "irrevocable" is sometimes used in the context of wills and trusts, but even this is usually only relevant when the person making the will or trust is unavailable to revoke it (typically due to incapacity or, of course, death).

[2] All the essential arguments in the piece are expressed within the main body of the text and can be appreciated without reference to the appendices, which are intended for those who wish to examine the arguments and the supporting evidence backing them up in more detail.

[3] On the Latvian experience see the IMF's Forth Programme Review for Latvia, June 2011, the IMF's Fifth Programme Review for Latvia, February 2012 and "Latvia's Internal Devaluation: A Success Story?" by Mark Weisbrot and Rebecca Ray, Centre for Economic and Policy Research (CEPR), Washington, December 2011. On the Singapore experience see: "Coping with the Asian Financial Crisis: The Singapore Experience", by Ngiam Kee Jin, Institute of Southeast Asian Studies, 2000.

[4] Goodhart, Charles, C.A.E. (2011), "The European Collapse of 2012/13", Special Paper 201, LSE Financial Markets Group.

[5] Andrew K Rose, "Checking Out: Exits from Currency Unions", 2007 CEPR Discussion Paper No. DP6254.

[6] Indeed, there are many examples of countries undergoing redenomination. Several countries have tried to make their monetary systems tidier by dropping a few noughts off the end of the currency without changing any matters of real substance. This happened in France in 1960, in Israel in 1986 and in Turkey in 2005. Equally, the adoption of the euro at pre-agreed exchange rates and the re-expression of prices and wages in the new currency in 1999, followed by the distribution and use of the new currency in 2002, are also relevant. These examples are helpful, but we should see this is much the least troublesome aspect of leaving a currency union.

[7] The devaluation would reduce the real income of anyone consuming tradable goods and services and increase the real income of those producing them. If the price of exports and imports changed by the same percentage, this would be bound to lead to a net loss for Greeks, since imports exceed exports (i.e. there is a trade deficit). In addition, there could be a further loss from a deterioration in the terms of trade, i.e. the foreign currency price of exports falls more than the foreign currency prices of imports. (Although this is not inevitable, and is not a requirement for the devaluation to work, it is a normal development for a devaluing country.) To the extent that the terms of trade deteriorate, then the excess of net losses over net gains will be correspondingly larger and it will take a stronger response from import and export volumes to overcome this loss. But given a sufficient volume response, before too long the loss of real incomes imposed by the exchange rate change applying to a net excess of imports over exports and any deterioration in the terms of trade would be offset by higher exports and/or lower imports.

[8] Alternatively, there is the option to stamp as drachma all euro notes that were available from banks so that people could only withdraw euro notes stamped as drachma from their accounts. But this would run into the problems discussed elsewhere, and is not our recommended solution.

[9] One consideration which stands against our recommendations is the impact on income distribution. Those parts of society which held a large proportion of their wealth in notes would gain relative to others. Into this category would fall criminals and those operating in the black economy as well as, ironically, retail banks. The latter could be partially addressed by allowing some limited 1 for 1 withdrawal of euro notes against drachma deposits, but in the wider scheme of things, with banks severely hit by many of the forces unleashed by default and devaluation, if banks benefited a bit from their holdings of cash that may be no bad thing. Unfortunately, however, there is little that could be done about the benefits accruing to criminals and those using the black economy.

[10] It might be possible to reduce the scope of this drain by obliging firms to return notes and coins to the banks, rather than hoarding them, and to oblige the banks to be 'generous' in providing euro notes and coins for cash withdrawal. But it is unclear how successful such an approach would be, and how it might be enforced.

[11] One issue which does not particularly concern us is the potential for destabilising effects in the rest of the euro-zone from inflows of euro notes from the exiting country. For a start, if the country was Greece, the scale of the problem would be limited. Euro notes held in Greece amount to only about 2% of the total in the euro-zone. Moreover, if euros were to continue to be used in Greece with no attempt to forcibly overstamp them, then there would not be much incentive for Greeks to shift euro notes out of Greece. If a large country, say Italy, left, and citizens did fear forced stamping or confiscation of notes, then there could be a problem in the rest of the euro-zone. The really radical step would be to demonetise all old euro notes and print new ones. But this would be hugely costly and completely unnecessary. All that would be necessary would be for the ECB to alter its money market operations so as to absorb liquidity from the banking system to offset the effect of an increase in notes deposited with banks.

[12] The maximum daily withdrawal at ATMs in Europe is typically around 300 euros. If every Greek citizen of working age withdrew that amount, this would amount to 2.3bn euros per day, or a reduction in banks' liabilities of 3.5% per week. In practice, banks would soon run out of notes.

[13] If more time were needed then the banks could be forced to close, or at least forced to close for deposit withdrawal, on Monday and Tuesday. Making use of a national extended bank holiday period, such as over Easter, could also be useful. (Note that when Argentina broke the link of the peso to the dollar in January 2002, it declared that the banks would be closed on Monday and Tuesday.)

[14] However, if the government wanted to minimise the possibility of a run on the banks, it could impose a low maximum limit on daily cash withdrawals or, in extremis, prevent them altogether. We would not recommend full prevention, however, not least because continuity of economic activity would demand that enough euro notes are in circulation.

[15] See Johnston & Tamirisa (1998) on capital controls.

[16] Our investigations suggest that this applies to about a quarter of national FX reserves. Following an exit, those would have to be negotiated with the ECB over the return of these reserves. Especially if the euro departure has been messy and acrimonious, these negotiations could be extremely difficult. Partially offsetting this consideration, however, and with the exiting government or central bank defaulting on some of their obligations, the exiting country's central bank would have some non-domestic euro-denominated assets which would now count as foreign currency.

[17] If a strong country like Germany planned to leave the euro-zone, it need not fear large capital flight before its departure as its currency would be expected to appreciate. But it might still choose to impose capital controls before and after it left to prevent vast inflows into its banking system which could otherwise cause the new currency to appreciate too much, and/or domestic borrowing creating dangerous bubbles.

[18] See, for example, Edwards (2000) and Magud, Reinhart and Rogoff (2011)

[19] See page 7 of http://www.imf.org/external/pubs/ft/scr/2012/cr1257.pdf

[20] This mirrors the reply of the Bank of England to criticisms that its policy of low interest rates is unfairly penalising savers who were not at all responsible for the actions which brought about the banking collapse and financial crisis.

[21] See Neumann (1996).

[22] See Buiter (2012) and Pill (2011).

[23] Council Regulation (EC) No 1103/97 of 17 June 1997

[24] Anghelini & Lippi (2007). and Beuerlein (2007).

[25] Italy, Spain, Ireland, Portugal and Germany all entered the euro-zone in 1999, but Greece joined in 2001. In this section, we look at changes in Greek costs and prices since 1999, rather than 2001 so

that all the figures are comparable across countries. But the results for Greece would be the same qualitatively if a start date of 2001 was used.

[26] Losses of this order of magnitude are high compared to historical experience of sovereign default. For example, debt write-offs under the Brady plan, between 1989 and 1997, were mostly between 35% and 50% in net present value terms.

[27] There is a suggestion that the EFSF's successor, the European Stability Mechanism, might have preferred creditor status on loans to any countries other than Greece, Ireland and Portugal. If so, this would imply much larger debt write-offs for private creditors in order to achieve the same reduction in debt ratios. But on the other hand there is now active discussion about the ECB accepting some share of debt reduction.

[28] Debt as a share of GDP will evolve over time according to the following formula: $D_t/Y_t = (1+r)D_{t-1}/(1+g)Y_{t-1} + b_t$ Where D_t is government debt at time t, Y_t is GDP at time t, r is the nominal interest rate, g is the nominal growth rate of GDP, b_t is the primary fiscal balance as a share of GDP at time t. If r is greater than g, the government will need to run a primary fiscal surplus to prevent the debt to GDP ratio from rising. The larger r relative to g and the higher the debt to GDP ratio, the larger this primary surplus will need to be.