VARIANT PERCEPTION

A Primer on the Euro Breakup:

Depart, Default, and Devalue as the Optimal Solution

"If member states leave the euro, 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?"

A submission for the Wolfson Economics Prize 2012

SUMMARY

Many economists expect catastrophic consequences if any country exits the euro. However, during the past century 69 countries have departed from currencies without experiencing major problems. The mechanics of currency breakups are complicated but feasible. The entire process of moving from one currency to another has typically been accomplished in a few months. This paper will examine historical examples and provide specific, actionable recommendations for the exit of the eurozone based on previous currency breakups.

The real underlying problem in Europe is that peripheral countries have external debt levels that are higher than most previous emerging market crises and they face severe misalignments in wages and prices with their neighbors in the core. Europe has the characteristics of a classic emerging markets balance of payments crisis writ large. In fact, levels of net external debt exceed those seen in previous crises.

As such, the problem in Europe is not the mechanics of exit, but how to manage a severe and necessary adjustment. This paper provides steps that can be taken to mitigate the negative consequences. The correction can come quickly via exiting the euro and devaluing or slowly via a fall in real wages and prices. Exiting from the euro and devaluing would be very painful and would likely lead towards panic and contagion in financial markets. Departing would accelerate insolvencies, but would provide a powerful policy tool to restore competitiveness via flexible exchange rates. Orderly defaults and debt rescheduling coupled with devaluations are inevitable and even desirable.

By defaulting and devaluing, the European periphery will escape the debt deflationary straitjacket of the euro. These countries would have lower debt levels and more competitive exchange rates, much like countries that left the gold standard in the 1930s (Britain and Japan 1931, US 1934, France 1936) and many emerging markets after recent defaults and devaluations (Asia 1997, Russia 1998, Argentina 2002, Iceland 2008).

KEY CONCLUSIONS

> **Peripheral European countries are suffering from solvency and liquidity problems making defaults inevitable and exits from the euro likely** – Greece, Portugal, Ireland, Italy and Spain have built up very large unsustainable net external debts in a currency they cannot print or devalue. Peripheral levels of net external debt exceed almost all cases of past emerging market debt crises that led to default and devaluation. This was fuelled by large debt bubbles due to increased capital flows after the introduction of the euro and an inappropriate one-size-fits-all monetary policy. Each peripheral country is different, but they all have too much debt. Greece and Italy have high government debt. Spain and Ireland have high private sector debt. Portugal has high public and private debt. Greece and Portugal are arguably insolvent, while Spain and Italy may be solvent in the long run but are facing severe liquidity risks. Defaults are a partial solution. Even if the countries default, their real effective exchange rates will still be overvalued if they do not exit the euro.

> **The euro is not a good currency area and is like a modern day gold standard where the burden of adjustment falls on weaker countries** – Like the gold standard, the euro forces adjustment in real prices and wages instead of exchange rates. And much like the gold standard, it has a recessionary bias, where the burden of adjustment is always placed on the weak-currency country, not on the strong countries. Peripheral countries can only adjust via “internal devaluations” where wages and prices fall. The solution from European politicians has been to call for more austerity, but public and private sectors can only deleverage through large current account surpluses, which is not feasible given high external debt and low exports in the periphery. So long as periphery countries stay in the euro, they will bear the burdens of adjustment and be condemned to contraction or low growth. Countries that left the gold standard returned to growth, and countries that leave the euro will grow again.

> **Withdrawing from the euro would merely unwind existing imbalances and crystallize losses that are already present** – The cash flows of households, corporations and governments in the periphery are simply not high enough to properly service private sector debt. Exiting the euro would speed the recognition of inevitable eventual losses given the inability of the periphery to grow its way out of its debt problems or successfully devalue. Policymakers then should focus as much on the mechanics of cross-border bankruptcies and sovereign debt restructuring as on the mechanics of a euro exit.

> **Defaults and debt restructuring should be achieved by departing the euro, re-denominating sovereign debt in local currencies and forcing a haircut on bondholders** – Almost all sovereign borrowing in Europe is done under local law. This would allow for a re-denomination of debt into local currency, which would not legally be a default, but would be considered a technical default by ratings agencies and international bodies such as ISDA. Devaluing and paying debt back in drachmas, liras or pesetas would reduce the *real* debt burden by allowing peripheral countries to earn euros via exports, while allowing local inflation to reduce the real value of the debt.

> **All local private debts could be re-denominated in local currency, but foreign private debts would be subject to whatever jurisdiction governed bonds or bank loans** – Most local mortgage and credit card borrowing was taken from local banks, so a re-denomination of local debt would help cure domestic private balance sheets by reducing the real burden of debt. The main problem is for firms, particularly banks, which operate locally but have borrowed abroad. Exiting the euro would likely lead towards a high level of insolvencies of firms and people who have borrowed abroad in another currency. This would not be new or unique. The Asian crisis in 1997 in particular was marked by very high levels of domestic private defaults. However, households and companies started with clean balance sheets not weighed down by debts.

> **The breakup of the euro would be an historic event, but it would not be the first currency breakup** – Within the past one hundred years, there have been 69 currency breakups. Almost all of the exits from a currency union have been associated with low macroeconomic volatility and most were accomplished quickly. Previous examples include the Austro-Hungarian Empire in 1919, India and Pakistan 1947, Pakistan and Bangladesh 1971, Czechoslovakia in 1992-93, and many USSR satellite states from 1992 to 1995. Some countries experienced hyperinflations, but the primary reason was not the mechanics of exit but the soundness of monetary and fiscal policies following the departure. Countries with independent central banks experienced low inflation and economic growth, while central banks that printed money to finance government deficits experienced high inflation or hyperinflation.

> **Previous currency breakups and currency exits provide important lessons and a roadmap for exiting the euro –** While the euro is historically unique, the problems presented by a currency exit are not. There is no need for theorizing about how the euro breakup would happen. Previous historical examples provide crucial answers to: the timing and announcement of exits, the introduction of new coins and notes, the denomination or re-denomination of private and public liabilities, and the division of central bank assets and liabilities. The entire process of moving from one currency to another has typically been accomplished in a few months.

> **The mechanics of a currency breakup are surprisingly straightforward; the real problems for Europe are overvalued real effective exchange rates and extremely high debt** – Historically, moving from one currency to another has not led to severe economic or legal problems. In almost all cases, the transition was smooth and relatively straightforward. The difference with a euro breakup is that people would not want to hold new deeply devalued national currencies. This strengthens the view that Europe's problems are not the mechanics of introducing a new currency, but the existing real effective exchange rate and external debt imbalances. European countries could default without leaving the euro, but only exiting the euro can realistically restore competitiveness.

> **The key danger for countries departing the euro is hyperinflation due to poor fiscal and monetary policies** – The problem of hyperinflation arose in some countries that departed

previous currency unions. However, this was not due to exiting a currency but rather to the monetary policy post exit, where central banks printed money to finance government spending. Countries that monetize fiscal deficits experience high inflation and even hyperinflations. Creating a currency board or mandating an inflation target can prevent hyperinflations. All peripheral countries are running substantial fiscal deficits. If they leave the euro and default, they'll be temporarily shut out of international bond markets and forced to close those deficits on their own. That will mean more austerity, which will be easier to handle thanks to the depreciation. However, in a country as politically troubled as Greece (and with serious problems with tax evasion) it may be difficult to avoid monetizing the debt, potentially generating hyperinflation.

> **The experience of emerging market countries shows that the pain of devaluation would be sharp but brief and rapid growth and recovery would follow** – Countries that have defaulted and devalued have experienced short, sharp contractions followed by very steep, protracted periods of growth. Orderly defaults and debt rescheduling, coupled with devaluations are inevitable and should be embraced. The European periphery would emerge with de-levered balance sheets. The European periphery could then grow again quickly, much like many emerging markets after defaults and devaluations (Asia 1997, Russia 1998, Argentina 2002, etc). In almost all cases, real GDP rebounded sharply and quickly exceeded previous levels. Leaving the euro might well be one of the best things that happened to them.

IMPORTANT NOTE TO THE READER

Did you ever think that making a speech on economics is a lot like pissing down your leg? It seems hot to you, but it never does to anyone else.
President Lyndon B. Johnson

The author decided to write this paper in plain English for the layperson to reach the widest audience possible. The paper is, however, based on a broad review of the most recent academic and professional literature from the worlds of economics, finance and law.

CONVENTIONAL THINKING ABOUT A EURO BREAKUP: CATASTROPHE AHEAD

It would be like a Lehman-times five event.
Megan Greene, director of European economics at Roubini Global Economics

A euro break-up would cause a global bust worse even than the one in 2008-09. The world's most financially integrated region would be ripped apart by defaults, bank failures and the imposition of capital controls.
The Economist, 26 November 2011

If the euro implodes, [the UK's] biggest trading partner will go into a deep recession. Banks may well go under, so will currencies both new and old. Investment will freeze up. Unemployment will soar. There is no way the UK is going to escape from that unscathed.
Matthew Lynn, *MoneyWeek*

A euro area breakup, even a partial one involving the exit of one or more fiscally and competitively weak countries, would be chaotic. A disorderly sovereign default and Eurozone exit by Greece alone would be manageable… However, a disorderly sovereign default and Eurozone exit by Italy would bring down much of the European banking sector. Disorderly sovereign defaults and Eurozone exits by all five periphery states… would drag down not just the European banking system but also the north Atlantic financial system and the internationally exposed parts of the rest of the global banking system.
Willem Buiter in the *Financial Times*

Given such uniform pessimism on the part of analysts and the unanimous expectation of financial Armageddon if the euro breaks up, it is worth remembering the words of John Kenneth Galbraith, one of the great economic historians of the 20th century, "The enemy of the conventional wisdom is not ideas but the march of events."

PAPER OVERVIEW

SECTION ONE: A SUB-OPTIMAL CURRENCY LED TO BALANCE OF PAYMENTS CRISIS

First, this submission will examine the problems within the euro area and show that exiting the euro is the best option for peripheral countries and the most likely path towards a return to growth. The section will show that the euro is not an optimal currency area, and this has led to credit booms that are now turning to bust in the periphery as well as a lack of competitiveness. The European periphery is experiencing a classic balance of payments crisis but within a single currency where devaluation and defaults are much more difficult. This submission will show that periphery growth is unlikely if not impossible within the euro straitjacket.

SECTION TWO: CURRENCY BREAKUPS HAPPEN OFTEN WITHOUT MAJOR TRAUMA

Second, the paper will provide a brief overview of studies of currency exits. During the past century 69 countries have exited currency areas with little downward economic volatility. The mechanics of currency breakups are complicated but feasible. The conclusion - that most exits from a currency union have been associated with low macroeconomic volatility and that currency breakups are common and can be achieved quickly - flies in the face of conventional wisdom. The section will summarize the lessons that can be learned from previous exits.

We will briefly examine the specific cases of the Austro-Hungarian Empire in 1919, Czechoslovakia in 1992-93, and the USSR's ruble zone in 1992-95. All of these cases show that currency exits are rarely associated with macroeconomic volatility. The paper will also look at the cases of Soviet republics that exited and faced hyperinflation, due the extremely loose central bank policies following the departure.

SECTION THREE: PRACTICAL RECOMMENDATIONS FOR DEPARTING FROM THE EURO

Using previous currency breakups as a model, as well as emerging market devaluations, we will then suggest a series of practical steps that will be necessary to achieve the cleanest, most efficient departure from the euro. The paper will also address the best way to default, restructure debt and devalue.

SECTION FOUR: DEFAULTS AND DEVALAUTIONS ARE RARELY AS BAD AS FEARED

Finally, we will look at previous emerging market crisis analogues, and why this leads us to end on an optimistic note regarding currency devaluations. Almost all economic analysts argued that dire consequences would follow previous defaults and devaluations (Asia 1997, Russia 1998, Argentina 2002, and Iceland 2008). Invariably economic consensus was too pessimistic and wrong about previous emerging market crises. History shows that following defaults and devaluations, countries experienced two to four quarters of economic contraction, but then real GDP grew at a high, sustained pace for years**.**

The clear implication from our analysis is that conventional economic thinking was wrong at the time about most emerging market defaults and currency devaluations, and almost all the dire predictions about the breakup of the euro will likely prove to be wrong as well. It will certainly be very painful, but it is unlikely to be the outright catastrophe many economic commentators assume. Policymakers should then plan ahead meticulously for exits and implement them as quickly and cleanly as possible.

The paper concludes that the best way to promote sustained growth in the European periphery is to depart the euro, default on debt that cannot be repaid, and devalue the currency to restore competitiveness.

Section One – A Sub-Optimal Currency Area Led to a Balance of Payments Crisis Writ Large

THE NEED TO EXIT A ONE-SIZE-FITS-ALL MONETARY POLICY

> *Europe exemplifies a situation unfavourable to a common currency. It is composed of separate nations, speaking different languages, with different customs, and having citizens feeling far greater loyalty and attachment to their own country than to a common market or to the idea of Europe.*
> Professor Milton Friedman, *The Times*, November 19, 1997

The introduction of the euro in 2000 was a milestone in a very long political process of deeper integration of the European Union. While there were economic arguments for and against creating the euro, the pure economic costs and benefits were not the main consideration. The main reasons countries joined the euro was to bind the European project further politically and symbolically. It is ironic that a project that was meant to tie European countries closer together may well be what tears Europe apart.

Politicians may not have carefully analyzed the economic landscape of a monetary union, but economists had. In the 1960s, long before the euro was created, Robert Mundell wrote about what made an optimal currency area. This ground-breaking work won him a Nobel Prize, and other economists built on his framework. As he explained, a currency area is optimal when it has:

1. Similar business cycles – Countries should experience expansions and recessions at the same time (technically this is referred to as "symmetry" of economic shocks).
2. Mobility of capital and labor – Money and people have to be willing and able to move from one part of the currency area to another.
3. Flexibility of wages and prices – Prices need to be able to move downwards, not just upwards.
4. Fiscal transfers to cushion the blows of recession to any region – If one part of the currency area is doing poorly, the central government can step in and transfer money from other regions.

Europe is not an optimal currency area because it has almost none of these characteristics. Despite hopes that eurozone countries would become further integrated, countries within the euro area became less aligned over time.

The United States, unlike Europe, is a good currency union. It has the same coins and money in Alaska as it does in Florida and the same in California as it does in Maine. If you look at economic shocks, the United States absorbs them pretty well. Generally business cycles are coordinated, but if they are not, mobility of capital and labor help ease the adjustment. If someone was unemployed in southern California in the early 1990s after the end of the Cold War defense cutbacks, or in Texas in the early 1980s after the oil boom turned to bust, they could pack their bags and go to a state that was growing. That is exactly what happened.

This doesn't happen in Europe. Cultural and linguistic barriers abound. Greeks don't pack up and move to Finland. Greeks don't speak Finnish, and Irish don't speak German. And if Americans had stayed in California or Texas, they would have received fiscal transfers from the central government to cushion the blow. There is no central European government that can make fiscal transfers. The United States works because it has mobility of labor and capital, as well as fiscal shock absorbers.

Optimal currency area theory is a very useful tool but it does a poor job of explaining why some currency areas exist and why other currencies break up. The euro exists for reasons that are

closely tied to the evolving political economy of the European Union. Unfortunately, adopting the euro for political, rather than purely economic reasons means that many European countries are trapped in an economic straitjacket.

The fundamental economic flaw of the euro is that it provides one uniform monetary policy for the highly diverse euro area countries. This has led towards wildly divergent real effective exchange rates and has produced asset bubbles. First we'll look at real effective exchange rates and then asset bubbles.

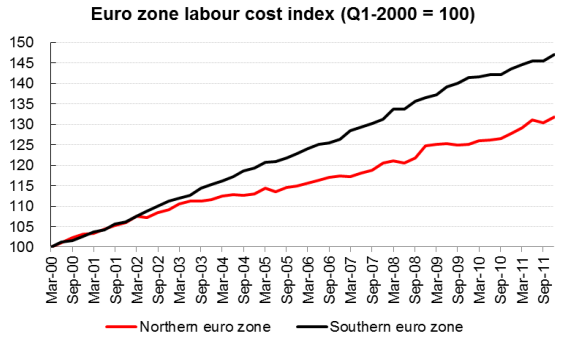
Real effective exchange rates, which each of the countries in the eurozone has, are the trade-weighted average of a country's currency relative to an index or basket of other major currencies, adjusted for the effects of inflation. Higher inflation would lead towards the weakening of a currency, and lower inflation or deflation would lead towards a stronger currency. In other words, the peripheral countries' exchange rates – adjusted for inflation – became extremely overvalued.

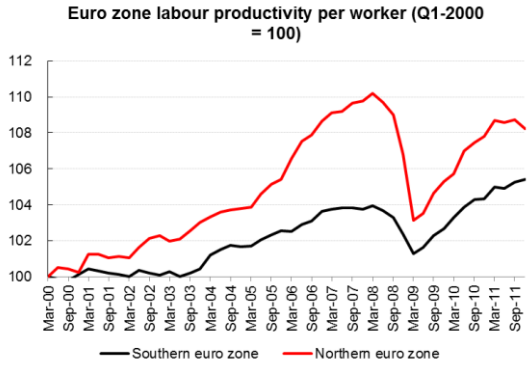
This was one of the implications of a common currency. Once the euro was introduced, the European Central Bank could provide only one interest rate for the whole of the euro area. Having a single interest rate for the whole euro area was the equivalent of having only one thermostat setting for an upstairs that is freezing and a downstairs that is boiling. This one-size-fits-all monetary policy led to disastrous consequences.

If Europe were an optimal currency area, a one-size-fits-all approach would have been ideal. However, the core had lower growth, inflation and wage increases than the periphery, which generally experienced higher growth, inflation and wage increases. The core needed low rates, while the periphery needed higher interest rates, but the European Central Bank (ECB) could only set one rate.

In Europe, the so-called core is Germany, France, Netherlands, Belgium and Finland. They are in general wealthier, have higher price stability, and have much more integrated economies. The periphery is Portugal, Ireland, Italy, Greece, and Spain (known often as the PIIGS). These countries historically are poorer (or regions within them are), have less price stability, are not well integrated with Germany and France, and have less coordinated business cycles.

High inflation and wage growth made the periphery very uncompetitive relative to Germany and the rest of the core, and unit labor costs and productivity in the periphery lagged the core. Over one or two years, the differences were small, but after ten years, the gap became very large.

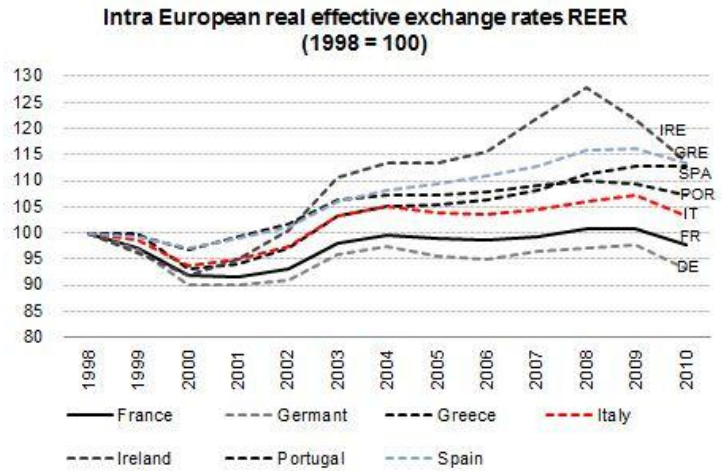




> *Source: Who is in the dominant position: The lender or the borrower?, Natixis 17 November 2011 - No. 833.* http://bit.ly/rVbMHF

The huge differential in wages and productivity between the core and the periphery means that the *intra*-euro real effective exchange rates are extremely large according to European Commission

calculations. As the following chart shows, the divergences are as large as 35% between some peripheral and core countries, for example Spain, Ireland and Portugal vs Germany.



Source: World Bank

Previously, such under- or over-valuations in real effective exchange rates would have been solved via devaluations or changes in open market prices for currencies. Now that the drachma, escudo, peseta and lira don't exist, the possibility for devaluations does not exist either. All the burden of adjustment will have to fall on wages and prices, via a so called "internal devaluation," or deflation. This is hugely contractionary and poses tremendous problems, as the periphery is now discovering. However, wages and prices in most of the European periphery are not very flexible due to the strong influence of unions in most industries. This is particularly true in Spain, Portugal, Greece and Italy, although Ireland has shown greater wage flexibility.

As the following chart shows, periphery countries such as Portugal, Italy and Greece have lagged Germany in terms of exports. The very poor export growth of the past decade indeed *requires* a devaluation to boost the competitiveness of periphery countries.

> *Source: Empirical and Thematic Perspectives Germany's "Windfall" from Euro-Area Membership and European Imbalances, Citigroup Global Markets and Variant Perception*

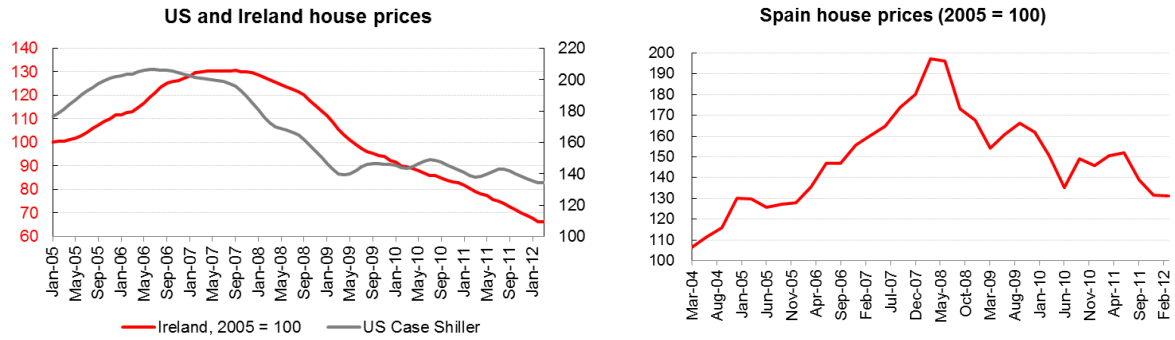
Even though, as this submission contends, it would be best for many periphery countries to exit and devalue, it is highly unlikely that Germany would in fact want them to do so. Germany has benefited enormously by being tied to a weaker euro rather than a strong deutschmark. Any exit from the eurozone is necessary for rebalancing, but would likely be a temporary blow to the German export

machine, as Germany has successfully dealt with a strong deutschmark for most of the post-War period. As the previous charts show, a large devaluation would go a long way towards bringing nominal unit labor costs of the euro area closer to Germany.

A one size fits all monetary policy also led to real estate bubbles and an enormous increase in debt to fund unproductive investments. Rapidly rising prices with low interest rates created the problem of negative real interest rates in the periphery. Normally interest rates are positive, but in much of the European periphery real interest rates were negative. In layman's terms, a negative real interest rate means that if the borrowing rate is 3 percent while inflation is 4 percent, you're borrowing for 1 percent less than inflation. You're effectively being paid to borrow. And that is exactly what the periphery did. Unsurprisingly, the European periphery countries racked up enormous debts in euros, a currency that they can't print.

If all countries in the eurozone had controlled their own monetary policy, they could have hiked rates in response to rising inflation and large housing booms. Unfortunately, all countries in the euro had outsourced the setting of interest rates to the ECB.

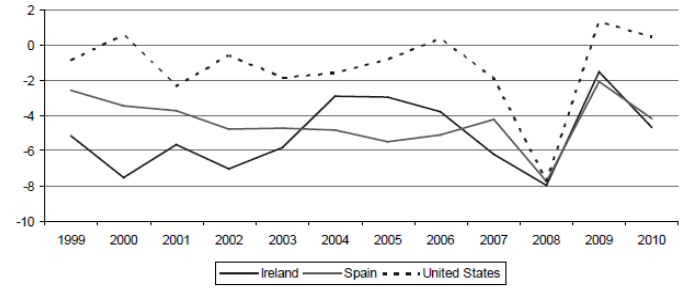
Globally, countries that had negative real interest rates had the largest housing bubbles. The following chart shows that Spain and Ireland also had very large run-ups in property prices, and now they are in the midst of enormous property busts.



> *Source: Bloomberg and Ireland Statistical Offices*

Countries with housing booms had monetary policies that were much looser than they should have been. Central bank rates were below the level prescribed by the Taylor Rule, which is followed by many central banks. The rule provides for an optimal policy rate given inflation, output, or other economic conditions. Spain and Ireland had the largest deviations from the rule and also had the biggest housing boom. Germany and France – the European core – did not have a housing boom because they had lower inflation and slower growth. The ECB's policy rate did not correspond to a loose monetary policy for them.

Figure 3.2 Deviations from the Taylor Rule in Ireland, Spain and the US



Notes: TR_t = CPI_t + (average IR over the sample period) + 0.5*(CPI_t - 2%) + 0.5*output gap_t, where TR_t is the implied interest rate in period t, CPI_t is the consumer price index and IR is the central bank's official interest rate.

Sources: Data on inflation and output gap from the IMF World Economic Outlook Database and calculating the implied interest rate according to the formula.

> *Source: Cross-Border Banking in Europe: Implications for Financial Stability and Macroeconomic Policies, CEPR, http://bit.ly/tz1an5*

Future housing bubbles in the euro area will be difficult to prevent given inappropriate real interest rates and mortgage rates for part of Europe. After the Great Financial Crisis, the ECB has provided extremely loose monetary policy. The loose monetary policy that was good for the periphery was inappropriate for the core. Unsurprisingly, French and German house prices have recently risen to all-time highs due to loose money policies.

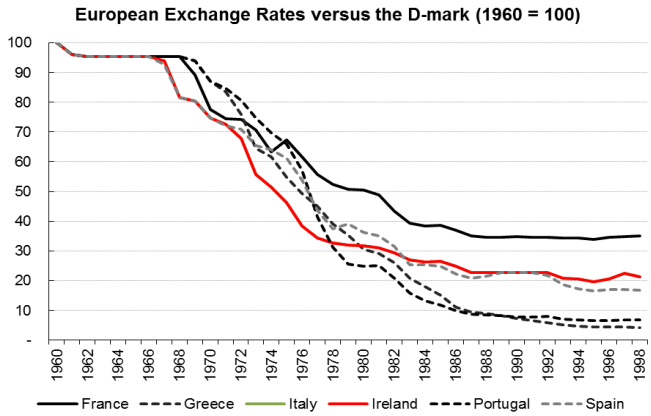
The extreme misalignments in real effective exchange rates and asset bubbles of the past decade confirm that Europe is not an optimal currency area. So long as the euro exists, either the core or the periphery will have an inappropriate monetary policy. Monetary policy will either be too hot or too cold for some countries. Only exiting the euro would allow countries to re-acquire control of their monetary policy.

THE PERIPHERY: A BALANCE OF PAYMENTS AND EXTERNAL DEBT CRISIS WRIT LARGE

I am a rich man as long as I don't pay my creditors.
Titus Maccius Plautus (c. 254-184 BCE), "Curculio"

The euro is a victim of its own success. It was intended to tie together the European political economy in a much deeper union. The one area where the euro succeeded spectacularly was in integrating the European banking system. Before the euro, banks were often reticent to lend across borders and if they did so, they only made loans at high prices. After the euro was introduced, the European banking system experienced a boom in cross-border lending.

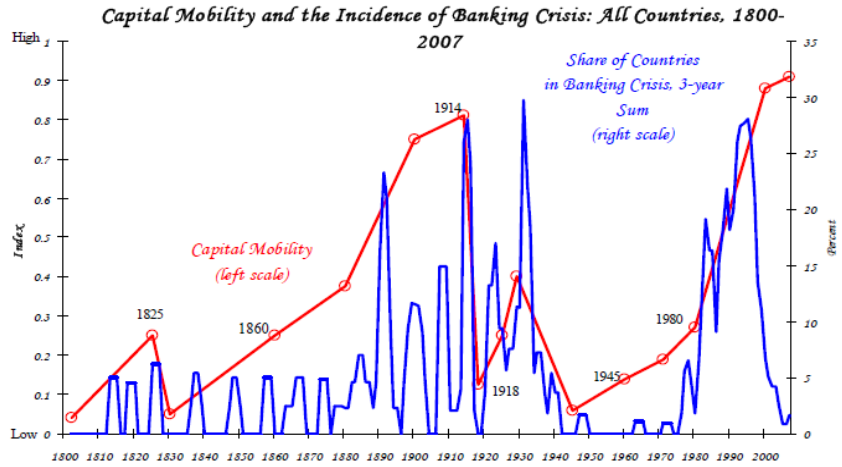
The introduction of the euro was a watershed moment that radically changed southern Europe from weak currency countries into strong currency countries. Prior to the introduction of the euro in 1999, the Greek drachma had devalued by 96% against the deutschmark between 1957 and 1999. The Italian lira was devalued by 85% against the deutschmark over the same period. Even the French franc declined 75% over the period. After the introduction of the euro, investors no longer had to fear constant devaluations. The introduction of the euro created an enormous amount of confidence in lenders once currency risk had disappeared.



> *Source: World Bank*

By entering the euro, they were able to borrow in a currency where lenders would not fear constant devaluations. The shift towards a hard currency allowed periphery countries to issue large amounts of securities in the rest of the eurozone at almost negligible costs in terms of risk premia to Germany. Borrowing and financing became very cheap, and the periphery, unsurprisingly, racked up enormous debts to fund consumption and overinvestment.

Economic research shows that there is a striking correlation between freer capital mobility and the incidence of banking crises. As the following chart by Reinhart and Rogoff shows, periods of high international capital mobility have repeatedly produced international banking crises. The massive increase in capital mobility between the European core and periphery is but one more example of banking crises following huge cross-border capital flows.



Sources: Bordo et al. (2001), Caprio et al. (2005), Kaminsky and Reinhart (1999), Obstfeld and Taylor (2004), and these authors.

> *Source: This Time is Different by Reinhart and Rogoff,*

> *www.economics.harvard.edu/files/faculty/51_This_Time_Is_Different.pdf*

After the introduction of the euro, capital flowed freely, and the PIIGS borrowed heavily and built up very large unsustainable external debts in a currency they cannot print or devalue. The EU periphery countries currently face severe, unsustainable imbalances in real effective exchange rates and external debt levels that surpass those typically seen before emerging market debt and currency crises, as we will show.

Each periphery country has too much debt, but the debt is not all the same. Leo Tolstoy wrote that "Happy families are all alike; every unhappy family is unhappy in its own way." Greece and Italy have high government debt levels. The money has been spent and can never be recovered. Ireland and Spain have extremely high private sector debts due to spectacular housing bubbles. A large proportion of Spanish and Irish homeowners are in negative equity, with no property upturn in sight. Portugal has a very high public and private debt level with a depression-like contraction in economic activity.

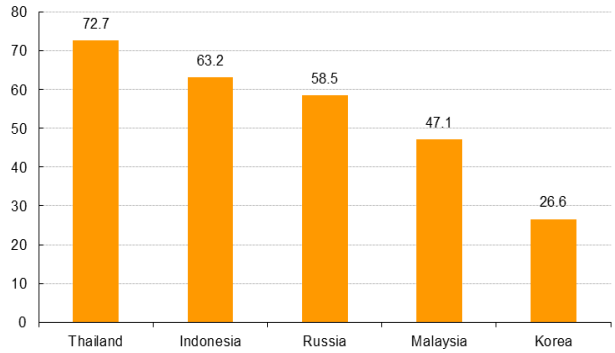
The problem for the European periphery is not only that debt levels are high, but that almost all the debt is owed to foreigners. As Ricardo Cabral, Assistant Professor at the Department of Business and Economics at the University of Madeira, Portugal, points out, "much of these countries' debt is held by non-residents meaning that the governments do not receive tax revenue on the interest paid, nor does the interest payment itself remain in the country":

> *In fact, external indebtedness is key to understanding the current crisis. Portugal, Ireland, and Spain have similar external debt dynamics to that of Greece. Despite netting out debt-like assets held by residents abroad, the PIIGS' average net external debt-to-GDP ratio, is approximately 30 percentage points higher than the average gross external debt-to-GNP ratio observed in the emerging market external debt crises.*

> *Source: The PIGS' external debt problem, Ricardo Cabral, May 2010 http://voxeu.org/index.php?q=node/5008*

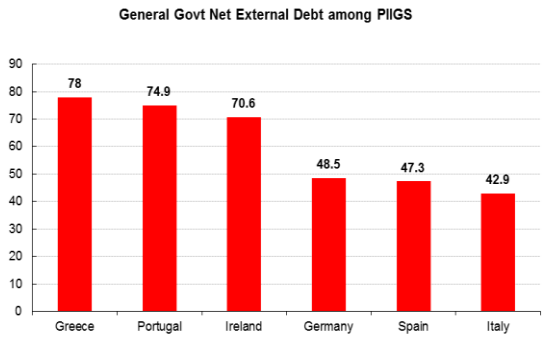
The closest analogue to the current European crisis was the Asian crisis of 1997 where Asian countries had overvalued currencies and built up very large external debts. The following chart shows the net external debt to GDP ratios in Asia before the 1997 crisis.

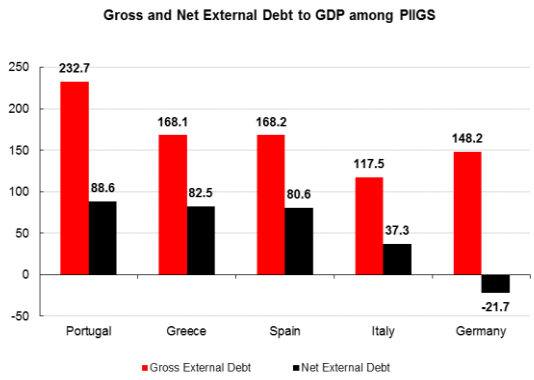
Asian Crisis in 1997: Gross External Debt to GDP



> *Source: The PIGS' external debt problem, Ricardo Cabral, May 2010 http://voxeu.org/index.php?q=node/5008*

Periphery debt levels before the recent European crisis began in 2010 were much higher than Asia's debt levels before the widespread defaults and devaluations in 1997. It is also noteworthy that at the beginning of the crisis most of the government debt of Greece, Portugal, and Ireland was held abroad, and almost half Spanish and Italian government debt was held abroad. After the crisis began, foreigners have been dumping periphery assets, forcing local banking sectors to prop up their sovereigns.





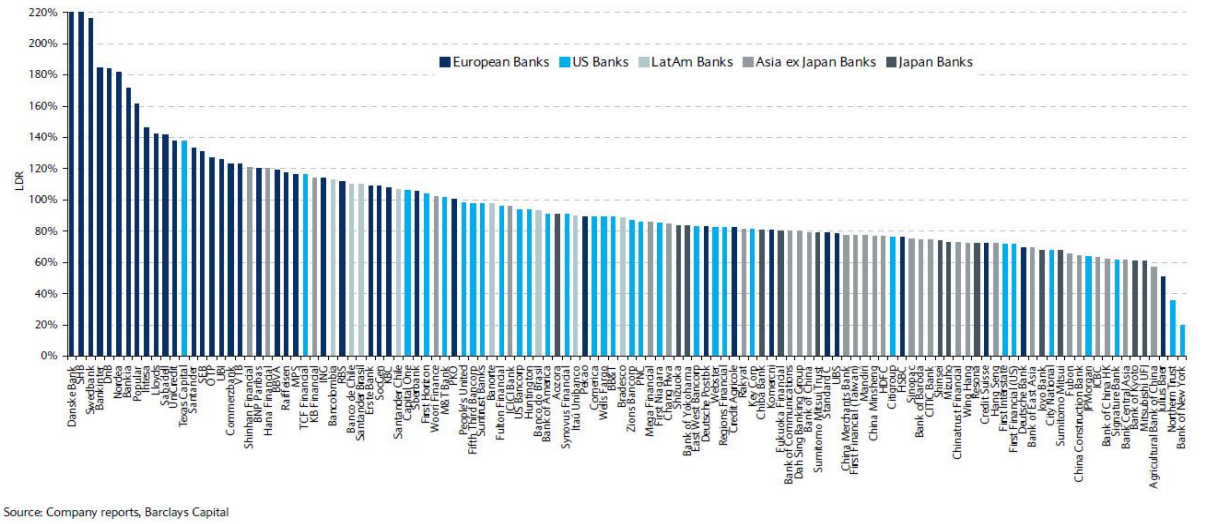
> *Source: The PIGS' external debt problem, Ricardo Cabral, May 2010 http://voxeu.org/index.php?q=node/5008*

In the case of Asian countries, most of the debt was denominated in another currency, ie dollars. This produced an "inverted balance sheet". With inverted debt, the value of liabilities is negatively correlated with the value of assets, so that the debt burden and servicing costs decline in good times and rise in bad times. Borrowing in a foreign currency is like drinking whiskey, it makes the good times better and the bad times even worse. Once Asian currencies started to depreciate, their debt to GDP ratios skyrocketed. Fortunately, for the European periphery, all the debt is in euros. This is one reason why departing from the euro is taboo. Any exit from the euro and a move to local currencies that could be depreciated would increase the total debt burden.

In practical terms, the European banking market is the microeconomic expression of overall macroeconomic imbalances. Twelve years after the euro has been introduced, persistent current account deficits and investment booms in the periphery have led to very high loan to deposit ratios for periphery banks. These are almost all funded by the core. Essentially, almost all the periphery is short funding.

The following chart is highly instructive regarding the funding situation of European banks. The banks with the highest loan-to-deposit ratios are periphery banks or banks that leant heavily to southern and eastern Europe: Bankinter, Bankia, Popular, Intesa, Sabadell, Unicredit, and Santander. They far exceed loan to deposit ratios for US and Japanese banks, which have already undergone a deleveraging and recapitalization process.

Figure 19: Loan-to-deposit ratios – global banks, FY 2011

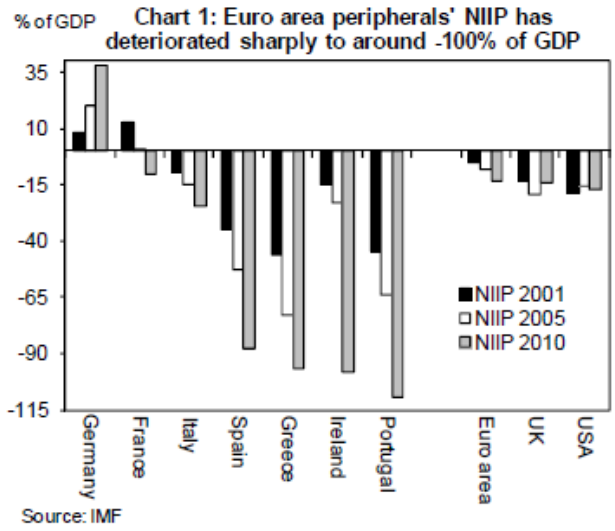


Source: Company reports, Barclays Capital

The loan-to-deposit ratios of individual European banks are the small scale reflections of the large scale deterioration of the Net International Investment Positions and Net External Debt to GDP ratios for the periphery. (The Net International Investment Position is the difference between what a country owns of the rest of the world and what the rest of the world owns of that country. Countries that sell more goods and services to the world than they consume tend to accumulate lots of assets abroad and have a good investment position.)

In order to finance the large current account deficits, the European periphery has had to sell more assets to foreigners than it purchased. Staggeringly, for Portugal, Greece, Ireland and Spain, foreigners own assets worth almost 100% of GDP. Like a drug addict selling all the family silverware, the periphery has sold large claims on their assets to fund sustained current account deficits.

The following chart shows the evolution of the Net International Investment Position of the periphery and how it has deteriorated to extreme levels.

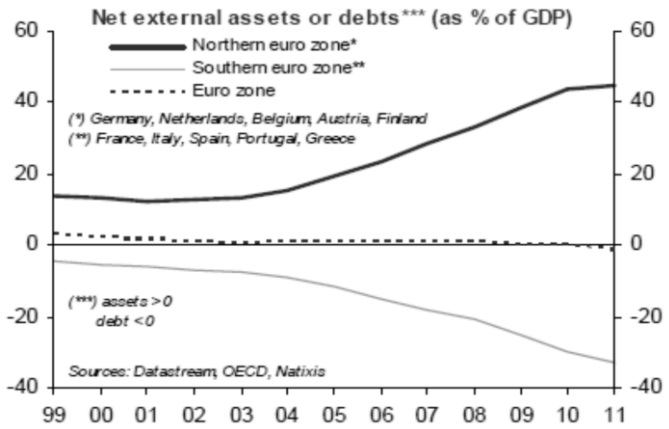


> *Source: Bank of Spain, http://bit.ly/rvHs2g and Goldman Sachs, European Weekly Analyst Issue No: 11/44 December 21, 2011 Goldman Sachs Global Economics, Commodities and Strategy Research*

Clearly the trend started with the advent of the euro and has deteriorated almost every single year thereafter. Interestingly, as the periphery's investment position deteriorated, Germany's improved. Germany is the flipside of the periphery. This is highly significant for reasons we discuss below.

FOR EVERY BORROWER, THERE IS A LENDER; FOR EVERY DEFICIT, A SURPLUS

The European periphery could only have run up very large debt levels if someone was willing to lend to them. While the European periphery borrowed heavily, the core of Europe lent freely. This means that any exit from the euro would make cross border liabilities a huge problem. As the following chart shows, the northern countries of the eurozone have increased their net external assets as the mirror image of the increase in external debts in the periphery.



> *Source: Who is in the dominant position: The lender or the borrower?, Natixis 17 November 2011 - No. 833.*
http://bit.ly/rVbMHF

Since the introduction of the euro, Germany and the rest of the European core have become important lenders to the European periphery. The natural result has been to shift its investment portfolio towards southern Europe and to accumulate large claims on periphery countries.

Simply put, the relation between borrower and lender means that, if the periphery experiences widespread defaults or exits the euro, the creditors that will suffer will be French, German and UK banks. Any defaults by periphery countries will immediately affect all the banks in the core of Europe due to their extremely high levels of cross border lending.

CRYSTALLIZING LOSSES: PRIVATE SECTOR LOSSES ARE ALREADY PRESENT

> *Panics do not destroy capital; they merely reveal the extent to which it has been previously destroyed by its betrayal into hopelessly unproductive works.*
> John Stuart Mill

Banks in the core do not wish to sustain losses, but large scale periphery defaults are inevitable. The cash flows of households, corporations and governments in the periphery are simply not high enough to service debt. For example, Spanish corporations hold twice as much debt relative to national output as do US companies, and six times as much as German firms, according to the McKinsey Global Institute. In terms of the cash flow capacity of businesses to

service corporate debt, Spain and Portugal are very stretched. According to Lombard Street Research, non-financial company debt in Portugal is 16x pre-interest cash flow compared with 12x in Spain. These debt-to-cash-flow figures imply a high likelihood that lenders will not be repaid in full. Furthermore, on the household side, much of the debt was used to buy overvalued real estate assets.

Any exit from the eurozone would merely accelerate the recognition of losses that are the result of previous imbalances and the accumulation of too much debt. The destruction of capital would not come from default or devaluation but from its previous unproductive use.

The net external debt positions and negative Net International Investment Positions of the periphery countries are extremely high. Indeed, they are so high that historically almost all countries that had such levels have defaulted and devalued. (For an extensive overview of similar previous debt crises, please read *This Time Is Different: Eight Centuries of Financial Folly* by Reinhart and Rogoff.)

After the Great Financial Crisis, the European periphery has faced a combination of very low economic growth or even outright economic contraction, very high deficits coupled with very high government debt burdens as a proportion of GDP, and with very high rates of interest on government bonds.

This toxic combination of characteristics has made financing difficult for peripheral countries. If economic growth is low and interest paid is very high, investors will assume debt levels will never go down and bonds will never be repaid. Then borrowing costs skyrocket, and the face value of debt collapses. The breakdown in confidence and collapse in debt value happens very quickly, as the recent case of Greece shows. Without growth in the European periphery and with rising borrowing costs, Portugal, Spain, and Ireland will face the same fate as Greece.

TOO MUCH DEBT: THE ONLY WAY OUT IS DEVALUATION, INFLATION OR DEFAULT

Defaults and bankruptcies are an essential part of capitalism. Frank Borman, the Chairman of Eastern Airlines, put it best when he said said, “Capitalism without bankruptcy is like Christianity without hell.”

When people or companies have too much debt, they typically default. When countries have too much debt, governments have one of three options:

1. They can default on it.
2. They can inflate away the debt.
3. They can devalue and hurt any foreigners who are holding the debt. This is really just a variation on the theme of inflating debt away.

Periphery countries can’t devalue, and the ECB will be loath to print limitlessly. These countries, thus, owe very large amounts of money in a currency they can’t print. Because they are in a currency union, they lack the tools typically available to countries that need to rid themselves of debt. Defaults, then, are inevitable.

But defaults alone, in the European context, are not enough. As the recent Greek default has shown, it is possible to default while staying within the eurozone. There is no advantage to leaving the euro area from the narrow point of view of the cost and benefits of defaulting on the public debt. However, defaulting does not solve the underlying problem of a one-size-fits-all monetary policy. It also does not correct the problem of a lack of competitiveness due to overvalued real effective exchange rates. **Defaulting is only a partial, short-term solution. Defaulting, exiting the euro *and* devaluing would be necessary as well.**

EURO AS A MODERN DAY GOLD STANDARD: SIMILARITIES AND DIFFERENCES

> *In truth, the gold standard is already a barbarous relic. All of us, from the Governor of the Bank of England downwards, are now primarily interested in preserving the stability of business, prices, and employment, and are not likely, when the choice is forced on us, deliberately to sacrifice these to outworn dogma... Advocates of the ancient standard do not observe how remote it now is from the spirit and the requirements of the age.*
> John Maynard Keynes in "A Retrospective on the Classical Gold Standard, 1821-1931"

The modern euro is like a gold standard. Obviously, the euro isn't exchangeable for gold, but it is similarly restrictive in many important ways. Like the gold standard, the euro forces adjustment in real prices and wages instead of exchange rates. And much like the gold standard, it has a recessionary bias for weaker countries. Under a gold standard, the burden of adjustment is always placed on the weak-currency country, not on the strong countries. Almost all of the burden of the coming economic adjustment will have to fall on the periphery.

Under a classical gold standard, countries that experience downward pressure on the value of their currency are forced to contract their economies, which typically raises unemployment because wages don't fall fast enough to deal with reduced demand. Interestingly, the gold standard doesn't work the other way. It doesn't impose any burden on countries seeing upward market pressure on currency values. This one-way adjustment mechanism creates a deflationary bias for countries in a recession.

What modern day implications can one draw from the gold standard-like characteristics of the euro? Barry Eichengreen, arguably one of the great experts on the gold standard and writer of the highly praised *Golden Fetters*, argues that sticking to the gold standard was a major factor in preventing governments from fighting the Great Depression. Sticking to the gold standard turned what could have been a minor recession following the crash of 1929 into the Great Depression. Countries that were not on the gold standard in 1929 or that quickly abandoned it escaped the Great Depression with far less drawdown of economic output.

The sooner countries left the gold standard, the sooner industrial production bounced back. The stark evidence of abandoning the gold standard and returning to growth is shown by the following chart by Barry Eichengreen. (Red arrows have been added to indicate the dates countries left the gold standard: Britain and Japan 1931, US 1934, France 1936. The yellow lines show the evolution of industrial output afterwards.)

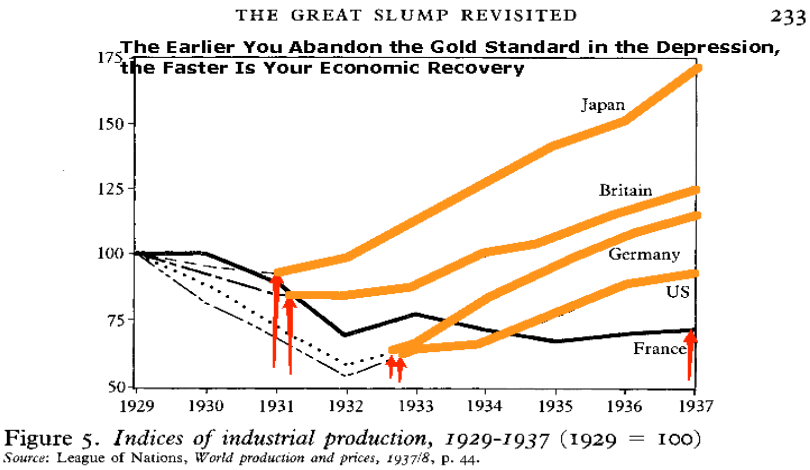


Figure 5. *Indices of industrial production, 1929-1937* (1929 = 100)
Source: League of Nations, *World production and prices, 1937/8*, p. 44.

> *Source: The Origins and Nature of the Great Slump, Revisited by Barry Eichengreen*

> *http://ideas.repec.org/p/ucb/calbwp/91-156.html*

>

It is odd then that Eichengreen and most economists today encourage periphery countries to *stay* inside the euro when they would have encouraged countries in the 1930s to *leave* the gold standard.

DEFICITS AND SURPLUSES: PIIGS TO THE SLAUGHTER

Not only are European leaders and economists recommending that countries not exit the euro, they are asking periphery countries to pursue "austerity" policies to reduce government deficits. They do this despite ample evidence that periphery countries embracing austerity have consistently registered lower growth and higher deficits than forecast. Austerity has proved to be self-defeating and savage wherever it has been implemented. As Albert Einstein said, "Insanity is doing the same thing over and over again and expecting different results." Under that definition, endless cycles of austerity could well be described as insanity.

Most of the problems in the periphery relate to overvalued real effective exchange rates and too much debt, both public and private. Fixating purely on public debt levels is extremely misguided. The medical equivalent of such austerity diagnoses is to recommend leeches to a man dying of cancer.

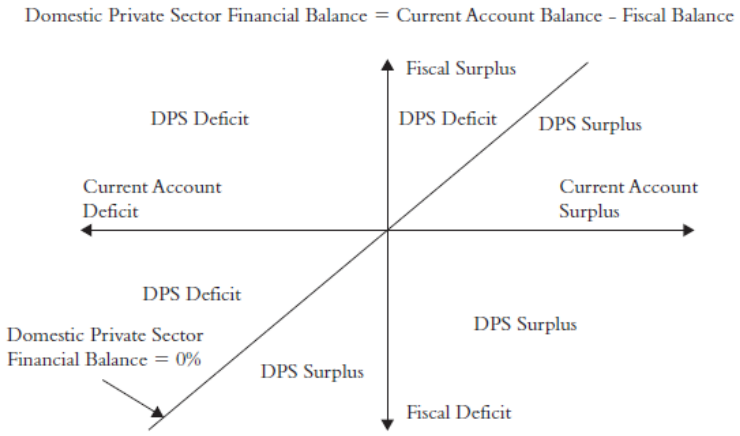
Austerity is the embodiment of Keynes's paradox of thrift. Sadly, most periphery countries are contracting fiscally into a downturn, which will only shrink their economy further. Under the paradox of thrift, total savings may fall even when individual savings attempt to rise. The paradox of thrift is like trying to drive to work ten minutes early. If one person does it, they get to work ten minutes early. If everyone does, the traffic jam starts ten minutes early. What is true for the individual is not true for the whole.

Given the constraints of the euro and the Maastricht Treaty deficit targets, the European periphery faces a period of debt deflation. The public sector and private sector in periphery economies cannot deleverage at the same time without running a trade surplus. This is true for mathematical reasons that are inescapable. A sectoral balances approach to the problem yields the economic identity:

Domestic Private Sector Financial Balance + Fiscal Balance + Foreign Financial Balance = 0

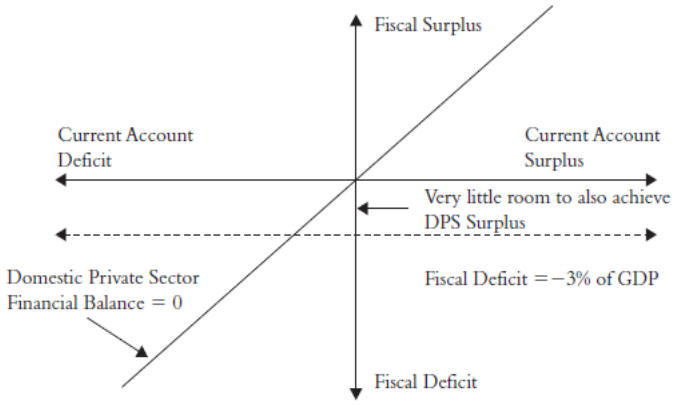
This is an economic identity that cannot be violated. Sectoral balances must net out; the changes in one sector's financial balance cannot be viewed in isolation. If government wants to run a fiscal surplus and reduce government debt, it needs to run an even larger trade surplus, or else the domestic private sector will need to engage in deficit spending. The only way that both the government and the private sector can deleverage is if the countries run large current account surpluses: your demand has to come from another country.

The following two charts are illuminating. The first chart shows a traditional financial balances map.



> *Source: Leading PIIGS to Slaughter by Robert Parentau, http://bit.ly/c6lSPb*

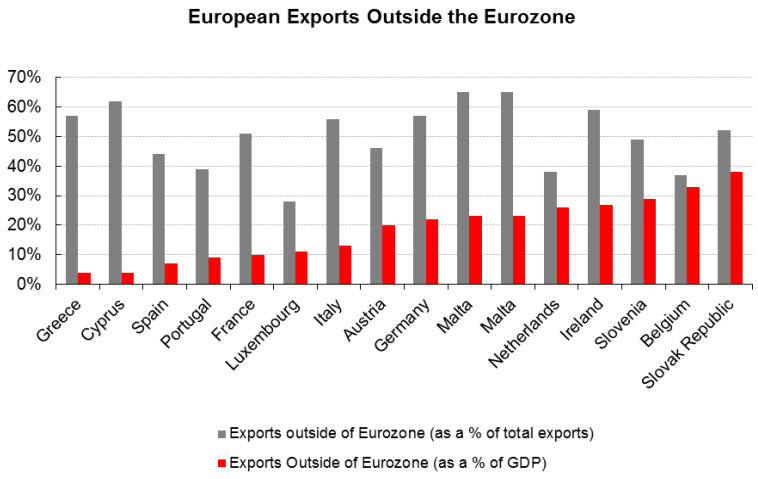
In Europe, according to the Maastricht Treaty, governments are not supposed to run deficits of more than 3% of GDP. If you apply the 3% constraint to the previous chart, then the financial balances map becomes extremely constrained and it becomes almost impossible to achieve any private sector financial balance under EU rules.



> *Source: Leading PIIGS to Slaughter by Robert Parentau, http://bit.ly/c6lSPb*

Not all countries can export their way back to prosperity because not everyone can run a surplus, in the same way as mathematically not all children can be of above average intelligence. As the periphery countries necessarily reduce their deficits, what must happen to maintain balance? Someone has to run a deficit if the periphery runs a surplus. Either European surplus countries reduce their surplus, or on net Europe must reduce its surplus, in which case China must reduce its surplus, or the United States must increase its deficit. Again, the mathematics of the predicament is inescapable.

The principal way a country can improve its competitiveness in the short run is via a weaker currency. However, a weak euro will not help the European periphery, because almost all periphery exports are to the EU. As the following chart shows, exports outside the eurozone as a percentage of GDP are very low for Greece, Spain, and Portugal. Except for Ireland, the PIIGS are not very open economies, and most of their exports are to other European countries. Only internal measures to make wages and prices more flexible and to improve the labor market and improve skills will have any impact, and these cannot happen overnight.



> *Source: http://www.piie.com/realtime/?p=1595*

The current periphery crisis is not a one-time event. Structurally eurozone economies remain divergent. The intra-eurozone current account deficits and external debt accumulation will reoccur so long as there is a one-size fits all monetary policy.

(In standard economic theory, if a country is more likely to save than it is to import, the exchange rate should be used to adjust the external balance. Previous cases of devaluation, such as Indonesia, South Korea and Argentina, meet that criterion much more than the European periphery. Arguably, this makes it more difficult for the periphery to improve adjust the external balance via the exchange rate. However, the main rationale for devaluing is not exclusively to increase exports, but rather to recover control over monetary policy and counteract the dangerous effects of a debt deflationary dynamic.)

Given the constraints of the euro, there are only three solutions that are possible to solve the debt and external balance problems in Europe:

1) **Germany and other surplus countries can assume the burden of adjustment via higher wages, higher consumption.** Surplus countries could cut consumption and income taxes sharply in order to reduce domestic savings and increase domestic consumption. They could also encourage borrowing by relaxing lending standards. These policies would help move Germany, Netherlands and the core from trade surplus to deficit and it would also result in higher inflation and reduced competitiveness. These changes would allow the periphery to run surpluses and regain lost competitiveness via lower inflation relative to that of Germany. This solution, however, is extremely unlikely. It belongs in a category with unicorns and fairies. Globally surplus countries like Germany, Japan and China rationally only follow their own interests, and they will not change their ways merely to please deficit countries.

2) **Adjustment of wages and prices, ie an internal devaluation** – Internal adjustments to regain competitiveness involve reducing wages and prices in current account deficit countries. The European periphery can endure austerity and high unemployment for many more years as wages slowly fall across the entire economy. Countries can also pursue structural reforms to improve the flexibility of labor markets and make it easier to start businesses, but these measures do not have an immediate effect.

3) **Outright currency devaluation by departing from the euro** – Devaluations typically involve abandoning a peg or actively selling local currency in order to bring down the value of the national currency against other currencies. Periphery countries can leave the euro and devalue. The value of the debt in euros would surge relative to incomes denominated

in a weakening currency. Any departure would force periphery countries to restructure their debt.

History has shown that the only solution that works in practice is devaluing the currency, as we will show in the next section. However, euro area politicians and academics only see internal devaluations as the solution.

The euro prevents devaluation and creates a debt-deflationary dynamic for the periphery. **Periphery countries should depart from the euro. Exiting the euro would solve one of the principal ills facing periphery countries by providing the exchange rate as a policy tool, as well as allowing central banks to counteract the huge deleveraging process that is underway.**

ALL CHOICES ARE PAINFUL, WHETHER "DEVALUING INTERNALLY" OR EXITING

More than any other time in history, mankind faces a crossroads. One path leads to despair and utter hopelessness. The other, to total extinction. Let us pray we have the wisdom to choose correctly.
Woody Allen

There is no easy, painless escape from the grave choice of external currency devaluation or internal deflation. Both imply substantial costs. Either way, the outcome will be very painful, but one method would be quick and the other slow.

There are two principal problems with internal devaluations.

1. Workers do not like wage cuts. This obvious insight is backed up by dozens of economic studies. Employers, also, generally dislike cutting wages because cuts to wages can reduce morale and prompt resistance even in difficult economic times. Also, not all workers would cut their wages at the same time, so the first to cut their wages would be poorer relative to workers who had not cut their wages yet.

2. Even if wage cuts could be easily achieved, existing debts would not be reduced proportionately, so debt to income ratios and debt to GDP ratios would balloon.

Achieving adjustment by changing the exchange rate, rather than by depending on thousands of firms to change their prices and employees to change their wages, is like shifting to daylight savings time rather hoping everyone will change their working hours independently. Everyone could independently decide to go to work an hour earlier, have lunch an hour earlier, and go to sleep an hour earlier. But it is much simpler to change the clock that guides all workers than to wait for each individual separately change his habits.

Internal devaluations make debts harder to repay. They create a vicious circle of insolvency and compound the problem of high debt to GDP ratios. The more wages are cut, the higher the debt to income ratio would be. For example, a couple with a 500,000 euro mortgage and 100,000 euro combined earnings would have a debt to income ratio of 5x. Reducing the household's wages by 30 percent to 70,000 euros would increase the debt to income ratio to 7.1x. The math does not work. The more "competitive" workers become, the higher the debt burden. Economists who recommend internal devaluations are much like the village idiot who kept cutting the board, but still found it too short.

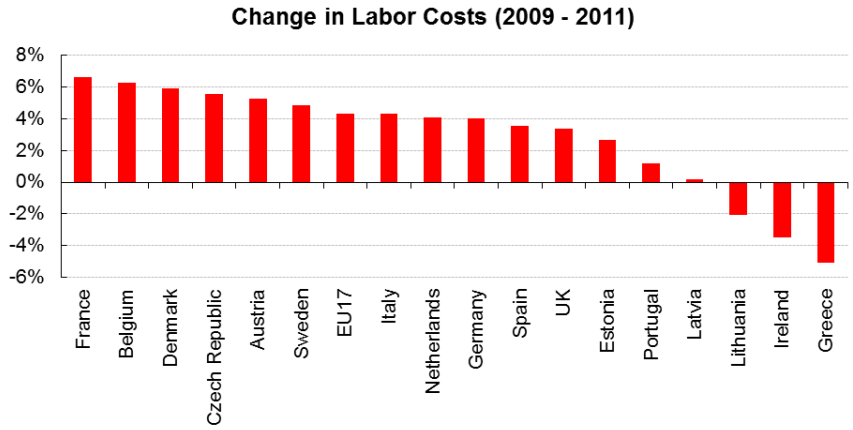
Staying within the euro implies choosing internal devaluations. There is no need to speculate how an internal devaluation might turn out.

Ireland and Latvia have been made guinea pigs for internal devaluations. Neither country can devalue: Ireland is trapped in the euro, and Latvia chose to keep its peg to the euro. Both experienced spectacular property busts, and both had very overvalued real effective exchange rates. When their property markets went bust in 2008, their banks failed or required recapitalization. Both countries have become wards of either the IMF or the EU. The results of the internal devaluations provide a cautionary tale.

However, external devaluations - unlike internal devaluations, which are long and drawn out - are typically short and sharp,.

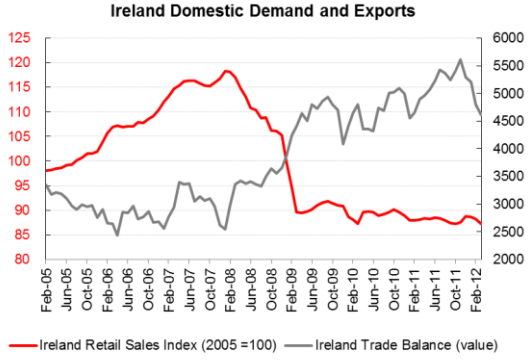
Almost four years after the busts in Ireland and Latvia, there are four clear lessons.

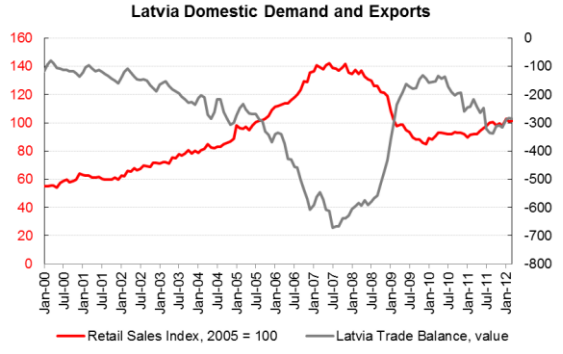
1. **The level of wage adjustment for Ireland and Latvia has been modest, at best.** Ireland, which has made the most progress, wages have fallen only slightly. As the following chart shows, relying on each person to change their wages and prices has meant that wage adjustments in Ireland and Latvia have proceeded very slowly. Because wages have risen in the rest of the euro area, the actual internal devaluation is bigger but it is only a fraction of what's needed. Germany has not been experiencing any revaluation of its wages.



Source: Eurostat

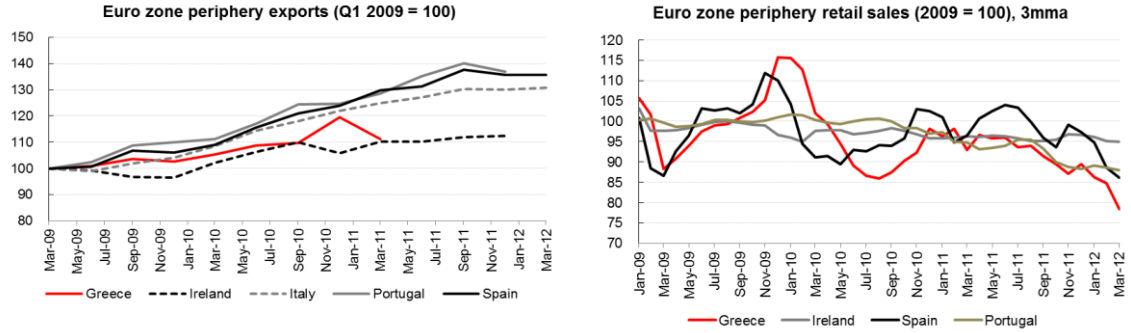
2. **Contractions are long and painful while growth is elusive outside of the export sector**. Exports in Latvia and Ireland have rebounded, but outside of the export sectors, growth has been lacklustre at best. The problem with relying on exports is that the export sectors are by far the smallest parts of the economy. Personal consumption and household expenditures have slumped in both countries. Relying solely on export growth is like trying to pull one's self up by the bootstraps.





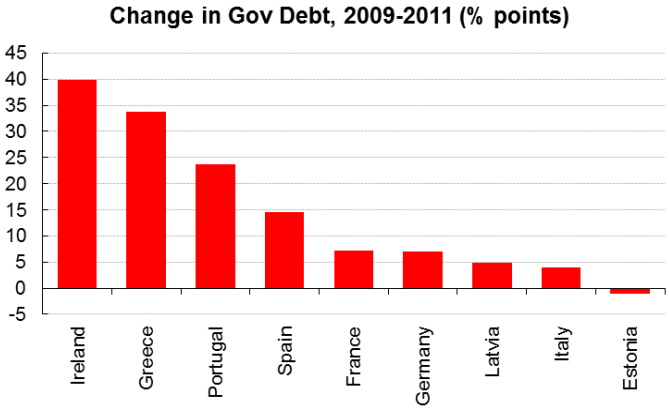
Source: Latvia Statistical Office and Bloomberg

This picture is similar across the eurozone periphery with exports growing but domestic demand growth continuing to slow and contract.



Source: OECD and Bloomberg

3. **The debt burden increases as debt to GDP ratios rise**. In Ireland and Latvia, government and private debt to GDP ratios have risen sharply. They have pursued internal devaluations without the large scale insolvencies or debt restructuring that would come with a major devaluation. The only decrease in private debt levels that has happened has been through outright defaults. Nominal inflation has not helped at all to reduce the real burden of debt, as has been the case in the US and the UK where central banks have pursued looser monetary policies to create inflation and weaken the currency. As the following chart shows, candidates pursuing internal devaluations have experienced the largest increases in debt to GDP.



Source: IMF

4. **Emigration of young able-bodied men increases very sharply.** From 2009 to 2011 Latvia has lost as many as 120,000 people, or 10 percent of the labor force. This is nothing short of disastrous for the long term health of the Latvian economy, as many emigrants will not return. If not for this migration, the broader measure of unemployment could be as high as 29 percent in the third quarter of 2011, instead of 21 percent. In the case of Ireland, the numbers of people leaving the country have not been this high since the 19th century. Almost one percent of the population has left per year since the 2008 crisis. Half of those leaving Ireland were EU immigrants who came in the good times, but the other half are young, able-bodied Irish men. Rising emigration is a fiscal disaster as able-bodied men and

women leave and cease paying taxes while older people who are unable to work stay and remain a burden on state social security systems.

If Latvia and Ireland are the success stories of internal devaluations, it would be terrible to see a failure.

THEORY AND PRACTICE OF A EURO BREAKUP

> *In theory there is no difference between theory and practice. In practice there is.*
> Yogi Berra

Any examination of breakup scenarios for the euro should distinguish between *might* happen and what *should* happen. "Is a breakup probable?" is completely different from the question "is a break up desirable?"

It is important to state from the outset that it is beyond the scope of this paper or indeed the abilities of the writer to predict the most likely outcome for the euro in practice due to political constraints. It is impossible to guess what course the future might take. This paper will focus on economic theory and historical experience in order to find out what is economically desirable, legally possible and politically feasible.

The euro is a project with a long history and deep political commitment across the entire political spectrum in almost every country of the European Union. The euro is as much a political expression of Europe as it is an economic one. Any exits from the euro would have to happen when it is politically feasible for parties in the periphery to see exiting the euro as an election winner. As periphery unemployment levels in some countries approach 25% and youth unemployment rates approach 50%, it is more likely that voters will radicalize and reject the status quo. This may be the catalyst to change elite opinion.

In theory there are an almost infinite number of ways the euro could break up, but most of them are not only improbable in political terms but also undesirable in economic terms. Broadly speaking, however, five main options exist to break up the euro, even though there are many more permutations:

1. **One country could leave and the rest could stay.** For example, a country such as Greece requiring a devaluation and default could leave, re-introduce the drachma, and all other countries could continue to use the euro. A less talked about scenario is that an economically strong country with low debt levels and undervalued real effective exchange rate such as Germany could exit.

2. **A cascading domino approach could lead countries to leave the euro in sequence.** Greece could exit the euro, and then either through economic or financial pressure, Portugal, then Spain and then Ireland could be forced to leave due to large bank runs, deteriorating domestic economic and political conditions.

3. **The euro could break into two currencies.** Some have imagined a hard currency, the *duro* could include Germany while a weaker currency called the *medi* or a rump euro could exist for Southern Europe. Other writers have suggested that the euro could be broken into an "egg white" and a "yolk." Under these scenarios, the duro or white would appreciate, while the medi or yolk would depreciate.

4. **Every single country could leave and return to their previous currencies.** The euro came into being as the European Currency Unit, (ECU) or a "currency basket" before it existed in the physical form of bank notes and coins. Similarly, a new ECU-2 could exist as a transitional stage before all countries return to their previous currencies.

5. **A country could introduce a national currency in parallel with the euro.** This proposal would seek to create a devalued currency while still remaining a member of the euro area. An existing country could introduce a national currency as a unit of account or invoicing currency for new contracts, while maintaining the euro as the sole legal tender as the means of exchange. The new parallel currency could be paid for government salaries, pensions, interest on national debt, tax refunds, etc. This is effectively a half-way house between staying in the euro and leaving.

Some of these scenarios require high degrees of planning and coordination between countries, while others could be executed by a country on its own.

ALL EURO EXIT OR BREAKUP SCENARIOS PRESENT PROBLEMS

The exit of single countries that would benefit from departing the euro is far preferable to breaking up the entire euro. Allowing countries to depart is the simplest, most efficient way to solve Europe's problems. This paper will assume that periphery countries can and should act individually in their own perceived best economic interests. This means that a single exit or multiple exits by weaker members is not only the most likely, but also the most desirable outcome economically.

An organized breakup of the entire euro area is not only extremely unlikely but it is also completely unnecessary and undesirable from an economic standpoint. Any exit scenario has to avoid undue dislocation to the countries that wish to remain in the euro area and are able to finance themselves absent market panics. The core of the euro area arguably is an optimal currency area because it has very similar GDP per capita levels, experiences coordinated business cycles, similar inflation levels, and has well developed fiscal shock absorbers. The periphery has much less in common with the core on all of these fronts.

Breaking up the entire euro would have immense global implications. The euro is a reserve currency. About one quarter of global foreign exchange reserves are held in euros. By breaking up the euro in its entirety, the chaotic effects would be felt globally by all countries that have accumulated euro reserves. The potential for global financial contagion via central banks would be immense in a full scale breakup.

Highly planned, coordinated breakups of the entire euro area are appealing because they superficially appear to be elegant solutions to a messy problem. Reality, however, is not as elegant. Such idealized proposals are hopelessly naïve. The euro itself took over a decade of summits and agreements, from the Single European Act of 1986, through the Delors Report of 1989 to the Maastricht Summit in 1991. It defies belief that achieving political consensus could happen with faster coordination. In the meantime, while politicians argue weaker countries would experience accelerated capital flight.

Before the euro came into being, all the currencies had fixed exchange rates and were converted into a basket of currencies (the ECU, or European Currency Unit) which then became the euro. **If the euro were turned into basket again as a transitional step back to national currencies, the periphery would still face devaluations and very large foreign currency asset liability mismatches.** The value of the weaker components of the basket would plummet instantaneously upon creation, and interest rates would rise significantly in weaker countries. Given the sophistication of financial markets, large investors would be able to sell the components in currency markets via non-deliverable forward contracts or trade the currency on a "when issued" basis, while individuals would lack the means to do so. Eventually, the components would trade freely on their own.

More importantly, even if the euro were broken up in an organized way via a basket or via a strong and weak currency, all investors and borrowers would still face painful maturity and foreign exchange asset/liability mismatches. The conversion to a basket would merely be a one-off move. Governments, households and corporations in the periphery would initially hold a currency basket

but future earnings and payment streams would be in the devalued currency. For example, periphery residents might hold mortgages or debts in the currency basket or yolk and white, but all future streams of income would be in devalued successor currencies. This would equally lead towards large scale periphery bankruptcies.

Assuming that a currency basket or a weak and strong currency would lead towards a painless transition without large devaluations and defaults ignores very basic tenets of economics such as: the law of one price, uncovered-interest-parity condition and an understanding of the term structure of interest rates. There is no way around devaluation and debt restructuring for the periphery under any circumstances. There is no simple solution to unscrambling the euro omelette.

WHO SHOULD STAY AND WHO SHOULD LEAVE?

The countries that should stay in the euro are the core: Germany, France, Netherlands, Belgium, Luxembourg, Finland, etc. These countries exhibit the highest symmetry of economic shocks, the closest levels of inflation, and have the closest levels of GDP per capita. These countries have converged economically and they have more compatible economic structures. Arguably, they are an optimal currency area.

Greece and Portugal should definitely exit the euro. Ireland, Spain and Italy should strongly consider it. These countries all have the highest levels of total net external debt as well as the most overvalued real effective exchange rates. Portuguese and Greek bonds trade at low prices, indicating the market assigns a high probability of default. Greece has already defaulted and even its new bonds traded poorly, and Portugal cannot finance itself without the help of the EU. Ireland, Spain and Italy have many of the pernicious characteristics of Greece and Portugal.

THE INEVITABILITY OF EXITS FROM THE EURO AND DEFAULTS

In the next section we will see how currencies have broken up over the past 100 years, what lessons European countries can learn from previous exits, and what practical steps they can take to implement an exit from the euro.

Section Two – Currency Breakups Happen Often Without Major Trauma

LESSONS FROM PREVIOUS CURRENCY BREAKUPS: LOW MACROECONOMIC VOLATILITY

The dissolution of the euro would be an historic event, but it would not be the first currency breakup. In fact, currency breakups and exits are commonplace. Within the past 100 years, there have been over 69 breakups and exits from currency unions.

Andrew K. Rose, a Professor of International Business at the University of California, Berkeley, has done a study of over 130 countries from 1946 to 2005. The following table taken from his research gives each exit during the period. In some cases, these were small colonies exiting currency areas and in other cases, these were large countries breaking up or leaving currency.

Table A2: Departures from Currency Unions

Country	Year	Anchor	Country	Year	Anchor
Algeria	1969	France	Mauritania	1973	CFA
Angola	1976	Portugal	Mauritius	1967	India
Bahrain	1973	India	Morocco	1959	France
Bangladesh	1965	India	Mozambique	1977	Portugal
Barbados	1975	ECCA	Myanmar (Burma)	1967	India
Botswana	1977	S Africa	New Zealand	1967	UK
Burundi	1964	Belgium	Nigeria	1967	UK
Cape Verde	1977	Portugal	Oman	1975	UK
Caymans	1972	Jamaica	Pakistan	1949	UK
Comoros	1994	CFA	Qatar	1959	India
Cuba	1950	USA	Reunion	1976	CFA
Cyprus	1972	UK	Rwanda	1966	Belgium
Djibouti	1949	CFA	Sao Tome and Principe	1977	Portugal
Dominican Rep	1985	USA	Seychelles	1967	India
Equatorial Guinea	1969	Spain	Sierra Leone	1965	UK
Gambia	1971	UK	Singapore	1967	UK
Ghana	1965	UK	Solomon Islands	1979	Australia
Guatemala	1986	USA	Somalia	1971	EACB
Guinea	1969	CFA	South Africa	1961	UK
Guinea-Bissau	1976	Portugal	South Yemen	1972	EACB
Guyana	1971	ECCA	Sri Lanka	1966	India
Iraq	1967	UK	St. Pierre and Miquelon	1976	CFA
Ireland	1979	UK	Sudan	1956	Egypt
Israel	1954	UK	Suriname	1994	Neth. Ant.
Jamaica	1954	UK	Tanzania	1978	EACB
Jordan	1967	UK	Tonga	1991	Australia
Kenya	1978	EACB	Trinidad & Tobago	1976	ECCA
Kuwait	1967	UK	Tunisia	1958	France
Libya	1967	UK	Uganda	1978	EACB
Madagascar	1982	CFA	Vanuatu	1981	CFP
Malawi	1971	CACB	Western Samoa	1967	NZ
Maldives	1967	India	Yemen, North	1971	EACB
Mali	1962	CFA	Zaire	1961	Belgium
Malta	1971	UK	Zambia	1971	CACB
			Zimbabwe	1971	CACB

> *Source: Checking Out: Exits from Currency Unions Andrew K. Rose, 2007*
> *www.mas.gov.sg/resource/publications/staff_papers/StaffPaper44Rose.pdf*

The conclusions Andrew Rose draws from the study of all the currency exits are remarkable:

> *I find that countries leaving currency unions tend to be larger, richer, and more democratic; they also tend to experience somewhat higher inflation.* ***Most strikingly, there is remarkably little macroeconomic volatility around the time of currency union dissolutions****, [emphasis added] and only a poor linkage between monetary and political independence. Indeed, aggregate macroeconomic features of the economy do a poor job in predicting currency union exits.*

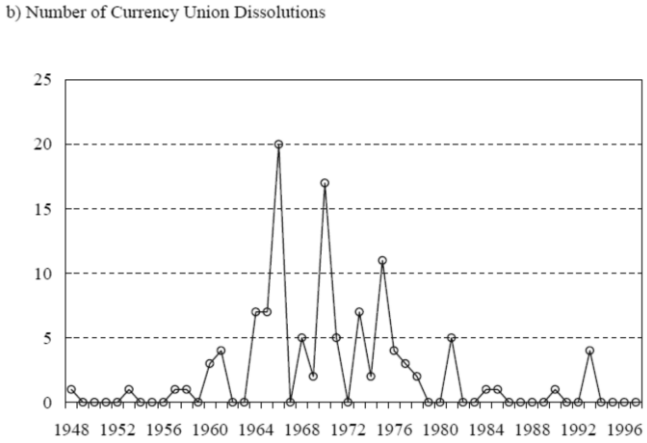
> *Source: Checking Out: Exits from Currency Unions Andrew K. Rose, 2007*
> *www.mas.gov.sg/resource/publications/staff_papers/StaffPaper44Rose.pdf*

Currency breakups were also the subject of a study by Volker Nitsch of Free University Berlin. His conclusion was that currency unions were not unusual and that most exits had little to do with macroeconomic factors.

> ***Historically, dissolutions of currency unions are not unusual.*** *[Emphasis added] I use an annual panel data set covering 245 country pairs that use a common currency (of which 128 are dissolved) from 1948 through 1997 to characterize currency union exits. I find that departures from a currency union tend to occur when there is a large inflation differential between member countries, when the currency union involves a country which is closed to international trade and trade flows dry up, and when there is a change in the political status of a member.* ***In general, however, macroeconomic factors have only little predictive power for currency union dissolutions.*** *[Emphasis added]*

> *Source: Have a Break, Have a… National Currency: When do Monetary Unions Fall Apart? Volker Nitsch, CESINFO Working Paper No 113. January 2004*

The peak of currency breakups was the end of colonization, as the following chart from Volker Nitsch shows.



> *Source: Have a Break, Have a… National Currency: When do Monetary Unions Fall Apart? Volker Nitsch, CESINFO Working Paper No 113. January 2004*

(Incidentally, reading the research of Andrew Rose and Volker Nitsch is an imperative for attempting to understand the dynamics and history of currency breakups.)

Larger scale currency breakups include India and Pakistan in 1947 and Pakistan and Bangladesh in 1971. Both breakups went smoothly from an economic standpoint despite the traumatic events of partition and even a civil war. More recently large breakups involved the Czech-Slovak split in 1992 and the ruble zone breakup in 1992-95.

The closest historical analogy in terms of heterogeneity of members and indeed geography to the euro is the currency dissolution of the Austro-Hungarian Empire. Peter Garber and Michael Spencer produced an extremely detailed account of the dissolution that is highly worth reading to understand the mechanics of breakup. They conclude that the historical episode of the Austro-Hungarian currency breakup in 1919 provides many lessons for current policymakers:

> *…currency separation can be accomplished relatively quickly. It involves little more than marking banknotes circulating within the breakaway state with a stamp. This initial operation will necessarily be followed by an exchange of stamped notes for new national currency, but it buys time for the authorities to plan the second stage carefully.*

> *Source: IMF Working Paper, The Dissolution of the Austro-Hungarian Empire: Lessons for Currency Reform, Peter Garber and Michael Spencer, www.princeton.edu/~ies/IES_Essays/E191.pdf*

The conclusion - that most exits from a currency union have been associated with low macroeconomic volatility and that currency breakups are common and can be achieved quickly - flies in the face of conventional wisdom.

It is important to note that most currency exits were motivated by political and not economic factors. In almost all cases, empires and states dissolved or colonial relationships soured. Countries then made the decision to have their own independent currency and run their own monetary policy primarily for political reasons. Political economy mattered much more than economics in terms of entering or leaving a currency union. In the following section, the case studies we will look at will primarily be currency areas that broke up for economic as well as political reasons.

While the prescription of this submission is for departure from the euro for periphery countries based on economic factors, it is much more likely that the timing of a euro breakup will be determined by political realities on the ground. It is likely that the economic costs of savage austerity, debt deflation and extremely high unemployment will ultimately lead to a political change of heart towards the euro.

EXITING THE EURO: RE-ACQUIRING MONETARY POLICY AND THE EXCHANGE RATE

> *A nation's exchange rate is the single most important price in its economy; it will influence the entire range of individual prices, imports and exports, and even the level of economic activity.*
> Paul Volcker and Toyoo Gyohten, Changing Fortunes: The World's Money and the Threat to American Leadership

In the following section we will provide a quick overview of three exits from previous currency unions and see what lessons can be learned.

While each currency exit is unique historically, one can draw some general conclusions:

1. **Currency areas have often broken up because they were not optimal and existed purely for political reasons** – Many of the currency unions that broke up existed purely for political reasons and were not ideal currency areas, particularly towards the end of the currency's existence. Inappropriate monetary and fiscal policies led to severe divergences in inflation and real effective exchange rates within the currency area. The expectation of devaluations and currency breakups often accelerated the process. This was true of the Austro-Hungarian dissolution, the Czech-Slovak monetary union, and leaving the ruble zone.

2. **The mechanics of currency introduction are messy and complicated but feasible** – Almost all the case studies continued to use old notes, but mandated that they bear either an ink stamp or a physical stamp. This was the first step in the changeover of notes and coins. Typically, only stamped notes were legal tender during the transitional phase. Once new notes had been printed, old notes were withdrawn from circulation in exchange for new ones. Often old currencies were taken across borders to be deposited.

3. **Currency breakups are often preceded by capital flight from weaker countries** – Once depositors and investors expect a currency breakup, they tend to move money from perceived weak currency banks to strong currency banks. This results in a bank run in weaker countries and a reverse bank run in stronger countries.

4. **Exits from currency areas are usually done by surprise and quickly** – While almost all devaluations are "surprise" announcements, there is no clear pattern for currency exits. Surprise was important in some cases because, the more advance notice people have, the greater the ability to hoard valuable currency or get rid of unwanted currency. However, countries with less inflation and credit creation and strong political identity were able to avoid surprise, as people were eager to hold the new currencies and get rid of the old, e.g. the Baltics and the ruble.

5. **Governments impose capital controls on import/export of money** – Allowing notes and currencies to move across borders would open up the possibility for leakage of currency and for arbitrage between the old currency and the new currency, depending on expected exchange rates. In most cases, countries imposed capital controls and de-monetized old currency quickly.

6. **Cross-border assets and liabilities are denominated into new successor currencies** – In most cases, cross-border liabilities were negotiated in advance by treaty or were assumed to convert at announced exchange rates on the date of the exit.

7. **The division of the assets of the central bank is often contentious** – In many cases of currency breakups, central banks quarrelled over the proper division of reserves and assets. The most contentious breakups were the Austro-Hungarian empire, the split between India and Pakistan, and the breakup of the ruble zone.

8. **Monetary and fiscal independence is crucial once countries exit** – The states that introduced new currencies in order to print money to cover government spending experienced higher inflation (and even hyperinflation) and depreciation of their currencies. Countries with independent central banks unable to lend to the government experienced more stable currencies and more stable exchange rates. Hyperinflations, however, were not inevitable and could be prevented through responsible monetary policy.

Some economists and historians have argued that historical examples are of limited use because almost all currency unions broke up due to political and not economic factors. While there is an element of truth to this, the mechanics of currency exit remain the same. The problems were not the mechanics of currency exit *per se* but the underlying economic problems. The complicating factor in the European case is the overlay of inevitable defaults and devaluations to what is a complicated, but feasible currency exit.

We will now look at three episodes of monetary breakups. The following treatments of currency exits are not meant to be exhaustive but are intended to provide a simple, quick overview of previous cases. These will inform the practical steps for countries to take to exit the euro. For more detailed reading, please see the source material and bibliography.

AUSTRO-HUNGARY MONETARY BREAKUP 1919: QUICK, SIMPLE AND PAINLESS

If we look at the example of the Austro-Hungarian Empire, which is perhaps closest in geographical and structural terms to the eurozone, we can see that it has some similar features with today's crisis in Europe. Much like the eurozone today, the Austro-Hungarian Empire faced the severe challenge of reconciling the conduct of national fiscal policy with a divergent supra-national monetary policy.

The Austro-Hungarian crown towards the end of its life was not an optimal currency area, because starting in 1916-17, Austria increasingly lost control of its economic integration and trade began to break down between countries. As Rudiger Dornbusch concluded in his study of the currency breakup, "It is quite an awful idea to maintain a currency area between sovereign nations based on an *un*stable center currency."

Peter Garber and Michael Spencer produced an extremely detailed account of the breakup that is highly worth reading to understand the mechanics of a currency dissolution. Their study concludes that historical episode of the Austro-Hungarian currency breakup in 1919 provides many lessons for current policymakers:

> *This episode suggests five lessons for currency reform elsewhere.* ***First, currency separation can be accomplished relatively quickly. It involves little more than marking banknotes circulating within the breakaway state with a stamp.*** *[Emphasis added] This initial operation will necessarily be followed by an exchange of stamped notes for new national currency, but it buys time for the authorities to plan the second stage carefully. Second, the exchange of old notes for new provides an opportunity for the authorities to eliminate any "monetary overhang" by imposing a tax on notes exchanged. Such a tax was imposed in the Serbo-Croat-Slovene State, Czechoslovakia, and Hungary. Third, if currency reforms are not conducted simultaneously throughout the former currency union, differential conversion rates for the old currency will create incentives for individuals to spend or exchange their old notes in the region where they are most valuable. The imposition of a tax, or differential expected rates of inflation, creates another incentive to move notes to escape the tax. Thus old notes will flow into those countries with the most favourable tax-inclusive real conversion rate. Fourth, states that are late in breaking away from the currency union may find more than their share of the stock of old notes dumped on them. Breakaway reforms elsewhere may cause people to sell their old notes for goods and assets in those states where they are still legal tender. The last to convert the old notes will then absorb both the notes originally circulating in its territories and many of the notes previously circulating elsewhere. A liquidation of old central bank assets prorated on the amount of currency collected will only partially compensate for lost goods.* ***Finally, currency reform will succeed in creating a stable medium of exchange only if it is accompanied by sound fiscal and monetary policies.*** *[Emphasis added] In this respect it is not necessary for fiscal restraint to precede currency reform if the new monetary authorities are constrained in their ability to extend credit to the state.*

> *Source: IMF Working Paper, The Dissolution of the Austro-Hungarian Empire: Lessons for Currency Reform, Peter Garber and Michael Spencer, www.princeton.edu/~ies/IES_Essays/E191.pdf*

The breakup of the Austro-Hungarian Empire pre-dated electronic currency transfers, and physical banknotes were the primary means of re-denominating the currency. All old notes in circulation had to be stamped before new notes could be issued and old ones de-monetized.

The following specimen shows the physical process of re-denominating banknotes. The new Czechoslovakian 1000 koruna bank note was stamped by a machine authorizing its circulation in lieu of an adhesive stamp used for all other denominations.

> *Source: Keller and Sandrock, "The Significance of Stamps Used on Bank Notes" http://bit.ly/sK0DTQ*

After the countries left the Austro-Hungarian empire, not all countries fared equally well. Inflation was high in most countries when the currency broke up. Of the three main countries, Czechoslovakia implemented a monetary reform and avoided hyperinflation by pursuing a balanced budget and constraining its central bank. However, Austria and Hungary both experienced very high levels of inflation due to printing money to cover government spending. **The result of high inflation and hyperinflation in some countries, however, was not associated with the breakup of the currency, but with the monetary and fiscal policies adopted by each country after exit.**

CZECHOSLOVAKIA BREAKUP: THE VELVET REVOLUTION 1992-93

Perhaps the most successful, fastest and least eventful currency exit ever was the breakup of the Czech-Slovak monetary union after the breakup of Czechoslovakia. The dissolution of the currency area was announced by surprise, and the entire proceedings were concluded within a few months.

The Czech-Slovak monetary union was not an optimal currency area. Before the breakup, depositors and investors from the Slovak side began transferring funds towards the Czech side in expectation of Slovak devaluation shortly after the split, much as depositors in the periphery today are transferring deposits from Greek and Portuguese banks to German and French banks. The parallels are uncanny and instructive.

Due to the reverse bank run, the Czech government decided secretly on January 19, 1993 to separate the currency, and after consultation with the Slovak government, the separation date was set as February 8, 1993. The separation was publicly announced on February 2, and the next day all payments between the two republics stopped and border controls were increased to prevent transfers of cash from one country to the other. Regular Czechoslovak banknotes were used temporarily in both republics and were distinguished by a paper stamp attached to the face of the banknote. Coins and small denomination notes were still used after the separation for several months. The stamped banknotes were gradually replaced by new Czech and Slovak banknotes over the next six months.

Shown here is the interim Czech Republic issue of 1,000 koruna with control stamp, which circulated only until new notes could be printed.

> *Source: Keller and Sandrock, "The Significance of Stamps Used on Bank Notes" http://www.thecurrencycollector.com/pdfs/The_Significance_of_Stamps_Used_on_Bank_Notes.pdf*

Slovakia also used old Czechoslovakian notes, placing them into circulation after a stamp had been affixed.

> *Source: Keller and Sandrock, "The Significance of Stamps Used on Bank Notes"*
http://www.thecurrencycollector.com/pdfs/The_Significance_of_Stamps_Used_on_Bank_Notes.pdf

The breakup of the Czech-Slovak Monetary Union was quick, painless and was accompanied by a very brief fall in output and trade. Ultimately, the breakup was hugely successful in terms of low macroeconomic costs and producing low inflation and sustained growth.

THE END OF THE RUBLE ZONE: UNSUSTAINABLE DIVERGENCES LED TO BREAKUP

Ultimately, most currency unions break up as the result of national political pressures. These pressures in turn are generated by economic stress on individual members where the monetary conditions of the union become unsuitable or unsustainable for them. An example of this is the breakup of the ruble zone in the early 1990s after the collapse of the Soviet Union.

Even after the fall of the Soviet Union, countries continued to use the ruble. Unfortunately, the old Soviet satellites were not an optimal currency area with Russia. The IMF had encouraged Soviet countries to stay in the ruble zone, despite the lack of any structure for controlling deficits across new national borders. This led to uncontrolled money printing in many states. All countries of the former Soviet Union had high levels of inflation, which led to wildly divergent real effective exchange rates.

Sixteen members of the ruble zone broke away to form their own new currencies. (This includes Russia that established a new ruble for itself.) The first countries to leave were the Baltic countries, Estonia, Latvia and Lithuania, in 1992. Ukraine followed a few months later. Almost all the other Soviet republics left in 1993: Kyrgyz Republic, Moldova, Russia, Georgia, Belarus, Armenia, Kazakhstan, Turkmenistan, and Azerbaijan. The last to leave was Tajikistan in 1995.

After the USSR broke up, the emission of ruble notes was still in the hands of the newly formed Central Bank of Russia, even though central bank branches in the former Soviet Republics became 14 fully independent central banks. The Russian central bank controlled the printing of currency, but national banks could still create credit. This created a free-rider problem where smaller national banks could print large amounts of credit at will within the Russian system. Almost all states took advantage of the situation, and the national central banks credit large amounts of credit. Unsurprisingly, when the Soviet Union broke up, ten of the fifteen successor states were hit by extremely high inflation. It is important to note that the problem of high inflation predated their exit from the ruble.

Ultimately, the breakup of the ruble zone was driven by Russia. The Central Bank of Russia decided to put an end to the money creation by national central banks within the ruble zone. Russia began printing new Russian rubles for use within Russia while printing old soviet rubles for shipping to other ruble zone countries. This was a prelude to the surprise de-monetization of old soviet rubles.

The forced exchange of pre-1993 rubles had compelled former Soviet republics still using the Russian currency to opt in or out of the ruble zone and effectively adopt new currencies if they chose to be outside the ruble zone.

A CONTROL EXPERIMENT: MONETARY POLICY POST EXIT IS CRUCIAL

In economics it is difficult to perform controlled, double-blind experiments. The breakup of the ruble zone, however, provides a perfect test of many countries exiting a currency area at the same time that followed radically different monetary policies. **The countries that adopted prudent monetary policies had rapidly falling inflation and strong growth, while the countries that used their central banks to print money experienced hyperinflation and large economic contractions.**

Broadly speaking, the countries that departed from the ruble zone can be divided into two groups. The Baltic countries adopted conservative monetary policies that provided a strong independent central bank. The remainder of the Soviet satellites created central banks that had little independence and printed money to finance government spending.

The Baltics left the ruble first and established currency boards. A currency board limits money growth to the amount of foreign exchange reserves held by the central bank. The board can help to create a credible policy environment by removing the option of printing money to finance government deficits. Estonia first introduced a currency board in 1992, followed by Lithuania in 1994. Currency boards helped bring down inflation rapidly and promoted economic growth in the Baltics.

Almost all other former Soviet countries besides the Baltics did not have responsible monetary policies. The classic economic rule of them is that hyperinflation begins in the month in which inflation exceeds 50% and ends in the month in which inflation last exceeds 50% and is followed by a year of price stability. Almost all countries experienced very high inflation, but the countries that met the textbook definition were Azerbaijan, Belarus, Georgia, Tajikistan, and Turkmenistan.

HYPERINFLATIONS: RESULT OF GOVERNMENT POLICY, NOT CURRENCY EXIT

As the lessons from the breakup of the Austro-Hungarian Empire and ruble zone make clear, the key danger for countries departing the euro is hyperinflation due to poor fiscal and monetary policies following exit. Hyperinflations, however, were not due to exiting a currency but rather to poor monetary policy choices after exits. The economies of legally independent central banks that were constrained by law had low inflation, but central banks that financed government spending witnessed high inflation and even hyperinflation. There is nothing inevitable about hyperinflations.

Hyperinflationary episodes are extremely well understood. Peter Bernholz wrote *Monetary Regimes and Inflation*, the authoritative work on the subject. Bernholz examined 12 of the 29 hyperinflationary episodes where significant data exist. Every hyperinflation looked the same. He concluded that, “Hyperinflations are always caused by public budget deficits which are largely financed by money creation.” But even more interestingly, Bernholz identified the level at which hyperinflations can start. He noted that “the figures demonstrate clearly that deficits amounting to 40 percent or more of expenditures cannot be maintained. They lead to high inflation and hyperinflations.”

The following table shows almost all hyperinflations. The ones to note that happened after currency exit are Austria, Hungary and Serbia following the breakup of the Austro-Hungarian Empire, and Azerbaijan, Belarus, Georgia, Tajikistan, and Turkmenistan in the case of the ruble zone dissolution.

Country	Year	Highest Inflation per Month %	Country	Year	Highest Inflation per Month %
Argentina	1989/90	196	Hungary	1945/46	$1.295*10^{16}$
Armenia	1993/94	438	Kazhakstan	1994	57
Austria	1921/22	124	Kyrgyzstan	1992	157
Azerbaijan	1991/94	118	Nicaragua	1986/89	127
Belarus	1994	53	Peru	1921/24	114
Bolivia	1984/86	120	Poland	1989/90	188
Brazil	1989/93	84	Poland	1992/94	77
Bulgaria	1997	242	Serbia	1922/24	309,000,000
China	1947/49	4,209	Soviet Union	1945/49	279
Congo (Zaire)	1991/94	225	Taiwan	1995	399
France	1789/96	143	Tajikistan	1993/96	78
Georgia	1993/94	197	Turkmenistan	1992/94	63
Germany	1920/23	29,000	Ukraine	1990	249
Greece	1942/45	11,288	Yugoslavia		59
Hungary	1923/24	82			

SOURCE: Peter Bernholz, *Monetary Regimes and Inflation: History, Economic and Political Relationships* (Edward Elgar Publishing, March 27, 2006).

All periphery countries are currently running substantial fiscal deficits. If they leave the euro and default, they will be temporarily shut out of international bond markets and forced to close those deficits on their own. That will mean more austerity, which will be easier to handle thanks to the depreciation and increased competitiveness. However, in a country as politically troubled as Greece and with serious problems with tax evasion it will be difficult to avoid monetizing the debt in order to cover a shortfall in government revenues, potentially generating hyperinflation.

Sadly, Greeks are no strangers to hyperinflation. Modern Greek monetary history is one of default, inflation and devaluation. Since introduction of the drachma in 1832, all modern drachmas have ended with steep devaluations. During World War II Greece even experienced a hyperinflation that matched the Weimar Republic, requiring Greece to print a 100,000,000,000-drachma note. The possibility of hyperinflation for Greece is very high if it exits and does not have an independent central bank.

The spectre of hyperinflation should give pause to countries deciding to exit the euro. However, it is not an inevitable part of leaving a currency area. Hyperinflation is an unforced error. Countries that conduct responsible monetary and fiscal policies have exited currency areas without problems.

KEY DIFFERENCES BETWEEN THE EURO AND PREVIOUS CURRENCY EXITS

While almost all currency exits happened smoothly and were accompanied by little short-term macroeconomic volatility, there are significant differences between previous currency breakups and a potential euro breakup:

1. The euro is a global reserve currency, whereas almost all previous cases were not global reserve currencies. The costs associated with a much weaker or dismembered euro would be felt far outside of European borders, particularly among central banks that have accumulated euros as part of their foreign exchange management. This would be a major problem if the entire euro broke up, but as this submission argues, only periphery countries that require exit should leave. Central banks with euro reserves would not face breaking their euro holdings up into a basket of currencies.

2. Almost all these currency breakups happened in a period where international portfolio flows (bank loans, stocks, bonds, and cash) were smaller as a percentage of global GDP than

they are today. The breakup of the euro would happen in the context of a much more globalized world with freer capital flows.

3. Many currencies that broke up were non-convertible, which meant that citizens faced restrictions on the manner and amount of currency they could trade or transfer.

4. European cross-border banking is much more highly integrated than in previous currency exits.

5. Currency exits have never happened in the internet age where information flows more freely, and secrecy and containing information are that much harder to achieve.

Arguably, most of these points are differences of degree and not kind. Furthermore, none of them are insurmountable problems to an exit from the euro if it is managed properly.

Also, the actual mechanics of a currency exit are not the problem. If the mechanics of departing from a currency area were the problem, macroeconomic volatility would always be associated with currency exits. This is not the case.

Focusing purely on the mechanical problems of exiting the euro is misguided; indeed, it is like a doctor telling a patient with a severe underlying condition to focus on the symptoms, without treating the disease that causes them.

Any exit from the euro would inevitably re-introduce devalued drachmas, pesetas, escudos, punts or lire, because of extremely overvalued real effective exchange rates and very high net external debt levels. In this context, then, the departures from the euro should be looked at much like previous emerging market balance of payments crises writ large. The euro merely overlays currency exit to what is a classic emerging market crisis.

Therefore, understanding private cross-border debt resolutions and sovereign debt restructuring is as important as understanding the mechanics of currency exits. Despite the scale of the crisis and some of the features that make exiting the euro unlike its analogues, there are measures that can be taken to avoid meltdown following the exit of various countries, and there is no reason to expect the worst if this process is handled carefully.

A NOTE OF CAUTION: INTERACTION EFFECTS AND UNKNOWN UNKNOWNS

> *There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – there are things we do not know we don't know.*
> Donald Rumsfeld, United States Secretary of Defense

Defaults and devaluations are common very well understood by economists. Currency exits are also well understood as governments and market participants have begun to examine previous monetary breakups. Even hyperinflations and how to stabilize them and eliminate them are well understood. However, comprehending and forecasting the effects of combining the defaults and devaluations is something that is much more difficult.

A good analogy of the problem of interaction effects comes from the field of medicine. For example, doctors know that both drinking alcohol and smoking increase the chance of throat cancer. However, people who drink and smoke have a much higher chance of getting cancer than would be predicted by either bad habit. The interaction of smoking and drinking is particularly dangerous for one's health. If only understanding the combined interaction of currency exits and defaults and devaluations were as straightforward.

The interaction effects of currency exit and the associated defaults, devaluations would be difficult. Any exits from the euro would be the biggest threat to banking systems since the collapse of Lehman Brothers. Even handled extremely carefully, Europe could face a "Lehman moment," complete with a brief but serious global recession. In that environment, tail risks are always a concern. No one knows what could happen. For example, if sovereign bonds are no longer viewed as safe, this would have a potential impact on non-government debt. The impact on derivative markets could be huge. Currently $70 trillion in G10 debt is the collateral for $700 trillion in derivatives. Sadly, it is impossible to predict the second and even third and fourth round effects.

APPLYING THE LESSONS FROM PREVIOUS CURENCY EXITS

In the next section, we use the historical examples we have highlighted above, and how they can be used to guide policy in the event of a breakup of the euro. We will also draw on the experience of countries that have devalued their currencies and defaulted on their debt.

Section Three – Practical Recommendations for Departing from the Euro Based on Historical Precedents

In this section we will examine the steps a country would have to take to exit the euro and the economic and legal effects such measures would have. The proposals involve the timing of exits, capital controls, the re-denomination of existing debts, the restructuring of private and sovereign debt, the recapitalization of the central banks, and the legal and institutional aspects of euro exit. These recommendations are based on historical currency exits as well as the experience of emerging market devaluations.

Any country exiting the euro should take the following steps:

1. **Establish a secret working group within the Treasury or the National Central Bank to draft a law** – Secrecy is crucial, as any leaking of the plans would lead towards an acceleration of capital flight from the country's banking system. The law would govern all the particular details of exit: currency stamping, demonetization of old notes, capital controls, redenomination of debts, etc.

2. **Convene a special session of Parliament on a Saturday, passing a law to implement the Treasury or National Central Bank's plan** – These new provisions would all take effect over the weekend. While devaluations can typically be made by finance ministers, exiting the euro and instituting a new currency would require a legislative act to deal with all the particulars.

3. **Create a new currency** – The new currency would ideally be named after the pre-euro currency and would become legal tender. All money, deposits and debts within the borders of the country would be re-denominated into the new currency. This could be done, for example, at a 1:1 basis, e.g. 1 euro = 1 new drachma. All debts or deposits held by locals outside of the borders would not be subject to the law. (The currency could even be temporary in order to speed the printing. A temporary currency was used in Lithuania and Latvia in 1992. A more permanent, harder to counterfeit currency could be introduced later.) Treasury departments should wait until the law is passed before printing any notes. Advance printing of banknotes would be difficult to keep secret and could become a self-fulfilling prophecy, and could force the authorities to make the move more quickly than they would like.

4. **Return all powers to the local central bank** – Make the national central bank solely charged, as before the introduction of the euro, with all monetary policy, payments systems, and reserve management. If the central bank is in a negative equity position, the central bank could be constituted under a new legal entity to put foreign exchange reserves at arm's length from foreign creditors.

5. **Enshrine the independence of the central bank in law** – In order to avoid hyperinflation or high inflation, the central bank should be prohibited by law from directly monetizing fiscal liabilities. This step not essential to exiting the euro but is essential for preventing hyperinflations afterwards. Central bank independence is not something that can be counted on around the periphery. Therefore, in order to promote credibility and bring about low interest rates and inflation, the central bank should be legally mandated with maintaining a low inflation target or operating a currency board.

6. **Notify the ECB and global central banks so they could put in place liquidity safety nets** – In order to counteract the inevitable stresses in the financial system and interbank lending markets, central banks should coordinate to provide unlimited foreign exchange swap lines to each other and expand existing discount lending facilities.

7. **Impose capital controls immediately over the weekend** – Electronic transfers of old euros in the country would be prevented from being transferred to euro accounts outside the country. Capital controls would prevent old euros that are not stamped as new drachmas, pesetas, escudos or liras from leaving the country and being deposited elsewhere.

8. **Declare a public bank holiday of a day or two** – This would allow banks to stamp all their notes, prevent withdrawals of euros from banks and allow banks to make any necessary changes to their electronic payment systems. The bank holiday could be longer if needed.

9. **Institute an operation to stamp notes** – Notes would be stamped with ink or affix physical stamps to existing euro notes. Currency offices specifically tasked with this job would need to be set up around the exiting country. (It is not essential that all notes be stamped immediately for them to be used as a medium of exchange, if a 1:1 exchange is assumed. All euros would be successor currencies at parity for transaction purposes, even if the successor currency devalues in the foreign exchange markets.)

10. **Print new notes as quickly as possible in order to exchange them for old notes** – Once enough new notes have been printed and exchanged, the old stamped notes would cease to be legal tender and would be de-monetized.

11. **Allow the new currency to trade on foreign exchange markets and float freely** – This would contribute to the devaluation and regaining of lost competitiveness. This might lead towards a large devaluation, but the devaluation itself would be helpful to provide a strong stimulus to the economy by making it competitive.

12. **The departing central bank should provide ample liquidity** – In order to counteract the deflationary impact of bankruptcies and insolvencies by allowing the National Central Bank of the departing country to supply a very large amount of liquidity to its own banking system against good collateral. The government should also recapitalize all banks by issuing bonds to them with equity participations.

13. **Expedited bankruptcy proceedings** – Bankruptcy proceedings should be instituted and greater resources should be given to bankruptcy courts to deal with a spike in bankruptcies that would inevitably follow any currency exit.

14. **Begin negotiations to re-structure and re-schedule sovereign debt** – Negotiations would be subject to collective bargaining with the IMF and the Paris Club.

15. **Begin post-facto negotiations with the ECB in order to determine how assets and liabilities should be resolved** – The best solution is likely simply default and a reduction of existing liabilities in whole or in part.

16. **Pursue ambitious structural reforms to accompany devaluation** – Institute labor market reforms in order to make hiring and firing more flexible and de-link wages from inflation and tie them to productivity. Indexing wages to inflation could even be outlawed. Short-term inflation will be an inevitable consequence of devaluation as import prices would rise. In order to avoid sustained higher rates of inflation, the country should accompany the devaluation with long term, structural reforms.

The previous steps are by no means exhaustive, and should be considered a minimum number of measures that countries would have to take to deal with the transition. Most of these steps would

be implemented immediately. However, previous historical examples indicate that all these steps can be completed within 3-6 months.

STEPS FOR THE COUNTRIES THAT REMAIN IN THE EURO

The quality of eurozone policy will have a big effect on the scale of losses associated with exit. The potential costs and scale of the crisis are not inevitable or pre-ordained. If authorities take appropriate steps, many of the nastier effects of breakup can be mitigated.

The countries that remain within the euro will have to take steps of their own in order to deal with the unilateral exit by a departing country.

1. **Print new currency** – In order to limit large inflows of "old" euros from any country that has exited the euro, the core countries should print new euros and then de-monetize old euros. This has happened in almost all previous currency breakups. If only Greece exited, the amount of old euros entering the euro area would be small, but if many periphery countries exited, the inflows could be large. If the countries that retain the euro do not print new currency, they could see euros from the departing countries make their way to the core banking system. This would imply an increase in the core money supply that may not be desired by the ECB. This step is not strictly speaking necessary, but it has been followed across almost all countries that have seen members exit their currency area.

2. **Provide support to solvent but illiquid sovereign countries** – The ECB should stabilize sovereign bond yields of solvent but potentially illiquid sovereigns in order to restore stability to financial markets. Sovereign bond losses are not inevitable. Sovereigns are like banks, in that, even when they are fundamentally solvent, they are always at risk of a speculative "run" that could precipitate a default. A government's assets are almost all long-term and highly illiquid. These include the current value of future taxes and the net present value of future spending cuts. Their liabilities are almost all short-term. These include social transfer payments, government spending, and bonds that have to be redeemed. Like banks, sovereigns need a lender of last resort to prevent sovereign defaults by a vicious circle of a drying up of market funding that makes fundamentally solvent but illiquid sovereigns insolvent. For example, Italy has a high debt load and poor growth prospects, but its deficit is tiny. Absent a panic, it's completely solvent.

3. **Counteract a shortage of foreign currency holdings in interbank markets** – In order to counteract the inevitable stresses in the financial system and interbank lending markets, central banks such as the ECB, the Federal Reserve, the Bank of Japan, the Bank of England, etc should coordinate to provide unlimited foreign exchange swap lines to each other and expand existing discount lending facilities.

4. **Recapitalize banks exposed to periphery countries that have exited and defaulted** – European banks in the core are already in the process of re-capitalizing, but they would undoubtedly need a much larger recapitalization in the event of periphery defaults.

5. **Provide EU wide deposit insurance in euros** – In a world in which the eurozone negotiated sufficient fiscal and banking-system integration to build a euro-zone-wide deposit guarantee (like that on offer from the FDIC in the United States) euro-area banks in periphery countries would not necessarily face large capital flight. Such a deposit insurance scheme could even be instituted before Greece or any other periphery country exits.

6. **Pursue greater fiscal union** – In order to prevent countries exiting from the euro that are suited to a monetary union with the core, countries that have not exited should accept greater fiscal and political union in order to make the euro a more optimal currency area. Current proposals include euro area deposit insurance plans, cross-border banking resolution, the issuance of Eurobonds, fiscal transfers between regions, etc.

7. **Allow monetary and fiscal policy to operate countercyclically** – Countries in the European core should pursue expansionary fiscal policies in order to counteract the contractionary effects that would inevitably come from a euro breakup. Given the deleveraging of the private sector during a crisis, it would be advisable to ditch the 3% constraint for fiscal deficits in order for economic policy to lean against the economic contraction, rather than amplify it.

Many of these steps, although unconventional, have been taken before in times of crisis. In a sense, central bank actions after Lehman's bankruptcy during the Great Financial Crisis could be considered a dry run for any exit from the euro.

ECONOMIC AND LEGAL PROBLEMS ARISING FROM A EURO EXIT

The steps to re-introduce new currencies would each create its own set of problems. These problems can be divided up into five principal areas.

1. Anticipation of devaluation: bank runs and capital flight
2. Mechanics of adopting a new currency and cash introduction issues
3. The macroeconomic and balance sheet effects of devaluation
4. Public and private debt defaults: legal and economic issues
5. European Union institutional and legal issues

The following sections deal with each of the five points in turn.

1. Anticipation of Devaluation: Capital Flight and Bank Runs

BANK RUNS AND CAPITAL FLIGHT

The main reason offered for not exiting the euro is that it would lead towards large-scale banking insolvencies as depositors would anticipate exit and would start runs on the bank. Investors holding periphery assets would begin dumping them. As Professor Richard Baldwin of the Graduate Institute of Geneva has elegantly noted, the reasons for large bank runs stem from three conditions:

1. **The expectation of devaluation would lead towards one way bets on periphery currencies.** Once the taboo of exit from the euro area had been broken for the first time, the markets and investors would estimate the probability that other countries will exit and devalue. Households and firms anticipating that domestic deposits would be redenominated into a new currency would move their deposits to banks in the core. A national bank run would most likely follow. Investors anticipating that periphery bonds would be redenominated into local currency would shift into core bonds and lending to local companies and periphery sovereigns would dry up, leading to a bond-market crisis.

2. **European capital markets and banks are extremely integrated.** The deep integration of the European banking systems and financial markets provides the means of placing large bets on the outcome of any exit by borrowing in one country and depositing the money in another. Also, the absence of capital controls means that depositors have the ability to move money freely from one country to the other.

3. **Leaving would take time, which would give investors time to move deposits and sell assets.** The machinery of European political decision making is extremely slow and inefficient. It is often not much faster at a national level. The anticipation of an exit would allow most financial players to place their bets and move their money.

These three circumstances taken together would lead towards large scale bank runs.

Sadly, the bank runs in the euro area are already happening as investors expect some countries to leave the euro ("bank jogs" might be a more appropriate term given the slow-motion deposit flight). There is strong evidence that core eurozone banks are preparing for periphery exits from the euro, and depositors are withdrawing their cash from the periphery banks.

Any exit from the euro would merely accelerate capital flight that is already underway and intensify the silent bank runs that are already happening. People are already voting with their feet and withdrawing deposits from the periphery banking system.

THE ECB'S POLICY ACTIONS: ONLY A TEMPORARY REPRIEVE FROM BANK RUNS

The European Central Bank has made great efforts to keep peripheral banks from going bust and forestall bank runs.

In late 2011 bank lending markets had dried up, and periphery governments could not fund themselves. Central banks have the power to stem any bank run given their ability to print money in unlimited quantity and provide it to the banking sector as lender of last resort. Central banks also have the power to cap sovereign bond yields through the unlimited purchase of government bonds (although typically currencies depreciate when they do this). However, the ECB had been restrained by the Maastricht treaty, which prohibits the purchase of government debt, and the political weight of Germans at the Bundesbank who feared money printing and the spectre of hyperinflation.

The ECB responded and averted a major banking crisis and European wide bank runs by providing support under the Long Term Refinancing Obligation (LTRO). Many commentators believed the ECB pulled a rabbit out of the hat by sidestepping the Maastricht Treaty. The solution was for the ECB to provide repurchase agreements for bank assets. Commercial banks were able to buy government bonds and use bonds as collateral to obtain much needed-liquidity. In one step the ECB provided liquidity to the banking sector and capped government bond yields without engaging in outright "money printing" or quantitative easing.

The result of the ECB's LTRO was a quick, but disastrous sugar high. Financial markets rallied, periphery bond yields fell, and European politicians congratulated themselves as they concluded the crisis was over. However, any benefits of the ECB's actions have been short lived and insufficient. Periphery bond spreads are near record levels again, periphery stock markets are back near all-time lows, and periphery banks have vastly increased their reliance on emergency funding.

The ECB's actions can only address liquidity issues for European banks, but they cannot change the underlying solvency problems that the periphery faces. Ultimately borrowers in the periphery will be unable to repay their debts. The LTRO, it must be remembered, was *lending* to banks. It dealt with the immediate cash-flow problem, but the loans will have to be rolled again or the banks will have to find other ways to finance themselves. The ECB now has vast quantities of doubtful collateral on its balance sheet, and many of these loans will never be repaid, as the assets behind them are severely impaired if not worthless.

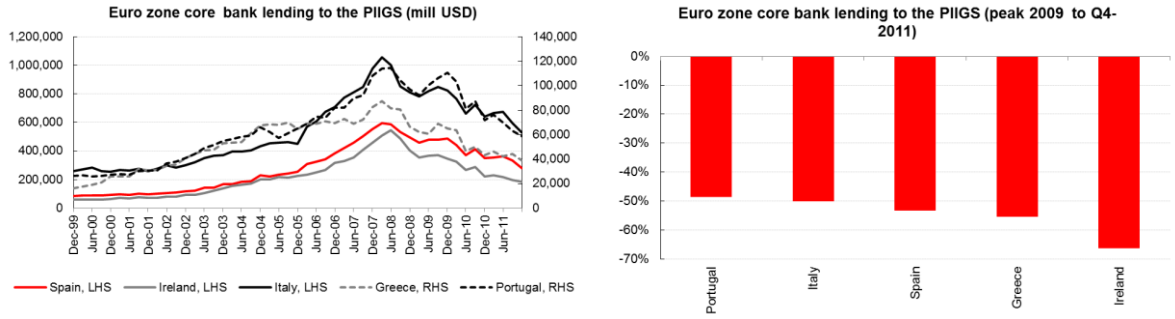
A less discussed, but far more pernicious effect of the ECB's actions are that the refinancing operations have reduced the proportion of unencumbered assets on bank balance sheets, and hence the private sector creditworthiness. Banks now fund the sovereign, which in turn will have to fund the banks to recapitalize them. Sovereigns and banks now lean precariously on each other, like two drunks walking home, each unstable on their own but both relying on each other for mutual support.

The ECB has merely bought a little time, but in the end departures from the euro, defaults and currency devaluations will be inevitable.

TRANSFER OF RISK FROM PRIVATE SECTOR TO THE ECB

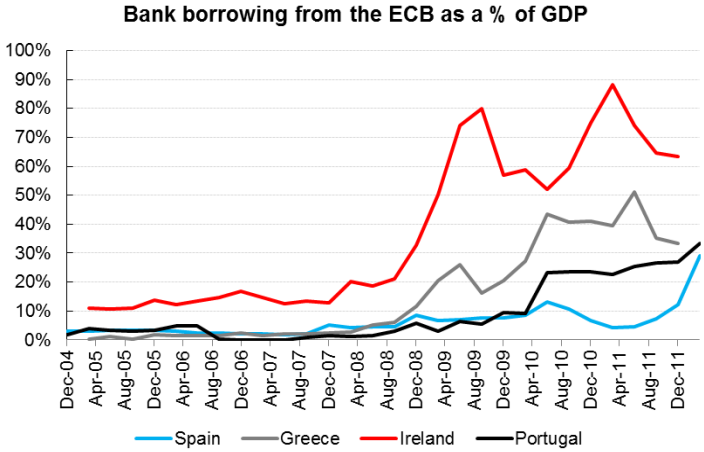
Due to the anticipation of periphery countries leaving the euro, over the past year eurozone banking has become much more nationalistic and has begun to disengage from the periphery. The first step banks in the European core took was aggressively to sell out of periphery bonds. This is confirmed by data from the Bank of International Settlements that shows that periphery sovereign bond exposures are now a much smaller proportion of the book value for the core euro area banks. The second step is on-going, as the banks have been (i) withdrawing from periphery via shrinking loan books and/or (ii) using LTRO proceeds to hedge the asset liability mismatch they have in the periphery. The end result is the increasing Balkanization of the European banking system.

The contraction of lending to the periphery is staggering. From December 2009 to December 2011, over $1 trillion in lending has been withdrawn. This is equal to 23% of the PIIGS' combined GDP. (In Ireland it has reached 41% of its GDP.) The following chart shows the statistics and the sharp fall in lending the periphery.



Source: Bank of International Settlements (BIS)

The counterpart to the withdrawal of private lending to the periphery is that the ECB has had to finance very large funding short falls in the eurozone periphery's banking system.



In absolute terms, Spain has by far been the biggest recipient of funds for the banking system with over €300 billion in total ECB loans to the Spanish banking system, and it is now approaching the level of aid as a percentage of GDP that Greece and Portugal received before they required an EU and IMF bailout. As a percentage of GDP Ireland comes up top due to the very large size of the country's banking system.

Europeans are behaving very much the same way Argentineans did. The Argentinean bank run did not happen right before Argentina abandoned its currency board. The bank run started in early 2001, a full nine months before the peso-ification of dollar deposits. The mere expectation of an exit is enough to spark deposit flight and a credit crunch. Similarly, the bank runs have already started in Europe.

DEALING WITH ANTICIPATION PROBLEMS: DENY, DENY AND THEN EXIT BY SURPRISE

> *The first rule of politics is never believe anything until it has been officially denied.*
> Sir Humphrey Appleby, Yes Minister

Any euro exit would likely happen quickly and would be done in a "surprise" announcement over a weekend when markets are closed. Almost all emerging market devaluations were "surprise" devaluations, and there is no reason to believe that any exit from the euro would not be a surprise as well. There is no technical definition of what constitutes a surprise devaluation, but it

would likely involve official denials in public while political leaders prepare the way behind the scenes for devaluation and potentially capital controls.

The timing of the announcement would be critical to the short-term success of the operation. In most countries banking insolvencies typically happen over the weekend to avoid immediate runs on banks given any bad news. In devaluations, the announcements are typically made over the course of a weekend, particularly when capital controls can be imposed. If necessary, Monday and Tuesday could be declared bank holidays as well. This was the case, most notably, with Argentina in 2002 where the announcement was made Sunday and then two days of bank holidays were declared.

CAPITAL CONTROLS: INEVITABLE FOR A SHORT PERIOD OF TIME

Following almost all emerging market currency crises, capital controls were imposed in order to stabilize exchange rates, and this would be inevitable following a currency exit.

It is impossible to do the following three things at once: 1) provide free capital movement, 2) defend the currency, and 3) provide macroeconomic stability. If policymakers demand free capital movement and a defense of the currency, then stabilization must be sacrificed. If they want free capital movement and freedom in the use of monetary and fiscal policy to attempt stabilization, then they will not be able to defend the exchange rate. Since both austerity and a collapsing exchange rate are likely to lead to deep recessions, capital controls are the only solution. Typically these last for a fixed period of time after devaluation. (In many countries capital controls are still in effect via the non-deliverability of currency through forward transactions, as is the case in Argentina, Brazil, China, Russia and Colombia.)

It is highly likely that countries that do not exit the euro will impose capital controls in order to reduce capital flight from their own banking systems (money leaving perceived weaker currency banking systems) or prevent reverse capital flight (large amounts of unwanted deposits flowing into perceived stronger currency country banking systems).

2. Mechanics of adopting a new currency and cash introduction issues

Currency has three functions: 1) a medium of exchange, 2) a unit of account, and 3) a store of value. In the following paragraphs, we will deal with each of these in turn.

NATIONAL CENTRAL BANKS: ALL THE TOOLS ARE STILL FUNCTIONING

Newly independent national central banks would be solely responsible for the emission of money and credit after the exit from the euro.

Despite the "No Exit" provisions of the Maastricht Treaty, when the ECB was created all eurozone central banks retained almost all their old functions. The mechanics for each central bank remain firmly in place. The Maastricht Treaty merely made national central banks subservient to the new ECB and charged them with facilitating ECB policy. Any eurozone exit would not imply re-creating old functions that have disappeared. All the euro countries still have fully functioning national central banks, which should greatly facilitate the distribution of bank notes, monetary policy, management of currency reserves, exchange-rate policy, foreign currency exchange, and payment. The National Central Banks would leave Target 2, but they would have all their domestic payment systems intact.

The central bank should be completely independent from the government and not provide loans to the government or print money to cover fiscal deficits. One of the key conclusions from previous currency exits is that high inflation or hyperinflation following an exit is determined by the degree of independence of the central bank and its willingness to finance fiscal deficits. Hyperinflation following exit is not a negligible possibility, but it is easily avoided with sound money policies.

MEANS OF EXCHANGE: STAMPING OLD NOTES, PRINTING NEW NOTES AND DE-MONETIZATION

In the historical overview of previous currency breakups, we have already examined the mechanics of currency stamping and de-monetization of old notes and printing of new notes. We will not belabor the point.

Some commentators have pointed out that stamping of currency may in fact not be necessary, as euro notes are already stamped with identifying country codes. Euro notes are not issued by the ECB, but by each National Central Bank. Each euro note is marked with a prefix letter according to its issuer, making banknotes easily identified by the country of issue. For example, notes printed in Spain start with a V, those in Germany start with an X, Greece Y, Belgium Z, etc. It is highly unlikely, though that notes would not need to be stamped. Travel within Europe means that even though notes bear country stamps, a large number of notes circulate outside of the country where they have been printed. People in the core hold periphery notes and residents in the periphery hold notes from the core.

Coins are trickier than notes to introduce as they take longer to produce physically and they are often processed by vending machines rather than humans. Euro cents would have to circulate as new cents for the new currency whilst new coins are being created. This would not be a problem, as converting from euros to a new currency at 1-for-1 would ensure that all prices would be the same in units of euros as new currency so slot machines could continue functioning. (One historical solution would be to do without coins, entirely. For example, when Kazakhstan switched from the ruble to the tenge in the early 1990s, no coins in circulated during the transitional phase. Instead, small fractional banknotes were used.)

Re-denominating deposits overnight would effectively deal with almost all of narrow money (M1 money supply) that is held electronically. In a modern banking system, it is much easier to move from one currency to another. Most people keep their savings in a bank as an electronic entry in the bank's balance sheet. In most European economies, people do not carry large amounts of cash. Notes in circulation in the euro area are roughly 5% of GDP.

Stamping notes would merely affect the medium of exchange. Changes to units of account would be more complicated.

UNIT OF ACCOUNT: UPDATING COMPUTER CODE, CASHPOINTS AND CURRENCY NETWORKS

Re-programming bank codes to redenominate savings and debts would specifically affect the unit of account (economists refer to the unit of account function as the *numéraire*).

Switching bank code to go from euros to drachmas or pesetas would take much less time than it took to go from pesetas and drachmas to euros. This view is based on off the record discussions with bank IT officers who have made contingency planning for a euro exit.

Once the switch to the euro was made, it became possible for banks to have "backward compatibility," and switch back. For two years after the introduction of the euro, countries had a "transition period" that lasted from January 1st, 1999 to December 31st, 2001. During that period banks were to accept euros and have dual display of euros and local currency in invoices and statements to their clients. However, even today in 2012, many banks have code that is capable of quoting pre-euro currencies to clients.

The software of cash points is almost all run and updated remotely, and as such any sudden change to computer code could be quickly rolled out. Companies that make these machines, such as Triton, Diebold and Wincor Nixdorf, are able to roll out software updates remotely via their networks. Large banks, on the other hand, control their own software on multi-vendor hardware platforms. The move has been towards virtualization, where cash points become "dumb" machines and a central server have become "smart" and control them. However, some cash points in the world still use out of date software. These cash points cannot receive security patch updates in the way most modern software can. This, however, is not an insurmountable problem. Older machines can simply be de-commissioned while newer machines are automatically updated.

The new currency would also have to trade and clear in foreign exchange markets. According to reports in the press many large banks and companies such as Bloomberg, ICAP and CLS Bank International, are preparing for departure quietly already, using old currency codes from the SWIFT interbank payment system. European banking authorities, however, are unhelpfully discouraging any talk of currency exits or the preparation of any contingency plans.

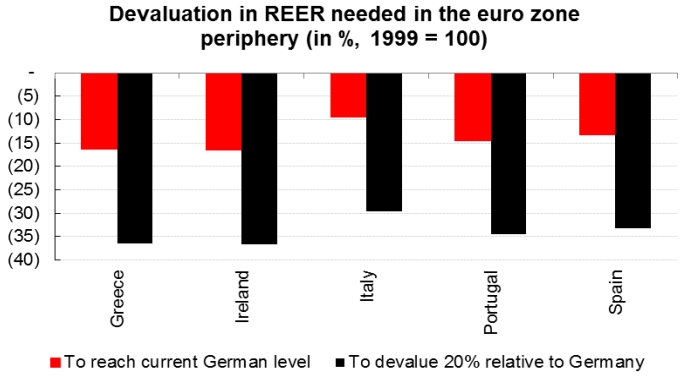
STORE OF VALUE: DEVALUATION AND TRADING IN THE OPEN EXCHANGE MARKETS

How a currency would trade against other currencies or how many goods the currency could buy would determine its store of value. Once new currencies are introduced, they would trade on foreign exchange markets.

Initially, capital controls would likely limit the amount of money locals could buy or sell on foreign exchange markets. This would help stabilize the currency. However, large multinationals and banks would likely still be able to transact in the new currency.

It is not certain how much the weaker successor currencies to the euro would be or how much they would devalue. The main reason periphery countries would devalue is to become more competitive relative to Germany. The following chart shows in the bars in red the levels of depreciation required

to reach Germany's Real Effective Exchange Rate. However, currencies would likely depreciate even further. The bars in black show how much each currency would need to depreciate to trade at a 20% discount to Germany's Real Effective Exchange Rate.



Source: BIS and Bloomberg

The large devaluation is essential. Unless Germany drastically alters its view on domestic inflation and allows its real effective exchange rate to appreciate, there is almost no chance at all that the eurozone periphery can ever make up the shortfall without a *nominal* devaluation.

It is likely that currencies would depreciate by the maximum amount rather than merely approach German levels of Real Effective Exchange Rate. Typically when currencies devalue, they "overshoot." A large shift in the spot exchange rate happens in order to align long-term equilibrium in the market for goods and services with short-term equilibrium in the capital markets. Overshooting is not an overreaction, but rather explains the why the spot exchange rate move beyond its long-term Purchasing Power Parity value. Overshooting is a necessary and required step in order to align the returns that investors can expect in each currency.

3. Macroeconomic and balance sheet effects of devaluation

DEBT REDENOMINATION: A NEW CURRENCY AS LEGAL TENDER

Once a new currency is announced, the most difficult issue of all is determining whether debts are to remain denominated in euros or be re-denominated in new currency.

The legal quagmires would be formidable, as legal scholars noted before the euro was introduced:

> *…[A]ny break-up accompanied by re-denomination of existing euro obligations, including government bonds, will create great legal uncertainty and costly litigation. There are no continuity of contract rules for exiting EMU equivalent to those for entering.*

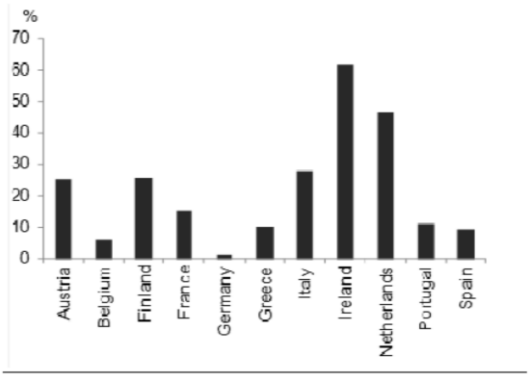
> *Source: When the euro Falls Apart, Hal S. Scott, International Finance 1:2, 1998: pp. 207-228 www.law.harvard.edu/programs/about/pifs/research/15scott.pdf*

While the potential legal pitfalls are many, the following sections outline an efficient way to exit the euro and how to treat debt within an exiting country and across borders.

Applying the legal principle of *lex monetae* – that the state determines its own currency – periphery governments should re-denominate local euro debt contracts and savings into the new currency which would be the new legal tender. Formally, legal tender is anything which when offered in payment extinguishes the debt. Just as periphery countries had the right to choose to make the euro legal tender, they have the right to leave the euro and make a new currency legal tender. Countries may use the principle of *lex monetae* without problems if the debt contracts were contracted in its territory or under its law. But private and public bonds issued in foreign countries would be ruled on by foreign courts, who would most likely decide that repayment must be in euros.

Almost all countries within the euro issue most of their sovereign and corporate debt under their local laws. As the following chart from Nomura shows, Portugal and Spain local law governs 90% of the bonds issued by these countries. The only countries with very large foreign law issuance as a percentage of the total bonds issued are Netherlands, Italy and Ireland. (Ireland issues more than 60% of its bonds under foreign laws, but this is mainly from subsidiaries of multinationals domiciled in Ireland and not Irish companies themselves.)

Fig. 11: Bonds under foreign law as a share of total bonds outstanding



Source: BIS, Bloomberg, Nomura

> *Source: Currency Risk in the Eurozone: Accounting for break-up and redenomination risk, Nomura Currency Research, January 2012*

The previous chart was prepared before Greece defaulted and restructured its debt. Greece's debt mountain is being cut by €105.4 billion, and private bondholders have taken steep losses. However, the EU, ECB and IMF have not taken any haircuts to the net present value of their bonds. Even under the rosiest, indeed hopelessly optimistic, of assumptions, Greece will still have a whopping 120% debt to GDP ratio by 2020. Before Greece defaulted and issued new bonds, up to 94% of Greek government bonds were issued under Greek law. When Greece defaulted, it missed an opportunity to re-denominate its debt into drachma and is now stuck with foreign law borrowings. Greece will not be able to grow and service its debts within the euro straitjacket and given the burdens of internal devaluation. It is likely to become a serial defaulter, but this time it will be a hard default on foreign law bonds.

Given the principle of *lex monetae* it is unlikely that local courts would ever enforce foreign judgements seeking payments in euros for local contracts. Even if foreign courts were to seek enforcement of claims in euros under the Brussels Regulation (EC Regulation 44/2001) dealing with the reciprocal enforcement of judgments, they would likely fail because the local courts in the payer's jurisdiction would be prevented from recognizing as valid or enforcing judgments which are not in its new post-euro currency.

Before the euro was introduced, the law firm Norton Rose issued a paper examining the legal implications of exiting the single currency. Their conclusions were as follows, using bonds in Netherlands as an example:

> *If the bond was issued after 1st January 1999, then it will be expressed in euro and there will be no direct, contractual link to the former Dutch national currency. But if the debt is payable within the Netherlands, then it is suggested that debtor can discharge the obligation either (i) by payment in euro, since the obligation is expressed in that currency or (ii) by payment in the new Dutch currency, because the law of the place of payment may be taken into account in determining the means or method of payment. In the latter case, the appropriate rate of exchange between the euro and the new Dutch currency would be governed by the law applicable to the instrument or obligation in question - the courts would not necessarily adopt the exchange rate prescribed by the new Dutch monetary law.*
>
> *If the bond was issued after 1st January 1999 but is expressed to be payable in euro outside the Netherlands, then it seems that the alteration in the Dutch currency should be irrelevant. Performance of the obligation in euro in the stipulated place of performance is entirely possible, because the euro remains the currency of the other, EMU-participant States. This rule would continue to apply even if the issuer were a Dutch-incorporated entity…*

> *Source: Economic and Monetary Union: Thinking the Unthinkable – The Breakup of the Monetary Union, by Charles Proctor and Gilles Thieffry, Norton Rose http://bit.ly/lHA0wF*

The interpretation offered by Norton Rose provides the best roadmap for interpreting the currency of liabilities post-euro.

The simplest, most efficient solution is that all contracts governed by local law should be re-denominated into the new currency, and contracts governed and drafted under foreign laws would remain in euros or whatever currency they were when they were drafted.

It would be impossible to enumerate all the potential forms of debt that could safely be re-denominated into the new currency of the exiting country. However, Eric Dor of the IESEG School of Management has suggested the most obvious cases:

> *- A sovereign bond that had been issued in euros by the departing country, directed towards local investors, not to be traded on a foreign market and payable in the country;*
> *- A loan in euros that was agreed on to a debtor of the departing country by a bank of another country in the eurozone or out of the zone, and which stipulated that the*

repayments and interest were to be paid to a subsidiary of the lender in the debtor's country.
- A loan in euros that was agreed on by a bank of the departing country, to a debtor of this country;
- A private or sovereign bond that had been issued in euros and that was traded from the start on the secondary market of the country wanting to quit;
- A debt based on a contract that was taken out in euros and governed by the law of the country wanting to quit or that stipulates that the payments were to be made in that country.

> *Source: Leaving the eurozone: a user's guide Eric Dor, October 2011, IESEG School of Management, Working Paper Series*

Undoubtedly, there are an infinite number of potential debts that one could envision would be subject to re-denomination upon exit. The previous examples, though, provide a good idea of the potential applicability of *lex monetae* to debts.

INTERNATIONAL FINANCIAL CONTRACTS: SWAPS AND OVER THE COUNTER SWAPS

Many companies, particularly financial institutions, are parties to cross border agreements involving derivatives (interest rate swaps, CDSs, etc). The most notable of these are ISDA agreements, which are governed by the International Swaps and Derivatives Association. ISDA typically offers guidance on developing ISDA Master Agreements and a wide range of related documentation materials, and in ensuring the enforceability of their netting and collateral provisions, has helped to significantly reduce credit and legal risk.

It is not possible to know what guidelines ISDA would offer, but DLA Piper, a large multi-national law firm with extensive experience in securities law argues that ISDA would provide broad rules that would govern contracts in the euro area, much as they did before the euro was introduced:

Derivatives contracts could be significantly impacted by a euro collapse or by a country leaving the eurozone. Depending on the circumstances, such events could trigger an ISDA termination event (especially if exchange controls were imposed by the departing country) or may result in a disruption event with respect to particular ISDA products. Equally, such an event could affect the efficacy of any payment or close-out netting provisions. When the euro was introduced, ISDA published a euro protocol to effect a smooth transition in the market as adherence by parties to the protocol ensured that all necessary amendments were automatically made to their ISDA documentation without further bilateral amendments. We anticipate ISDA would proceed with an equivalent protocol in the event of a euro collapse or eurozone country departure.

> *Source: The Eurozone in Crisis: What are the Risks for the parts in Cross Border Transactions?, DLA Piper http://bit.ly/uNRwJW*

Almost all ISDA master agreements are governed by NY or London law and would remain in euros given that the principle of *lex monetae* would not allow the PIIGS to re-denominate contracts outside of their own borders.

EFFECT ON MULTINATIONAL COMPANIES: INTRA-COMPANY FX MISMATCHES

Large multi-national companies with cross-border liabilities and assets are likely to experience serious dislocations. The dealings between their own subsidiaries would be severely impacted, and some might sustain large losses. Not only could their subsidiaries face the potential for insolvency and the need to be recapitalized by the parent company, but their cross border working capital (payables, receivables and inventory) could result in large losses. In anticipation of exits from the

euro, multinationals are already making sure that all of their external and intercompany transactions are long euros with banks in the European core and short euros with local banks in the likely breakup countries. If companies are long euros with local periphery banks, the risk is that the euros will be converted to devalued currencies at a significant loss.

EFFECT ON COMPANIES IN EXITING COUNTRIES

Large companies from periphery countries would fall into the multinational camp. They would face losses and gains as we have described above.

Nevertheless, for every cloud there is a silver lining. Some periphery companies would be clear winners. Periphery firms involved in exports that have no foreign debts and local wages and cost structures would have a very positive asset/liability mismatch. They would produce goods in local currency and collect payment in stronger euros, dollars, yuan, etc.

EFFECTS ON PRIVATE SAVINGS AND BORROWINGS

Local savers in the periphery would be the primary losers in the event of any exit from the euro, while debtors would likely derive the greatest benefits. While exiting the euro and devaluing would be positive for debtors, as it would reduce the real value of their debt, redenomination would be a huge blow to savers who would see the value of their euro bank accounts fall. Middle class savers would be disgruntled and would likely take to the streets to protest, much as savers did Russia in 1998 and Argentina in 2002.

The wealthy have already started moving money out of the periphery country banking systems into foreign banks: US, Switzerland and banks in the European core. Arguably, the people and companies moving their savings outside of periphery countries are the most sophisticated and agile of savers. It follows logically that small savers without sufficient wherewithal of banking facilities elsewhere will be the biggest losers.

Unfortunately, it is not possible to solve the real effective exchange rate problems and reduce the real value of periphery debt without harming savers. This will be an inevitable consequence of exiting, re-denomination of legal tender and devaluation.

Arguably, one should not pity savers as the real effective exchange rates became more misaligned, the “euros” held by the periphery were in fact more and more overvalued every day. Exiting the euro and devaluing would merely reverse a previously unsustainable real effective exchange rate and mark to market the true value of a periphery’s currency.

Mortgage holders would experience a loss on the euro value of their properties as the drachma devalues. However, the mortgage would be reduced at the same pace as the house value by re-denominating the mortgage in drachmas. Symmetry would be preserved by allowing the conversion of the debt, as Greeks would earn drachmas to pay the mortgage.

In the core of Europe, German savers would most likely be the biggest beneficiaries, as they would finally have a currency that could appreciate without being artificially kept down by periphery countries. A euro without weaker periphery members would be more akin to the deutschmark.

4. Public and Private Debt Defaults and Restructuring

PRIVATE DEFAULTS: LOCAL BANKRUPTCY LAWS SHOULD PREVAIL

Almost all European sovereign debt is issued under local law. But a large part of corporate and bank debt is issued under foreign law, typically English or American law because of the unique role of London and New York as financial centers. Debt issued under foreign law should generally trade at a premium to local law debt, given the lower redenomination risk.

All local private debts should be re-denominated in local currency, but foreign private debts would be subject to whatever jurisdiction governed bonds or bank loans when they were contracted. This solution would reduce the instances of foreign exchange asset/liability mismatches. Many local mortgages and credit card debts are owed to local banks, so a re-denomination of local debt would help cure domestic private balance sheets. The main problem is for firms that operate locally but have borrowed abroad.

Local bankruptcy laws should continue to be enforced exactly as before the exit from the euro. Exiting from the euro should not in any way alter the capital structure of firms and the place of creditors in the bankruptcy process. The bankruptcy of firms is a very well understood process even if it varies from country to country in its particulars. The primary objective of the bankruptcy process is the maintaining and enhancing the value of the firm's assets so that the value can then be distributed according to seniority of claims, from senior secured lenders to senior unsecured lenders, then to junior lenders, to preferred shareholders and then finally to common shareholders.

The following chart shows the typical capital structure of a firm in terms of seniority:

The bankruptcy process establishes a collective framework ruled by a bankruptcy court where the rights of creditors and debtors are weighed to make sure that creditors do not act to their own detriment or that of other creditors and the debtor company itself.

As Steven Radelet of Harvard Institute for International Development has pointed out, "Although bankruptcy proceedings differ in important ways across countries, most have four key elements in common:"

- an arbitrator or administrator, usually a court or tribunal;
- provisions for a standstill on payments to prevent a creditor "grab race;"
- provisions for the possibility of the firm borrowing new money to continue operations during the standstill; and
- a workout arrangement (following a period of time for information gathering and negotiation) consisting of some combination of a rollover/extension of existing loans, a reorganization of the firm and/or the debt contracts, or a closure of the firm.

> *Source: Orderly Workouts for Cross-Border Private Debts, www.cid.harvard.edu/archive/hiid/papers/workouts.pdf*

In the case of an exit from the euro, the bankruptcy processes in each country should continue to work as they have beforehand. The real issue is the jurisdiction of debt contracts that the company assumed in the course of its business.

EFFECT ON SOVEREIGN DEBT: DEFAULTS AND RESTRUCTURING LIKELY

Almost all sovereign borrowing in Europe is done under local law, which would allow countries to exit the euro and re-denominate their sovereign debt in local currencies. The re-denomination of debt into local currency would not legally be a default, but it almost certainly would be considered a technical default by ratings agencies and international bodies such as ISDA.

Beyond merely re-denominating debt, countries may wish to re-schedule their debt. The process of restructuring sovereign debt is not as well established as the process for restructuring debt through corporate bankruptcy. Nonetheless, there are informal processes in place for restructuring sovereign debt owed to other governments through what is known as the Paris Club and to commercial banks through the London Club. The Paris Club and London Club coordinate their actions with each other and with the IMF. In effect, both Clubs act in the same way creditor committees act in local bankruptcy processes.

RECAPITALIZING BANKS IN THE CORE AND PERIPHERY

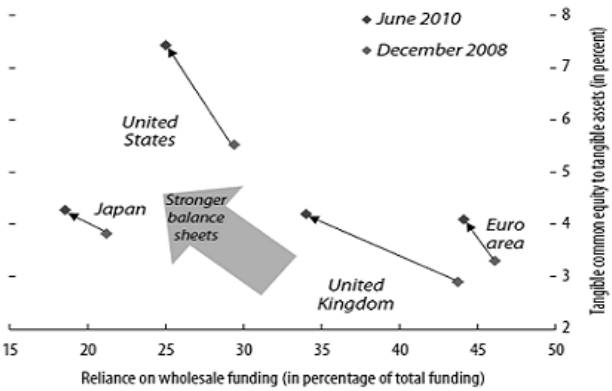
The parties who will be holding the bag in the event of an exit, default and devaluation will be German, French and British creditor banks. These would have to be recapitalized with public funds. The EU has already started the process of raising common equity to total capital ratios. This process should be accelerated so that in anticipation of large losses banks would be overcapitalized.

Banks headquartered in countries that exit the euro would likely need to be recapitalized by a combination of receiving local currency bonds from the government along with government equity participation.

Local banks that are large creditors would likely suffer because they would hold government bonds that would be restructured. However, local banks would likely have small foreign exchange asset liability mismatches. Their deposits (liabilities) and loan books (assets) would both be in the same local currency. Foreign institutions, however, would have very large asset liability mismatches given their deposits (liabilities) would be in euros and loan books (assets) would likely be in devalued drachmas, pesetas, escudos, punts or liras, if loans were extended in periphery jurisdictions.

The European banking system is arguably already undercapitalized and insolvent based on extremely low tangible common equity to asset ratios as well as very high reliance on wholesale funding. As the following chart from the IMF shows, European banks have done the very least to improve their reliance on deposits for funding as well as having done the least to raise common equity.

Figure 1.6. Banking System Capital and Reliance on Wholesale Funding



Sources: EU Consolidated Banking Data; national authorities; and IMF staff estimates.

> *Source: IMF Global Financial Stability Report, April 2011,*

> *http://www.imf.org/external/pubs/ft/gfsr/2011/01/index.htm#c1figure*

European banks have problems with or without any exits from the eurozone. Low levels of tangible common equity and high reliance on wholesale funding makes banks subject to solvency and liquidity risks. Solvency risks arise from not having enough equity with which to absorb potential losses from the write-down of assets. Liquidity risks arise from a very high reliance on fickle capital markets to provide short term funding, which must be continuously rolled.

REDUCING COLLATERAL EFFECTS OF A EUROPEAN EXIT

Any exit from the euro would likely lead towards global financial panic, rising credit spreads, higher equity volatility, sell-offs in stock markets, the withdrawal of capital from emerging markets, a flight to highly rated government bonds, and a spike in interbank borrowing rates. Previous emerging market devaluations and defaults such as the Asian Crisis in 1997, Russia in 1998, and Argentina in 2002 were marked by these signs of panic. However, the effects were transitory and quickly receded from global markets.

In order to counteract the inevitable stresses in the financial system and interbank lending markets, central banks such as the ECB, the Federal Reserve, the Bank of Japan, the Bank of England, etc should coordinate to provide unlimited foreign exchange swap lines to each other and expand existing discount lending facilities. They should follow Walter Bagehot's dictum to "lend freely at a high rate, on good collateral." Central banks should also consider reducing interest rates or pursuing additional quantitative easing in order to provide additional liquidity to counteract the short term deleveraging effects caused by financial panic.

The economic literature studying previous episodes of interbank stresses points to highly concrete steps that can be taken to calm the interbank lending markets. Central banks and governments should: recapitalize banks, provide greater disclosure on solvency and liquidity of banks, expand the eligible collateral in order to reduce any collateral squeeze, provide high quality assets for repurchase agreements (a means by which banks turn illiquid collateral into cash), allow non-bank companies to participate in repurchase facilities, and provide sovereign interbank lending guarantees. These steps were used to great effect after the collapse of Lehman Brothers.

As monopoly suppliers of fiat money, central banks have the power to calm financial markets through theoretically unlimited quantities of money they can "print." Central banks should use all the available tools at their disposal to prevent liquidity crises from becoming solvency crises.

5. European Union Institutional and Legal Issues

Undoubtedly one of the more complicated and contentious issues in any currency exit are the legal and institutional issues involving separation. Much like a couple divorcing, countries that leave currencies are often mired in fights over assets and the fine print of legal contracts and treaties. In this section we look at how central bank assets are divided as well as European Union treaty considerations.

HOW TO RE-DISTRIBUTE CENTRAL BANK ASSETS

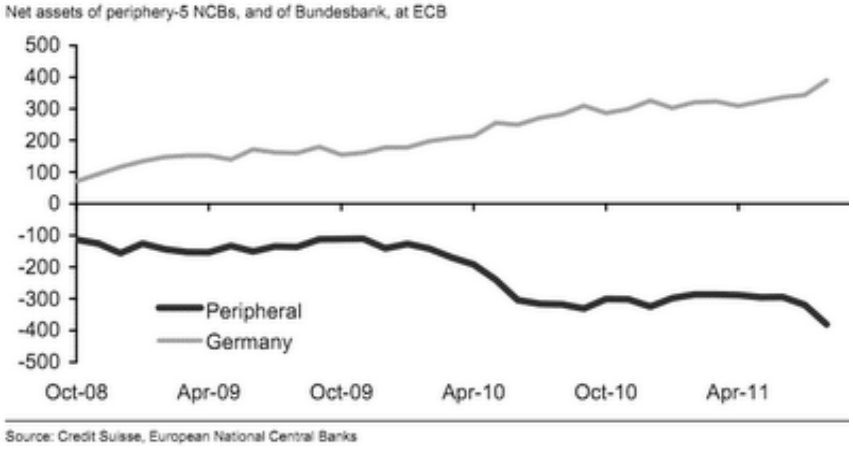
One of the more highly technical questions of an exit from a currency area is the re-distribution of central bank assets and liabilities. If we look at historical examples of currency exits, each exiting country has decided how to resolve this in a different way. The most common way, however, was based on the distribution of currency holdings upon exit. This was the case of the Austro-Hungarian Empire in 1919 and of Pakistan and India in 1947-48.

In the case of the euro, apportioning assets and liabilities by country is complicated by the interbank balance of payments system known as TARGET 2, which has allowed periphery countries to run very large intra-ECB surpluses and deficits. This was noted by Tomo Wollmershaeuser and Hans-Werner Sinn in a NBER paper:

> *The European Monetary Union is stuck in a severe balance-of-payments imbalance of a nature similar to the one that destroyed the Bretton Woods System. Greece, Ireland, Portugal, Spain and Italy have suffered from balance-of-payments deficits whose accumulated value, as measured by the Target balances in the national central banks' balance sheets, was 404 billion Euros in August 2011. The national central banks of these countries covered the deficits by creating and lending out additional central bank money that flowed to the euro core countries, Germany in particular, and crowded out the central bank money resulting from local refinancing operations. Thus the ECB forced a public capital export from the core countries that partly compensated for the now reluctant private capital flows to, and the capital flight from, the periphery countries.*

> *Source: Target Loans, Current Account Balances and Capital Flows: The ECB's Rescue Facility Hans-Werner Sinn and Timo Wollmershaeuser, NBER Working Paper No. 17626, November 2011*

The imbalances are substantial and growing. The following chart shows the deficit of the PIIGS vs Germany at the ECB as part of the Target 2 system.



> *Source: Credit Suisse*

Periphery banks are net debtors under the Target 2 system. A default of the exiting country's central bank would lead to huge losses to the ECB, which would be shared pro-rata by all remaining euro countries according to their claims on Target 2. The central banks of Germany, Netherlands, Luxembourg are net creditors via the ECB's Target 2 system will sustain the largest losses in the event of a euro exit.

The issue of dividing up pooled ECB capital is not straightforward at all from a legal standpoint. Norton Rose examined the issue of ECB reserves and capital in the event of a euro exit. The issue, as ever, was clouded by the lack of any exit mechanism in the Maastricht Treaty:

> *The Maastricht Treaty does not allow for the withdrawal of contributed capital or reserves from the ECB, and financial terms would require a new negotiation. Such negotiations would be complicated by a number of factors; in particular, the withdrawal of a Member State would clearly shake market confidence in the euro and would be likely to lead to extreme volatility in its external value. This could only be mitigated by (i) a retention of a portion of the contribution of the withdrawing State and/or (ii) an additional financial contribution to the ECB by participating Member States in order to support the euro. It is quite likely that the available funding within the ECB itself would be insufficient (i) to support the euro adequately and (ii) to support the creation of a new national currency by the withdrawing State. This, in turn, might render it impossible to negotiate "exit" terms without placing the entire EMU process under impossible strain…*

> *Source: Economic and Monetary Union: Thinking the Unthinkable – The Breakup of the Monetary Union, by Charles Proctor and Gilles Thieffry, Norton Rose http://bit.ly/IHA0wF*

Central banks in the core will need to either be recapitalized by their national governments, or much more likely be recapitalized via recognizing and capitalizing seigniorage, which we discuss below.

HOW TO RECAPITALIZE THE ECB TECHNICALLY

In the event of periphery countries exiting the euro, the ECB and core central banks would likely be technically insolvent, but this is more a technical than practical issue. It is highly doubtful whether there is any practical impact to central banks being insolvent, as they have the ability to issue currency in unlimited quantities. The point is mainly a public accounting issue.

One potential solution is that the ECB could capitalize the net present value of its seigniorage. Many analysts estimate the Net Present Value to be in the range of two to three trillion euros. Seigniorage exists when a central bank makes available the money it has itself created to the private sector in exchange for interest-bearing assets like bills of exchange or deposits of securities. Seigniorage is the interest earned on the assets that the central bank has acquired with its money, which is effectively costless for the central bank to create and issue. Central banks don't typically recognize the value of seigniorage on their balance sheets, but this would be one way of plugging the technical hole in the gap between their assets and liabilities. (Currently, seigniorage does not belong to the ECB or NCBs, but goes to member governments under a formula. So either way the government would do the recapitalisation.)

HOW TO DEAL WITH DEPARTING CENTRAL BANKS

It is highly likely that the central bank of any departing country would be insolvent. This is primarily because the peripheral national central banks have very large liabilities to core central banks under the Target 2 system. If the countries stay within the euro area, these liabilities are not an immediate problem. However, if they leave, the ECB would likely demand repayment.

It would not be the first time in history that a central bank has gone bust. Furthermore, as the law firm Allen & Overy has pointed out, there are historical precedents where countries have insulated foreign exchange reserves from the process of bankruptcy.

> *Accordingly, a state which gets into financial difficulties can effectively insulate its foreign assets by locating them in specially formed stated-owned entities or in the central bank so that the veil of incorporation shuts off the foreign creditor. There are at least two historical cases (Cuba and the USSR) where, even when the central bank was the debtor of record, the debtor state simply wound up and dissolved the central bank and created a new central bank which received the foreign reserves. The result was that creditors of the old central bank, were left either with a "shell" or with a company which had totally disappeared. A case in the English courts (involving Cuba) alleging that the whole thing was a fraudulent preference did not succeed.*

> *Source: Allen and Overy, Global Law Intelligence unit , State insolvency - what bondholders and other creditors should know, www.allenovery.com/AOWeb/binaries/64484.PDF*

While it may be a public policy goal to keep the central bank solvent, it is not the end of the world if a central bank goes bust.

LEAVING THE EURO WITHOUT LEAVING THE EU

The Maastricht Treaty created the euro without an exit provision. It is like Hotel California, where, "You can checkout any time you like / But you can never leave." Countries that leave the euro would have to make the legal case that they have the right to do so while they maintain full privileges of being members of the European Union.

Arguably the no exit provision was driven by the fear that any exit clause would make the euro very much like the European Exchange Rate Mechanism (ERM), which came undone when weaker members were forced to exit. The moment one country left ERM, pressure was immediately applied on others to leave as well. The euro was designed to avoid the problem of cascading exits, capital flight and bank runs. Arguably, it has failed at quelling discussions of exit, but there is almost no roadmap ahead legally.

The fact that the possibility of withdrawal may not have existed under the EC and EU Treaties until recently does not exclude the possibility of its unilateral assertion, followed by its recognition as a legal right by the withdrawing Member State's former partners. Political motivations explain why no Member State contested the UK's threatened withdrawal in 1975 and why Greenland was allowed to leave the European Communities in 1982.

Periphery countries could act against international law and disregard the Maastricht Treaty. If treaties do not explicitly allow for renunciation, it is difficult to exit treaties. It appears that any country that leaves the euro would not only violate the Maastricht Treaty, but also the Vienna Convention on the Law of Treaties.

According to the Vienna Convention on the Law of Treaties, which entered into force 27 January 1980, Article 56 of the convention provides:

> *A treaty which contains no provision regarding its termination and which does not provide for denunciation or withdrawal is not subject to denunciation or withdrawal unless:*
> *It is established that the parties intended to admit the possibility of denunciation or withdrawal; or*
> *A right or denunciation or withdrawal may be implied by the nature of the treaty. A party shall not give less than twelve months' notice of its intention to denounce or withdraw from a treaty under paragraph 1.*

> *Source: When the euro Falls Apart, Hal S. Scott, International Finance 1:2, 1998: pp. 207-228 www.law.harvard.edu/programs/about/pifs/research/15scott.pdf*

The previous paragraphs would indicate that any exit from the euro would be against international law, and would make staying within the European Union itself subject to question. However, later treaties clearly allow for the exit from the European Union, which could allow governments to argue that an exit from the euro would also be implied by treaty frameworks.

As the ECB itself has noted, the Lisbon Treaty allows withdrawal from the EU and establishes a process for this via article 50:

> *The Treaty of Lisbon provides for a mechanism for voluntary and unilateral withdrawal from the European Union (Article 50 of the Treaty on European Union). A Member State wishing to withdraw notifies its intention to the European Council, which provides guidelines for the conclusion of an agreement setting out the arrangements for its withdrawal. This agreement is concluded on behalf of the European Union (EU) by the Council, acting by qualified majority, after obtaining the consent of the European Parliament.* ***The Treaties cease to apply to the State in question from the date of entry into force of the agreement, or within two years after notification of the withdrawal*** *[emphasis added].*

> *Source: http://europa.eu/legislation_summaries/glossary/withdrawal_clause_en.htm*

The Lisbon Treaty allows for an exit from the EU but does not have a clause that allows a country to leave the eurozone but remain a member of the EU. The only way to withdraw from the euro legally at present is to use Article 50, withdraw from the EU and then re-apply for EU membership but remain outside of the euro.

However, it is likely that countries would find a legal justification for leaving the euro and staying within the EU. The ECB itself in a study paper has established the arguments that could be made for withdrawal from the euro:

> *There are three hypothetical circumstances where a Member State could, in extreme circumstances, assert a right of unilateral withdrawal, whether as a remedy or by way of relief. These are where: (i) another Member State(s) has fundamentally infringed and continues to infringe the treaties; or (ii) the European institutions have acted ultra vires (in both of the foregoing cases, without the treaties appearing to offer any remedy guaranteeing an early return to legality); or (iii) a Member State faces extraordinary difficulties that prevent it complying with its treaty obligations.*

> *Source: Withdrawal and expulsion from the EU and EMU some reflections, ECB Legal Working Paper Series, No 10 / December 2009 www.ecb.int/pub/pdf/scplps/ecblwp10.pdf*

Furthermore, there are clauses in the Maastricht Treaty that allow for taking temporary measures in derogation from the Treaty. The ability to take temporary measures would allow for the impositions of short-term capital controls:

> *Where extraordinary domestic or international situations affect a Member State's ability to fulfil its treaty obligations, the EC Treaty provides for the possibility of Member States taking temporary measures, in derogation from the Treaty, in order to resolve 'serious internal disturbances affecting the maintenance of law and order, in the event of war, serious international tension constituting a threat of war, or in order to carry out obligations it has accepted for the purpose of maintaining peace and international security'*

> *Source: Withdrawal and expulsion from the EU and EMU some reflections, ECB Legal Working Paper Series, No 10 / December 2009 www.ecb.int/pub/pdf/scplps/ecblwp10.pdf*

European treaties are not set in stone. It is highly likely that if a country exited the euro, European treaties would be amended to make it possible for other countries to leave. However, treaty changes are costly, lengthy and burdensome. Most recent changes to EU treaties have taken years and typically have involved referenda.

While the legal hurdles to exiting the euro may be high, in the end, national governments are likely to respond to domestic economic and political concerns over any EU treaty obligations. **Once one country declares that they will exit the euro, the treaty concerns about the legality of exit are likely to become a moot point. A treaty is just a contract between nations; and contracts do get broken.**

WHAT HAPPENS NEXT?

In this section, we have looked at how we believe exits from the common currency would take place in practice, and what the ramifications would likely be. In the following section we will examine the examples of countries that have defaulted and devalued and see what happens to their economies after they do so.

Section Four – What Happens After Exit? Defaults and Devaluations are Rarely as Bad as Feared

If periphery countries exit the eurozone, they will devalue their currencies and default on their debt. Therefore, it is essential to examine previous devaluations and defaults in order to better understand the macroeconomic effects and the outlook for growth and inflation.

MACROECONOMIC CONSEQUENCES: RECENT DEFAULTS AND DEVALUATION

> *The only function of economic forecasting is to make astrology look respectable.*
> John Kenneth Galbraith

Dire predictions about economic growth following devaluations are usually wrong, and most countries quickly recover pre-crisis levels of GDP. If we look at recent devaluations, in almost all cases devaluing countries had short, sharp downturns followed by steep, prolonged upturns.

Mark Weisbrot and Rebecca Ray prepared a report for Center for Economic and Policy Research and examined GDP declines before and after devaluations. The following table from their study shows where each country's GDP was three years after these large, crisis-driven devaluations. Almost all of the countries were considerably above their pre-devaluation level of GDP three years later. This was true for developed countries as well as emerging countries.

Major Recent Devaluations and Ensuing GDP Loss

	Devaluation					GDP Decline		
	Date	Mos. until Trough	National Currency per US Dollar		Size of Devaluation	Quarters until Trough	Loss of GDP	Change in GDP 3 Years After Devaluation
			Before	Trough				
Argentina	Jan-01	5	1.0	3.6	-72.2%	1	-0.3%	+25.8%
Finland	Sep-92	11	4.4	5.8	-23.9%	3	-1.2%	+9.2%
Georgia	Dec-98	2	1.5	2.3	-36.8%	0	0.0%	+10.1%
Iceland	Oct-08	1	91.2	135.3	-32.6%	5	-11.3%	-9.3% [1]
Indonesia	Jul-97	12	2,446.6	13,962.5	-82.5%	4	-16.6%	-9.8%
Iran	Mar-93	2	67.3	1,635.7	-95.9%	3	-9.1%	+3.1%
Italy	Aug-92	12	1,102.6	1,605.1	-31.3%	1	-0.6%	+7.9%
Malaysia	Sep-97	4	2.7	4.4	-37.8%	5	-8.5%	+6.7%
Mexico	Dec-94	3	3.4	6.7	-48.6%	3	-15.1%	+6.2%
South Korea	Dec-97	1	1,025.6	1,701.5	-39.7%	2	-9.1%	+14.0%
Sweden	Nov-92	9	6.2	8.1	-22.8%	1	-0.6%	+10.0%
Thailand	Jul-97	6	25.8	53.8	-52.1%	4	-13.8%	-3.7%
UK	Aug-92	12	0.5	0.7	-23.1%	0	0.0%	+10.4%
Latvia	*2007Q4*	*24*	*0.49*	*0.48*	*2.1%*	*8*	*-24.1%*	*-21.3%*

[1] Not enough time has elapsed to measure Iceland's GDP three years after devaluation. Shown here is the most recent data: 2.5 years after devaluation.
Source: IMF (2011a).

> *Source: Latvia's Internal Devaluation, Mark Weisbrot and Rebecca Ray December 2011*
> *www.cepr.net/documents/publications/latvia-2011-12.pdf*

Devaluations typically work because if they come after periods of price stability, devaluation can have real effects due to the rigidity of prices for non-tradable goods and money illusion. It can create improved economic sentiment arising from strong demand, higher export profits and temporary employment increases in the short run when wage rigidities can be relied on. A large one-off nominal depreciation of the currency will not necessarily result in a persistent improvement in competitiveness, but when accompanied by significant reforms and structural changes, it often leads towards a sharp economic improvement.

It is useful to look at previous historical examples of countries after they defaulted and devalued to observe their growth and inflation trajectory. The three examples we will look at are Thailand, Indonesia and Korea in 1997, Russia in 1998, and Argentina in 2002.

ASIAN LARGE SCALE PRIVATE DEFAULTS AND DEVALUATION, 1997

The Asian crisis shows how defaults and devaluations work to make countries more competitive, clear balance sheets of unwanted debt and allow for strong, sustained growth afterwards.

Before the 1997 crisis, East Asia was booming. From 1993 to 1996, the nine major East Asian countries – China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand – averaged annual GDP growth over 6% each year. Annual net capital inflows to Asia doubled during the period and cross border banking claims grew by almost 60%. This led to property and stock market bubbles, and Asian countries built up large short term borrowing in dollars from foreign banks.

Asia had every ingredient for a blow-up before the wave of defaults and devaluations of 1997. Almost all the Asian borrowing was short-term in nature and much of it was in dollars and not in local currency. This created a foreign exchange asset liability mismatch. Also, while liabilities were short-term and liquid, assets were often longer term and illiquid. Asian economies thus had not only a foreign exchange asset/liability mismatch; they also had a liquidity and maturity mismatch.

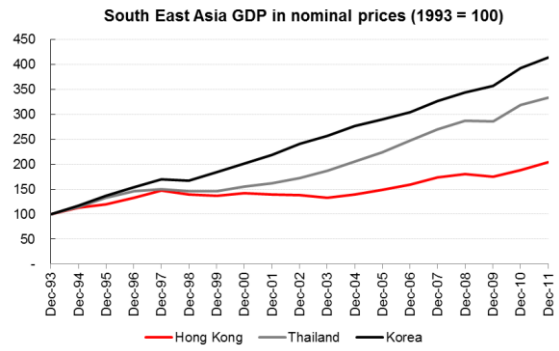
The events surrounding the Asian crisis began in early 1997 with the bankruptcy of several Korean conglomerates. During the summer the Thai baht, the Indonesian rupiah and the South Korean won all devalued. Almost all local leaders denied that the currencies would be devalued, right up until the crisis. For example, on 30 June 1997, Prime Minister Chavalit Yongchaiyudh said that he would not devalue the baht. The Thai baht was devalued two days later, on July 2nd.

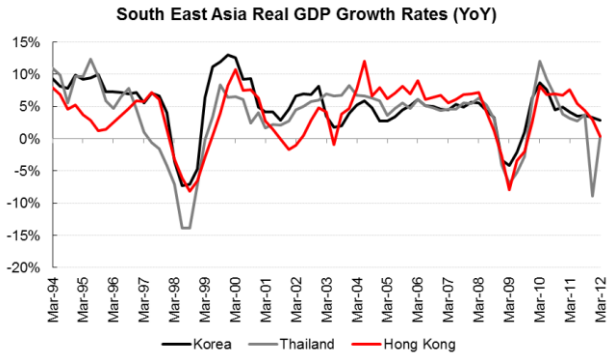
Despite initial predictions of catastrophic collapses and Armageddon, Asia has done extremely well after large-scale defaults and devaluations. After the Asian currency crisis in 1998, South Korea, and Thailand experienced short, sharp downturns, but then grew quickly for the next decade and achieved pre-crisis GDP levels within two to three years.

South Korea saw its economy contract sharply for four quarters, but then bounced back very strongly and grew consistently for the following ten years. Within two years, South Korea's real GDP level had fully recovered from the downturn.

Thailand experienced a very sharp contraction for one year, but was growing again strongly within two years. In fact, within two years Thailand's real GDP had reached a new peak. By 2001, Thailand's economy had recovered. The increasing tax revenues allowed the country to balance its budget and repay its debts to the IMF in 2003, four years ahead of schedule.

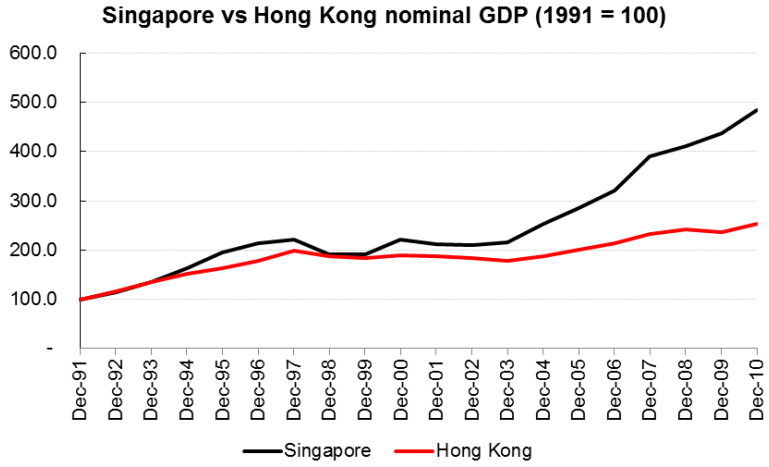
This is in contrast, however, to Hong Kong which opted to maintain its USD peg throughout the crisis. The economy did not see nominal GDP make a full recovery until 2005.





Source: Bloomberg

In a study on the Asian Currency Crisis, Michael B. Devereux from British Columbia University contrasts the experience of Singapore (floating exchange rate) and Hong Kong (fixed exchange rate). Devereux found that the slow recovery of output growth in Hong Kong relative to Singapore post-1997 can largely be explained by the Hong Kong's fixed exchange rate.



Source: Bloomberg and Devereux (2003)

Hong Kong experienced a period of deflation in order to keep its peg. It fared poorly compared to Singapore, a similarly highly open, export economy. In 1998, Singapore GDP grew in real terms by 1.5%, whereas it fell 5.8% in Hong Kong.

Whatever the long-term and structural benefits a country may have of pegging to an anchor currency, there can be a significant medium-term cost involving the slow and painful burden of adjustment in real terms. A free-floating nominal exchange rate is a very powerful adjustment mechanism, as the example of Singapore vs Hong Kong shows.

RUSSIAN SOVEREIGN DEFAULT AND DEVALUATION, 1998

Much like Greece today, the international community, the IMF, governments and holders of Russian debt thought default would be catastrophic. The government was told repeatedly that default would mean that Russia would not be able to access the credit markets for a generation and that foreign money would never dare return.

Following the Asian crisis, in late 1997 and early 1998, Russia received very large loans from the IMF and the World Bank because Russia had trouble accessing international debt markets. Much

like Greece today, borrowings from other sovereigns and the IMF did not resolve the solvency crisis. Ultimately, in August 1998, Russia defaulted on its sovereign debt and devalued its currency.

The expected catastrophe didn't happen. The pain lasted only about six months, followed by a decade long boom. The Russian stock market, which had declined by 90%, increased over 4000% over the next decade. Russian industrial output rose over ten times over the next decade. The private sector benefited massively from the boost to competitiveness provided by the devaluation.

> *Source: Bloomberg*

Contrary to dire prophecies, foreign investors resumed lending to Russian corporations within a year. Once growth returned, the Russian government paid a large portion of its debts in full, usually ahead of schedule.

ARGENTINA DEFAULT AND DEVALUATION, 2002: INVESTORS HAVE SHORT MEMORIES

> *The fiscal history of Latin America … is replete with instances of governmental default. Borrowing and default follow each other with almost perfect regularity. When payment is resumed, the past is easily forgotten and a new borrowing orgy ensues.*
> Max Winkler, Foreign Bonds: An Autopsy, Rowland Swain Co., Philadelphia 1933

During the 1990s, seeking to tame hyperinflation, Argentina had tied the value of its peso to the American dollar. This strategy did not work in the long run because Argentina developed an overvalued real effective exchange rate relative to the dollar. The decision by Brazil, its largest trading partner, to devalue the Brazilian Real in 2001 made the Argentinean peso very uncompetitive.

Argentina's fiscal predicament before it defaulted seems tame compared to the situation of the European periphery today. At the time of its default, Argentina had a fiscal deficit of about 3% of GDP. Greece's deficit was over 10% of GDP in 2010. Argentina's total sovereign debt to GDP level was also very low coming in at 54% vs Greece's debt of over 150%.

Argentina was forced to default and devalue in late 2001 and early 2002. Despite gloomy forecasts, the economy did extraordinarily well:

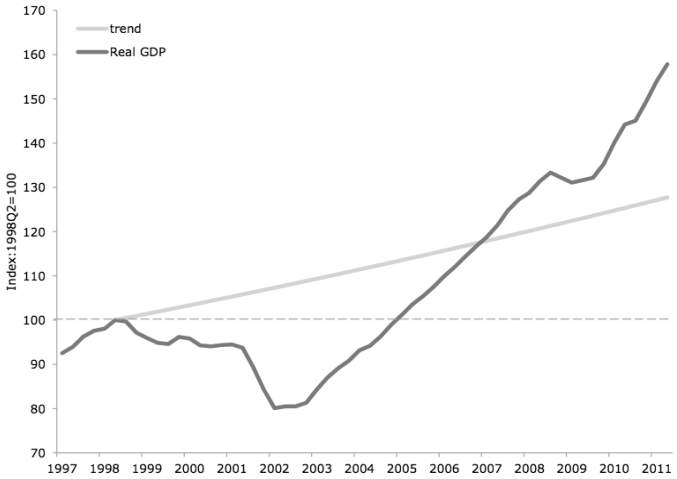
> *In December of 2001, the government defaulted on its debt, and a few weeks later it abandoned the currency peg to the dollar. The default and devaluation contributed to a severe financial crisis and a sharp economic contraction, with GDP shrinking by about 5 percent in the first quarter of 2002 and nearly 11% for the full year. However, recovery began after that one quarter of contraction, and continued until the world economic*

slowdown and recession of 2008-2009. The economy then rebounded, and the IMF now projects growth of 8 percent for 2011.
Argentina's real GDP reached its pre-recession level after three years of growth, in the first quarter of 2005. Looking at twenty-year trend growth, it reached its trend GDP in the first quarter of 2007.

> *Source: The Argentine Success Story and Its Implications, Mark Weisbrot, Rebecca Ray, Juan Montecino, and Sara Kozameh, Center for Economic and Policy Research, 2011 http://www.cepr.net/documents/publications/argentina-success-2011-10.pdf*

As the following chart shows, once Argentina defaulted and devalued, it experienced two quarters of economic contraction. Its longest contraction happened as it postponed default. This is a very strong lesson to Europe. **After default and devaluation, Argentina returned swiftly to growth. The economy has grown by more than 8% a year since 2003.**

FIGURE 1
Real GDP: Actual and 20-Year Trend (Seasonally-Adjusted)



Source: INDEC 2011a, IMF 2011b and Authors' Calculations.

> *Source: The Argentine Success Story and Its Implications, Mark Weisbrot, Rebecca Ray, Juan Montecino, and Sara Kozameh, Center for Economic and Policy Research, 2011 http://www.cepr.net/documents/publications/argentina-success-2011-10.pdf*

The Argentine government waited until 2005, when its economy was already in recovery, to carry out the first of two debt restructurings. Non-government foreign investors took haircuts of almost 70%. However, the one creditor that was paid back in full in 2006 was the International Monetary Fund. (Today, private Greek bondholders have taken similar haircuts, while the IMF will likely to be paid back in full.)

The catastrophic consequences that investors predicted for Argentina never happened. As a recent study of Argentina concluded:

We show that the Argentine case contradicts many of their standard predictions, in particular its posterior lack of access to international credit, restriction to international trade and negative economic growth. Moreover, it corroborates the historical fact that many defaulters "get away with it."

> *Source: Argentina's Default and the Lack of Dire Consequences, Werner Baer, Diego Margot, Gabriel Montes-Rojas, City University London Department of Economics, Discussion Paper Series No. 10/09 www.city.ac.uk/__data/assets/pdf_file/0009/73845/1009.pdf*

Experiencing an ultimately successful default is not only true for Argentina, but more broadly. Countries that have defaulted on their debt have been able to return to financial markets regularly. They may have to borrow again in foreign currency at a high rate, but they will not be locked out of international bond markets.

> *A central feature of theory papers in international finance is that debtor governments have strong incentives to repay in order to maintain a good reputation and to avoid punishment in capital markets…. Yet the empirical support for this proposition is weak at best, as shown by more than 30 years of research...*
>
> > *Source: Sovereign Defaults: The Price of Haircuts, Juan Cruces, Christoph Trebesch, http://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.373257.de/fin11_cruces_trebesch.pdf*

Much like Asia in 1997 and Russia in 1998, despite terrible forecasts, Argentina was able to grow quickly and return to international debt markets.

EUROPEAN PERIPHERY VS PREVIOUS DEVALUATIONS

Although exits from the euro would not be the catastrophe many contend, there would undoubtedly be severe short-term pain, as happened after previous emerging market crises (Asia 1997, Russia 1998, Argentina 2002, etc). Much like these events, at the time of defaults and devaluations, credit spreads would widen, equity volatility would spike, some banks would need to be recapitalized, and economic output would decline. These effects are not primarily due to exiting a currency area, but rather to the process of defaults and devaluations. After the short, sharp pain, long-term growth and competitiveness would be greatly enhanced for any country that departs, defaults and devalues.

Departing the euro, defaulting and devaluing would not solve all macroeconomic problems. Any devaluation that is not accompanied by structural reforms and fiscal discipline will likely fail to achieve macroeconomic stability. Of the previous three examples, Argentina stands out as a country that has continued to grow, but it is now facing high and accelerating inflation.

The gains and growth post-devaluation would likely be smaller than those experienced by Asia, Russia and Argentina. This is due to three principal reasons:

1. Asia, Russia and Argentina had the good fortune in being commodity exporters at a time when the developed world as a whole was doing much better than now. Given the current backdrop of anaemic global growth, it is likely the periphery would experience more moderate improvement than these countries cited as examples. Exports are dependent on external demand, which would not be particularly robust given global prospects for low growth.

2. Another factor that makes it likely that gains in the European periphery will be smaller than those experienced by Asia, Russia and Argentina is that the PIIGS are already wealthy with a high level of GDP per capita. The emerging market countries that devalued had lower GDP per capita and, so, had much more “catch up” growth to do.

3. Furthermore, trend growth in advanced economies has been declining for a long while now. Arguably, the pace of growth achieved in the past thirty years has been a reflection of increased leverage rather than increased productivity. Returning to trend growth in effect implies returning to low levels of growth.

Departing, defaulting and devaluing is not a panacea, but it would help periphery countries escape the straightjacket of the euro.

BORROWING AFTER DEFAULTS: INVESTORS HAVE SHORT MEMORIES

Debts which are forgiven are forgotten.
Jeremy Bulow and Kenneth Rogoff

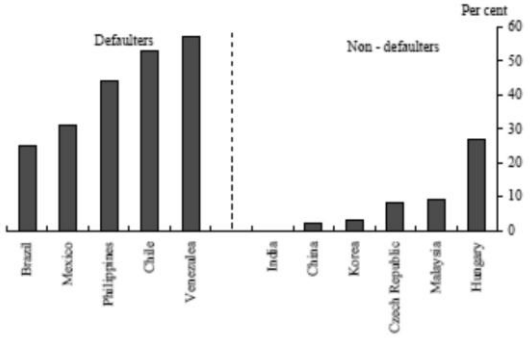
Defaults in Europe would be nothing new. In a massive overview of sovereign defaults, Carmen Reinhart and Kenneth Rogoff conclude "serial default on external debt—that is, repeated sovereign default—is the norm throughout every region in the world, even including Asia and Europe." Defaults in Europe imply a return to normalcy rather than an aberration.

Most emerging market investors belong to the Timothy Leary school of investing. Timothy Leary once said, "There are three side effects of acid: enhanced long-term memory, decreased short-term memory, and I forget the third." Emerging market institutional investors frequently state that they will not forgive or forget defaults, yet they usually lend to countries that have only recently defaulted.

Indeed, investors' memories are extremely short. Work by R. Gaston Gelos from the IMF shows that most defaulters regain access to borrowing within one year after a restructuring. Countries might have to pay higher borrowing costs given large haircuts after previous defaults or force defaulters to borrow in foreign currency. While borrowing costs are higher, economic is also higher, making debt more serviceable. Furthermore, in almost all cases, countries have been able to return to the international bond markets to access financing.

Defaulters are often unable to borrow in their own currency after defaults. Given a history of previous default and higher inflation, it is therefore unsurprising that they are forced to borrow in foreign currency when they return to bond markets. As the following chart from a Bank of England study of defaults shows, countries that have defaulted have a much higher proportion of foreign currency borrowing than non-defaulters. Periphery countries would likely be forced to return to the bond markets and borrow in euros or dollars.

Chart 3 Share of sovereign debt denominated in foreign currency (percent of total marketable sovereign debt)[(a)], end-2004



Source: Jeanne and Guscina (2006).

[(a)] Issued both domestically and abroad. Note that all the defaulters in the chart defaulted at least twenty years ago, suggesting that most, if not all, of the current debt stock was issued after their default.

> *Source: Costs of sovereign default, Bank of England, Financial Stability Paper no. 1, July 2006*
> *http://www.bankofengland.co.uk/publications/fsr/fs_paper01.pdf*

The key point, though, is that most defaulters are able to return to debt markets. They do so, however, at higher interest rates and usually in another currency.

INFLATION AND HYPERINFLATION AFTER DEVALUATIONS

Defaults are not without costs, but the costs are generally manageable and the side effects often necessary. The primary macroeconomic side-effect of a default and exit would be higher inflation.

Defaults, devaluation and inflation are inevitable, if history is any guide. They happen regularly and are not uncommon. After the Lehman bankruptcy, this is exactly the pattern the world finds itself in. As Reinhart and Rogoff have shown, the typical pattern is for banking crises to lead to sovereign defaults and for sovereign defaults to lead to inflation.

BANKING CRISIS --> DEFAULT --> INFLATION

This is beautifully illustrated by the following chart by Reinhart and Rogoff in their work on banking crises:

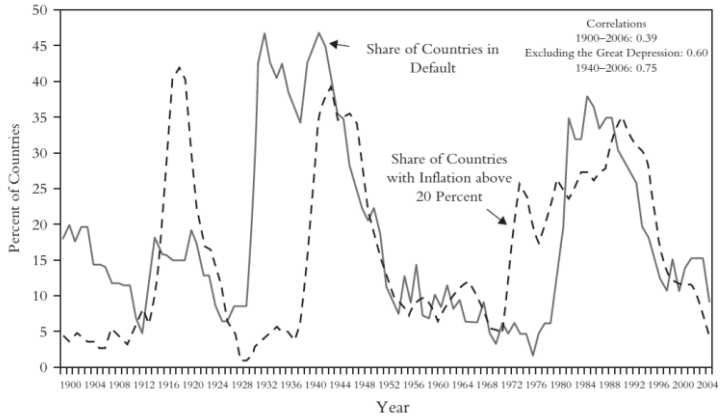


Figure 8.2 Inflation and External Default: 1900–2006

> *Source: Reinhart and Rogoff, "Banking Crises: An Equal Opportunity Menace," www.bresserpereira.org.br/terceiros/cursos/Rogoff.Banking_Crises.pdf*

Finally, it is worth differentiating between external and domestic defaults. Countries are often more likely to default on their domestic debt than external debt. According to a study of domestic debt by Reinhart and Rogoff, the composition of the debt is important to ascertaining the path of inflation. Inflation during the year of external default is 33% (using 64 episodes); but it averages 170% with domestic defaults. Exiting the euro and defaulting on foreign debt is arguably most akin to an external default. Consequently, we might not expect very high inflation.

Table 3. Inflation and Domestic Debt: Selected Episodes, 1917–1994

Country	Year	Inflation	Domestic debt/GDP	Base Money/GDP	Domestic debt/ Total domestic liabilities
		Some Hyperinflations			
Argentina	1989	3079.5	25.6	16.4	61.2
Brazil	1987	228.3	164.9	9.8	94.4
	1990	2947.7	155.1	7.1	95.6
Germany	1920	66.5	52.6	19.4	73.0
	1923	22220194522.37	0.0	0.0	1.0
		High Inflations			
Greece	1922	54.2	53.0	34.3	60.7
	1923	72.6	41.3	32.7	55.9
Italy	1917	43.8	79.1	24.1	76.6
	1920	56.2	78.6	23.5	77.1
Japan	1944	26.6	236.7	27.8	89.5
	1945	568.1	266.5	74.4	78.2
Norway	1918	32.5	79.3	86.4	47.9
	1920	18.1	106.9	65.6	62.3
Philippines	1981	13.1	10.4	6.6	61.1
	1984	46.2	11.0	13.9	44.2
Turkey	1990	60.3	14.7	7.4	66.6
	1994	106.3	20.2	7.1	73.9

Sources: See Reinhart and Rogoff (2008, Appendix I). Money and Debt stock refer to levels at the beginning of each episode.

> *Source: The Forgotten History of Domestic Debt*

> *http://www.sais-jhu.edu/academics/economics/seminar/Reinhart.pdf*

Reinhart and Rogoff contend that "there are many important episodes where domestic debt appears to have been a major factor in the government's incentive to inflate, if not indeed the dominant one."

Indeed, inflation is a key remedy for high debt levels that works by eroding the real value or burden of debt. Defaults and devaluations go hand in hand. Government defaults typically lead foreigners to sell the local currency, leading towards weaker exchange rates. Devaluation makes prices for imported goods more expensive and leads to inflation. At the same time, governments and central banks fight the downturn with more expansive monetary policies in order to reduce the real value of debt, which leads to higher inflation.

CONCLUSION

The experience of emerging market countries after default and devaluation shows that despite sharp, short-term pain, countries are then able to grow without the burden of high debt levels and with more competitive exchange rates. If history is any guide, the European periphery would be able to grow as Asia, Russia and Argentina have. Asia, Russia and Argentina, among others, all managed to return to sustainable growth faster than almost anyone expected after their respective crises. There is no reason to believe this will not be true for countries that choose to depart the euro, default on their debts, and devalue their currency. In fact, exiting the euro is the best thing that could happen to the European periphery.

Bibliography

BACKGROUND TO OPTIMAL CURRENCY AREA THEORY AND EUROPEAN CRISIS

Cabral, Ricardo, The PIGS' external debt problem, May 2010
http://voxeu.org/index.php?q=node/5008

Cross-Border Banking in Europe: Implications for Financial Stability and Macroeconomic Policies, CEPR, www.voxeu.org/sites/default/files/file/cross-border_banking.pdf

Eichengreen, Berry, Sui Generis EMU, NBER Working Paper 13740
http://www.nber.org/papers/w13740

Eichengreen, Berry, 2007, The Breakup of the Euro Area, NBER Working Paper 13393.

Goldman Sachs, European Weekly Analyst Issue No: 11/44 December 21, 2011 Goldman Sachs Global Economics, Commodities and Strategy Research

Goodhart, Charles, Atlantic Economic Journal, Volume 35, Number 1, 1-21,
http://dx.doi.org/10.1007/s11293-006-9050-x

Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. 1986. "Fairness as a Constraint on Profit Seeking: Entitlements in the Market." American Economic Review 76(4).

Leading PIIGS to Slaughter by Robert Parentau, http://www.creditwritedowns.com/2010/03/leading-piigs-to-slaughter.html

Who is in the dominant position: The lender or the borrower?, Natixis 17 November 2011 - No. 833.
www.soprarnosgr.it/download.php?f154c6735b3624cca49657ecab3f788a

HISTORICAL CURRENCY BREAKUPS

Cagan, Phillip (1956). "The Monetary Dynamics of Hyperinflation". In Friedman, Milton (ed.). Studies in the Quantity Theory of Money. Chicago: University of Chicago Press. ISBN 0-226-26406-8.

Conway, Patrick, Currency Proliferation: The Monetary Legacy of the Soviet Union, Essays in International Finance, No. 197, June 1995.

Currency Proliferation, Essays in International Finance, No 197, Patrick Conway, June 1995
www.princeton.edu/~ies/IES_Essays/E197.pdf

Disintegration and Trade, Jan Fidrmuc, Jarko Fidrmuc, November 2003
http://www.fidrmuc.net/research/trade.pdf

Dornbusch, Rudiger "Monetary Problems of Post Communism: Lessons from the End of the Austro-Hungarian Empire," Weltwirtschaftliches Archiv 128, no. 3: 391–424

Five Years in the Monetary Development of the Baltic States: Differences and Similarities, Bank of Estonia

http://www.eestipank.info/pub/en/dokumendid/publikatsioonid/seeriad/bulletan/bylletaan97/_5/article/article1/index.html?ok=1

Iikka Korhonen, Post-Communist Economies, Vol. 12, No. 1, 2000, Currency Boards in the Baltic Countries: What Have We Learned?

Examples of Currency Breakup, Thu, 15 Dec 2011, Prof. Jayanth R. Varma's Financial Markets Blog http://www.iimahd.ernet.in/~jrvarma/blog/index.cgi/Y2011/currency-breakups.html

Fidrmuc, Jan and Július Horváth, Stability of Monetary Unions: Lessons from the Break-up of Czechoslovakia, June 1998 http://ideas.repec.org/p/dgr/kubcen/199874.html

Garber, Peter and Michael Spencer, The Dissolution of the Austro-Hungarian Empire: Lessons for Currency Reform, IMF Working Paper, www.princeton.edu/~ies/IES_Essays/E191.pdf

Keller and Sandrock, "The Significance of Stamps Used on Bank Notes" http://www.thecurrencycollector.com/pdfs/The_Significance_of_Stamps_Used_on_Bank_Notes.pdf

Nenovsky, Nikolay and Hristov, Kalin and Mihaylov, Mihail "Comparing the Institutional and Organizational Design of Currency Boards in Transition Countries," Eastern European Economics, vol. 40, no. 1, January–February 2002, pp. 6–35.

Nitsch, Volker, Have a Break, Have a… National Currency: When do Monetary Unions Fall Apart? CESINFO Working Paper No 113. January 2004

Rose, Andrew K., Checking Out: Exits from Currency Unions, 2007 www.mas.gov.sg/resource/publications/staff_papers/StaffPaper44Rose.pdf

The Bank and the Partition, History of the Reserve Bank of India, Volume 1, Chapter 18 http://rbidocs.rbi.org.in/rdocs/content/PDFs/89651.pdf

EU TREATY, LEGAL AND INSTITUTIONAL ISSUES

Athanassiou, P. (2009), "Withdrawal and expulsion from the EU and EMU: Some reflections", Legal Working Paper Series No 10, December. BIS (2010), Report and Recommendations of the Cross-border Bank Resolution Group, March, http://www.bis.org/publ/bcbs169.pdf.

Baldwin, Richard, The EZ Breakup Contets: Take Ignorance Seriously, http://www.voxeu.org/index.php?q=node/7864

Dor, Eric, Leaving the eurozone: a user's guide, October 2011, IESEG School of Management, Working Paper Series http://my.ieseg.fr/bienvenue/DownloadDoc.asp?Fich=1046781054_2011-ECO-06_Dor.pdf

Economic and Monetary Union: Thinking the Unthinkable – The Breakup of the Monetary Union, by Charles Proctor and Gilles Thieffry, Norton Rose http://gtlaw.ch/publications/Economic_and_Monetary_Union.pdf

The Eurozone in Crisis: What are the Risks for the parts in Cross Border Transactions?, DLA Piper http://bit.ly/uNRwJW

Orderly Workouts for Cross-Border Private Debt, Steven Radelet, Harvard Institute for International Development, February 1999 www.cid.harvard.edu/archive/hiid/papers/workouts.pdf

Proctor, C., 2011, The euro - fragmentation and the financial markets, Capital markets Law Journal, 6 (1): 5-28.

Proctor, C., 2006, The future of the euro — what happens if a Member State leaves?, European Business Law Review, Vol. 17, Issue 4.

Proctor, C., 2005, Mann on the Legal Aspect of Money, Oxford University Press, 904 p.

Proctor, C. and G. Thieffry, 1998, Thinking the unthinkable - the break-up of monetary union", Norton Rose.

State insolvency - what bondholders and other creditors should know, Allen and Overy, Global Law Intelligence unit www.allenovery.com/AOWeb/binaries/64484.pdf

Thieffry, G., 2011, Thinking the Probable: The Break-Up of Monetary Union, Journal of International Banking Law and Regulation , Issue 3, 103-104.

Thieffry, G., 2005, Not so unthinkable - the break-up of European monetary union, International Financial Law Review, July, 15-17.

Target Loans, Current Account Balances and Capital Flows: The ECB's Rescue Facility Hans-Werner Sinn and Timo Wollmershaeuser, NBER Working Paper No. 17626, November 2011

Withdrawal and expulsion from the EU and EMU some reflections, ECB Legal Working Paper Series No 10 / December 2009, www.ecb.int/pub/pdf/scplps/ecblwp10.pdf

Wouters, J. and D. Van Eeckhoutte, 2002, Giving Effect to Customary International law Through European Community Law, working paper 25, Catholic University of Leuven, Institute for International Law.

PREVIOUS EMERGING MARKET DEVALUATIONS AND DEFAULTS

Baer, Werner and Diego Margot, Gabriel Montes-Rojas, Argentina's Default and the Lack of Dire Consequences, City University London Department of Economics, Discussion Paper Series No. 10/09 www.city.ac.uk/__data/assets/pdf_file/0009/73845/1009.pdf

Costs of sovereign default, Bank of England, Financial Stability Paper no. 1, July 2006 http://www.bankofengland.co.uk/publications/fsr/fs_paper01.pdf

Devereux, Michael B 2003. "A tale of two currencies: The Asian Crisis and the exchange rate regimes of Hong Kong and Singapore", Review of International Economics, 11(1), 38-54, 2003 http://faculty.arts.ubc.ca/mdevereux/rie2003-a%20tale%20of%20two.pdf

Gelos, Gaston R., Ratna Sahay, and Guido Sandleris. 2004. "Sovereign Borrowing by Developing Countries: What Determines Market Access?" International Monetary Fund Working Paper 04/221. www.imf.org/external/pubs/ft/wp/2004/wp04221.pdf

Moody's Global Credit Research, March 2008, Sovereign Default and Recovery Rates, 1983-2007. www.moodys.com/sites/products/DefaultResearch/2007100000482445.pdf

Sovereign Defaults: The Price of Haircuts, Juan Cruces, Christoph Trebesch, http://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.373257.de/fin11_cruces_trebesch.pdf

The Forgotten History of Domestic Debt, Carmen M. Reinhart, Kenneth S. Rogoff, Working Paper 13946, http://www.nber.org/papers/w13946

This Time Is Different: Eight Centuries of Financial Folly by Reinhart and Rogoff, Princeton University Press, 2009.

Weisbrot, Mark and Rebecca Ray, Juan Montecino, and Sara Kozameh, The Argentine Success Story and Its Implications, Center for Economic and Policy Research, 2011
http://www.cepr.net/documents/publications/argentina-success-2011-10.pdf

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